Agrometeorology

Offered in the School of Environmental Sciences

Agrometeorology & Environmental Biophysics

AMET210 P1 (36L-5T-40P-0S-50H-24R-0F-0G-5A-13W-16C)

Prerequisite Requirement: 32C at Level 1.
Aim: Provision of concepts and applications in applied environmental, agricultural and ecophysiological sciences.
Content: The atmosphere, greenhouse effect. Climate change. Earth's radiation and energy balance. Remote sensing. Role of water in the environment. Glasshouse climate. Windbreaks. Energy and water exchange processes above canopies. Animal climate. Meteorology: rain processes. Weather systems.
Practicals: Temperature measurement; reflectivity, radiation profiles in crops; humidity; rainfall and evaporation; leaf resistance and water potential. Project.
Assessment: Tests (15%), practicals (12%), project (6%), 3h exam (67%).
DP Requirement: 80% attendance at lectures and practicals.

Environmental Instruments:Life/Earth Sciences

AMET211 P2 (20L-0T-39P-0S-0H-17R-0F-0G-4A-13W-8C)

Prerequisite Requirement: 32C at Level 1.
Aim: To provide students taking agriculture and environmental science options with the skills to set up an automatic weather station.
Content: Datalogging measurement and control techniques using an automatic weather station (AWS) and other sensors for measurement and control purposes. Internet techniques, information retrieval and storage and data display.
Practicals: Identifying, checking electronic components. Use of an AWS.
Assessment: Test (10%), practicals (23%), 3 h practical exam (67%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Students may not obtain credit for both AMET212 and AMET211.

Environmental Instruments:Life/Earth Sciences

AMET212 P2 (23L-0T-115P-0S-0H-17R-0F-0G-5A-13W-16C)

Prerequisite Requirement: 64C at Level 1.
Aim: To provide students taking agriculture and environmental science options with the skills to set up an automatic weather station.
Content: Datalogging measurement and control techniques using an automatic weather station (AWS) and other sensors for measurement and control purposes. Internet techniques, information retrieval and storage and data display.
Practicals: Identifying, checking electronic components. Use of an AWS. Grass reference estimation; fire index; wind chill and chilling index estimation. Internet techniques, information retrieval and storage and data display.
Assessment: Test (5%), 13 practicals (12 %), project (50%), 3 h practical exam (33%).
DP Requirement: 80% attendance at all academic contact activities, 100% at practicals; 45% subminimum on the project.
Students may not obtain credit for both AMET212 and AMET211.

Evaporation Estimation

AMET860 PY (20L-5T-18P-0S-27H-7R-0F-0G-3A-26W-8C)

Aim: This module is to provide students with the theory necessary to understand the principles of evaporation estimation and techniques for turbulence measurement.
Content: Water and energy in the environment; radiation and energy transfer; lysimetry; atmometers. Sap flow theory and measurement; Bowen ratio, eddy covariance, surface renewal. Penman-Monteith equation and use; infra red thermometry; energy balance closure; Monin-Obukhov similarity theory; scintillometry.
Practicals: Field use of equipment and sensors; advanced data analysis using a spreadsheet including VBA.
Assessment: 1 h test (33%), 2 h exam (67%).
DP Requirement: 80% attendance at lectures and practicals.
Year-long module.

Automatic Weather Station Technologies 1

AMET861 PY (20L-5T-18P-0S-27H-7R-0F-0G-3A-26W-8C)

Aim: To provide theory and skills to set up an automatic weather station and the checking and use of collected data. Included here is the checking of the electronic components and an understanding of the sensors used.

Content: Datalogging measurement and control technologies, including datalogging programming. Theory of sensors used. Procedures for the checking and use of automatic weather station (AWS) data. Data processing and presentation. Theory and use of the AWS sensors and their use for measurement and control. Data telecommunication techniques. Internet techniques, information retrieval and storage, scientific graphics display.

Practicals: Field use of equipment. Advanced data analysis using a spreadsheet.

Assessment: 1 h test (33%), 2 h exam (67%).

DP Requirement: 80% attendance at lectures and practicals.

Year-long Module.

Digital Data Treatment & Representation

AMET862 PY (20L-5T-18P-0S-27H-7R-0F-0G-3A-26W-8C)

Aim: This module 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: 1 h test (33%), 2 h exam (67%).

DP Requirement: 80% attendance at lectures and practicals.

Year-long Module.

AWS Measurement & Control Technologies

AMET863 PY (20L-5T-18P-0S-27H-7R-0F-0G-3A-26W-8C)

Aim: This module 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 protection, reference evaporation, glasshouse microclimate.

Practicals: Field use of equipment.

Assessment: 1 h test (33%), 2 h exam (67%).

DP Requirement: 80% attendance at lectures, 100% at practicals.

Year-long Module.

AWS Measurement & Control Technologies

AMET864 PY (20L-5T-18P-0S-27H-7R-0F-0G-3A-26W-8C)

Aim: This module is to provide students with the theory 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: 1 h test (33%), 2 h exam (67%).

DP Requirement: 80% attendance at lectures and practicals.

Year-long Module.

Heat Pulse Measurement in Plants & Soils

AMET865 PY (20L-5T-18P-0S-27H-7R-0F-0G-3A-26W-8C)

Aim: This module is to provide students with the theory necessary to understand the following heat pulse technologies for use in 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: 1 h test (33%), 2 h exam (67%).
DP Requirement: 80% attendance at lectures and practicals.
Year-long Module.

Modelling Exchanges in the SPAC System 1

AMET866 PY (20L-5T-18P-0S-27H-7R-0F-0G-3A-26W-8C)

Aim: This module is to provide students with the theory 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.
Assessment: 1 h test (33%), 2 h exam (67%).
DP Requirement: 80% attendance at lectures and practicals.
Year-long Module.

Environmental Temperature & Radiation

AMET867 PY (20L-5T-18P-0S-27H-7R-0F-0G-3A-26W-8C)

Aim: This module is to provide students with the theory 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 (33%), 2 h exam (67%).
DP Requirement: 80% attendance at lectures and practicals.
Year-long Module.

Agric/Environment Instrumentation Research

AMET869 PY (0L-0T-390P-0S-250H-0R-0F-0G-0A-26W-64C)

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 employer(s).
Practicals: This forms the basis of the research project.
Assessment: 1 project report (100%).
DP Requirement: Not applicable.
Year-long Module. This module has no supplementary exam.

Earth Science

Offered in the School of Environmental Sciences

Rocks Minerals & the Environment

EART122 P2 (18L-0T-21P-0S-23H-13R-0F-0G-5A-13W-8C)

Aim: To provide an understanding of the genesis and classification of rocks and minerals 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; rocks and ground water.

Practicals: Laboratory and field identification of common rocks and minerals.

Assessment: 2 theory tests & laboratory prac reports (25%), 1.5 h theory exam (50%), 1.5 h prac exam (25%).

DP Requirement: 40% Class mark and attendance at all field practical work.

Environmental Sciences

Offered in the School of Environmental Sciences

Environmental Systems

ENVS120 H2 P2 W2 (39L-8T-30P-0S-66H-10R-0F-0G-7A-13W-16C)

Aim: To introduce basic concepts in Physical Geography & the functioning of Environmental Systems.

Content: An integrated, process-related, systems approach to studying the earth & its spatial variability. Atmosphere – the structure & composition of the atmosphere & human influence on it; weather & climate. Biosphere – basic ecological concepts pertinent to populations, communities & ecosystems. Hydrosphere – the hydrological cycle, transport by running water, coastal processes. Lithosphere – broad-scale lithospheric processes; the composition & dynamics of the earth's crustal system. Cartographic theory & map skills are taught as an integral component of the module.

Assessment: Assignment/essay (20%), Tests (10%), Practicals (20%); 3 h theory exam (50%).

DP Requirement: 80% attendance at practicals and tutorials; 40% Class mark.

Students may be required to contribute to costs of fieldwork.

Biophysical Environments of Southern Africa

ENVS210 H1 P1 W1 (39L-0T-40P-0S-54H-20R-0F-0G-7A-13W-16C)

Prerequisite Modules: ENVS120.

Aim: To introduce students to the physical processes that shape the biophysical environment in southern Africa.

Content: Weather producing systems and southern African climates and their variability; the biogeography of the region in terms of the distribution of biota through climatic and other environmental factors; a discussion of biomes, biodiversity and conservation; the properties of geomorphic materials as well as erosion, transport and deposition processes that shape and modify the landscape.

Assessment: Assignments (15%), Tests (15%), Practicals (20%); 3 h theory exam (50%).

DP Requirement: 80% attendance at practicals and field work; 40% Class mark.

Students may be required to contribute to costs of fieldwork.

Geographic Information Systems

ENVS211 H2 P2 W2 (29L-0T-36P-0S-77H-10R-0F-0G-8A-13W-16C)

Prerequisite Requirement: 64C at Level 1.

Aim: To introduce students to the concepts, techniques and interdisciplinary application of GIS and remote sensing as environmental decision-making tools.

Content: Development, interdisciplinary nature and potential value of GIS; referencing the geographic location of data; technological environment of GIS, data sources, data models, entry and analysis; data quality, management & legal aspects; GPS, physical basis of remote sensing, sensors & platforms; basics of digital image processing.

Assessment: Practical reports (15%), practical test (15%), theory test (10%), assignment (10%); 3 h theory exam (50%).

DP Requirement: 80% attendance at practicals; 40% Class mark.

Biogeography and Climatic Change

ENVS314 P1 W1 (27L-5T-30P-6S-64H-24R-0F-0G-4A-13W-16C)

Prerequisite Requirement: 32C at Level 2.

Prerequisite Modules: ENVS210 or equivalent.

Aim: To provide students with a broad understanding of key biogeographical concepts.

Content: Process, pattern and scale in biogeography. Biogeographical regions. Distributional patterns and the roles of climate and evolution. Palaeo-climatic change. Biological processes in biogeography: adaptation; speciation; extinction; ecological interactions. Biogeographical reconstruction: refugia, evolutionary biogeography. Measures of range size. Species-area curves.

Assessment: Tests (20%), Seminar, essays, presentations (15%), Practicals (including a field trip) (25%); 3 h exam (50%).

DP Requirement: 80% attendance at all academic contact activities; 40% class mark.

Students may be required to contribute to costs of fieldwork.

Soil Erosion and Land Degradation

ENVS315 P1 W1 (27L-0T-46P-0S-73H-10R-0F-0G-4A-13W-16C)

Prerequisite Modules: ENVS210 or 230.

Aim: To introduce the processes, social & physical consequences of soil erosion & land degradation issues in Africa.

Content: Land degradation & sustainability; causes & consequences of degradation; risk assessment in relation to the sustainability of soil; food security & degradation; political & socio-economic aspects of soil erosion; physical & chemical erosion processes; human-environment processes & influences; conservation practices; magnitude-frequency considerations; desertification; land use systems in a historical context; soil conservation strategies; principles, planning & policy issues.

Practicals: Case studies & applications. Possible four day excursion

Assessment: Field report/Assignment (30%), Practicals (10%), Test (10%); 3 h exam (50%).

DP Requirement: 80% attendance at practicals; field trip compulsory; 40% Class mark.

Students may be required to contribute to costs of fieldwork.

GIS & Remote Sensing

ENVS316 H2 P2 W2 (27L-1T-36P-0S-62H-27R-0F-0G-7A-16W-16C)

Prerequisite Modules: ENVS211 or equivalent knowledge.
Aim: This module is designed to provide further insight into GIS as a management tool for spatial data.
Content: Spatial data and modelling; Attribute data management; Analysis of remotely sensed GIS data and its classification; Data quality issues; GIS project management and design.
Assessment: Theory test (10%), assignment (10%), practical reports (15%), practical test (15%); 3h theory exam (50%).
DP Requirement: 80% attendance at practicals and tutorials; 40% Class mark.
Students may be required to contribute to costs of fieldwork.

Atmospheric Science

ENVS318 W1 (30L-0T-35P-0S-66H-25R-0F-0G-4A-13W-16C)

Prerequisite Modules: ENVS210, MATH133.
Aim: To provide an understanding of the basic concepts & theories pertaining to the behavior of the atmosphere and to introduce the causes & consequences of air pollution, with a focus on applications in a South African context.
Content: This module provides an understanding of meteorological theory & the study of weather and climate over South Africa, and to the study of air pollution. Topics include thermodynamics, adiabatic processes, pressure & hydrostatic equilibrium, radiative processes, divergence & vorticity, zonal and meridional airflow; local air circulations and boundary layer phenomena. Air pollution, fumigation, dispersion and its modeling.
Assessment: Practicals (10%), Practical Test (10%), Theory Test (30%); 3 h exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Students may be required to contribute to the costs of the fieldtrip.

Environmental Management

ENVS322 H2 P2 W2 (27L-0T-36P-8S-65H-20R-0F-0G-4A-13W-16C)

Prerequisite Requirement: ENVS221 or ENVS224 or 64C at level 2 in the environmental science disciplines.
Aim: To develop an understanding of environmental management theory and practice.
Content: Theoretical and critical examination of the issues of environmental management by examining the history of environmentalism and mainstream approaches and their alternatives. The relationship between environment and planning; examination of the different tools and methods used in environmental management.
Practicals: Use of methods and techniques related to environmental management tools.
Assessment: Essays (20%), Tests (10%), Practicals (20%); 3 h exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Students may be required to contribute to costs of fieldwork.

Research Methods in Environmental Sciences

ENVS700 P1 W1 (30L-0T-8P-0S-99H-20R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours programme.
Aim: To introduce students to the history and philosophy of science and to develop techniques and skills in scientific research methods in the environmental sciences, which are relevant to solving current and past the environmental problems.
Content: The history and philosophy of science; the production of knowledge in the environmental sciences, techniques and skills such as basic survey and measurement in the natural sciences; statistical analysis and procedures, and other vital natural science skills. The preparation of a scientific paper and its oral and written presentation.
Assessment: Term paper (25%), Essays, presentations, seminars (15%), assignment (10%); 3 h exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.

Biogeography of Invasive Species

ENVS708 WC (20L-0T-14P-15S-78H-30R-0F-3G-0A-13W-16C)

Prerequisite Requirement: ENVS314 or a completed major in BIOL.
Aim: To provide a solid understanding of the biogeographical and ecological patterns and processes associated with invasive species.
Content: Definitions: naturalization, invasiveness, invisibility of species. Natural versus human-assisted changes in species distributions. Plant invasions and biological control. Freshwater animal invasions. Marine invasions. Island versus mainland invasions. Mapping and modeling the spread of invasive species. Invasion phylogenetics. Assessing invasive species as threats to indigenous biodiversity.
Assessment: Seminars (30%), practicals (20%); 3h exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Offered in either Semester 1 or 2. Students may be required to contribute to the costs of the fieldtrip.

Air Pollution

ENVS711 WC (30L-20T-0P-24S-73H-10R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours programme.
Aim: To understand technical and social aspects that contribute to air pollution problems and to be able to apply this knowledge to air quality management.
Content: Sources and types of pollutants, air pollution chemistry, air pollution meteorology, dispersion modelling, impact and abatement strategies, air quality management, policy and legislation in South Africa, case studies of air pollution 'hotspots'.
Assessment: Essays (30%), Seminar presentation (20%), 3h Exam (50%); 3h theory exam (67%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Offered in either Semester 1 or Semester 2.

Analytical GIS & Advanced Spatial Modelling

ENVS712 P1 W1 (20L-0T-32P-10S-62H-30R-0F-0G-6A-13W-16C)

Prerequisite Requirement: At least 60% in ENVS316.
Aim: This module is designed to provide advanced insight into GIS and its applications. Emphasis is on understanding through an analytical modelling approach to spatial problems.
Content: Analytical modelling, techniques for spatial modelling, Statistical analysis and interpretation of geographic data, spatial database design and manipulation, Error assessment and management, GIS project design and management, Environmental GIS applications.
Practicals: GIS applications for environmental management.
Assessment: Assignment (20%), practical reports (15%), practical test (15%); 3h theory exam (50%).
DP Requirement: 80% attendance at lectures, practicals; 40% Class mark.
Students may be required to contribute to costs of fieldwork.

Advanced Remote Sensing

ENVS720 P2 W2 (20L-0T-22P-10S-72H-30R-0F-0G-6A-13W-16C)

Prerequisite Modules: ENVS316 or equivalent knowledge.
Aim: To provide students with an advanced instruction in Remote Sensing, coupled with the use of Geographic Information Systems (GIS) in environmental applications. Emphasis is on understanding through application of techniques.
Content: Image processing; Image restoration; Supervised and unsupervised classification; Quality Assessment, including replicability, positional accuracy and thematic accuracy; Vegetation Indices and their applications; Time series change and analysis using Remote Sensing with GIS; Decision making using Multiple Criteria Analysis.
Practicals: Application of advanced remote sensing techniques.
Assessment: Assignment (20%), practical reports (15%), practical test (15%); 3h theory exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.

Applied Geomorphology

ENVS722 PC (20L-0T-42P-5S-60H-30R-0F-0G-3A-13W-16C)

Prerequisite Modules: ENVS315.

Aim: To impart an understanding of process geomorphology based on the analysis of case studies.

Content: The application of Geomorphology to solving problems in natural and urban environments; Professional ethics; social and economic considerations; Risk assessment and hazard mitigation in geomorphic systems; Case studies to investigate the application of Geomorphology in the solution of environmental problems; The field based identification and remediation of degraded systems through careful process intervention.

Practicals: Field excursion (students to contribute to costs), laboratory work.

Assessment: Major project (25%), assignment (15%), seminars (10%); 3h Exam (50%).

DP Requirement: 80% attendance at lectures, practicals and field work; 40% Class mark.

Offered in either Semester 1 or 2. Students may be required to contribute to costs of fieldwork.

Advanced Biogeography

ENVS723 PC (20L-0T-32P-15S-60H-30R-0F-0G-3A-13W-16C)

Prerequisite Modules: ENVS314.

Aim: To discuss, critically evaluate, synthesize and integrate the various approaches to modern biogeography.

Content: Vicariance biogeography; centres of origin; pan-biogeography; applied historical biogeography; techniques of historical biogeography - retrospection; experimental island biogeography; the man-land paradox and the depletion/conservation of resources; species diversity; modern environmetalism.

Practicals: A field excursion (students to contribute to costs), laboratory work.

Assessment: Practical assignments (20%); major project (20%); seminars (10%); 3 h exam (50%).

DP Requirement: 80% attendance at lectures, seminars and practicals, 40% Class mark.

Offered in either Semester 1 or 2. Students may be required to contribute to costs of fieldwork.

Environmental Science Res Project

ENVS730 PY WY (0L-0T-0P-40S-440H-0R-0F-0G-0A-26W-48C)

Prerequisite Requirement: Entry into an appropriate Honours programme.

Aim: To introduce students to the research in the environmental sciences.

Content: A significant research project in the environmental sciences, dealing with an appropriate environmental problem and undertaken under the supervision of an academic member of the University staff. Students are expected to present written and oral project proposals and progress reports; and to submit the research dissertation by the set date.

Assessment: Assessment of dissertation (80%) and oral presentations (20%).

DP Requirement: Not applicable.

Year-long Module. This module has no supplementary exam. Students may be required to contribute to the costs of the field trip.

Coastal Geomorphology

ENVS741 WC (20L-0T-14P-15S-78H-30R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours programme.

Aim: To develop an understanding of shoreline and off-shore geomorphological history and processes; to study the geomorphological link between catchments and shorelines and to emphasize the impacts of human utilization of the coastal zone.

Content: Geomorphological aspects of oceanic currents; offshore and shoreline processes; tectonics and coastlines; catchment and shoreline geomorphology; human interventions and impacts on coastal geomorphological systems.

Practicals: Field excursion; three afternoon practicals.

Assessment: Seminar presentation (20%), field report (20%), practicals (10%); 3 h exam (50%).

DP Requirement: 80% attendance at all academic contact activities; 40% class mark.

Offered in either semester 1 or 2. Students may be required to contribute to the costs of the fieldtrip.

Environmental Modelling

ENVS750 PC (20L-0T-42P-5S-60H-30R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours programme.
Aim: To gain insight into the complexities of deriving process-based models pertaining to particular aspects of the natural environment.
Content: Models, model building and the role of models in environmental science; model sensitivity and accuracy; environmental modelling and understanding in selected natural environmental systems; modelling and simulation.
Practicals: The module includes a field excursion to investigate case studies involving the environmental systems considered in the course, and one major assignment.
Assessment: Field excursion report (15%), assignment (15 %), practical reports (20%); 3h theory exam (50%).
DP Requirement: 80% attendance at lectures, practicals and field trip; 40% Class mark.
Offered in either Semester 1 or 2. Students may be required to contribute to costs of fieldwork.

Contemporary Environmental Issues

ENVS751 PC WC (20L-0T-35P-10S-62H-30R-0F-0G-3A-13W-16C)

Prerequisite Modules: ENVS322.
Aim: To understand the complexity of contemporary environmental issues of applied environmental science in the southern African and global context.
Content: Hazard assessment in an environmental context; people-environment dependencies; sustainability and biodiversity; energy, fuel and pollution; conservation strategies and policies including Agenda 21, ISO and other international treaties and conventions; environmental ethics and sustainable development; environmental consequences of population movement.
Practicals: Workshops, a major independent assignment and limited fieldwork.
Assessment: Seminars (25%), essay (10%), assignments (15%); 3 h exam (50%).
DP Requirement: 80% attendance at practicals, seminars and fieldwork; 40% Class mark.
Offered in either Semester 1 or 2. Students may be required to contribute to costs of field work.

Coursework Masters Dissertation

ENVS800 HY PY WY (0L-0T-0P-0S-640H-0R-0F-0G-0A-26W-64C)

Aim: To expose students to completing a major piece of supervised, independent research.
Content: Undertaking a major research project on an approved topic of interest to the Environmental Sciences and writing a dissertation on this research under the supervision of a member of the academic staff.
Assessment: The dissertation will be assessed as the sole criterion for the module, in accordance with the standard rules of Faculty for coursework masters degrees.
DP Requirement: Not applicable.
Year-long Module. This module has no supplementary exam.

Applied Geographical Information Systems

ENVS810 PC WC (16L-0T-24P-10S-77H-30R-0F-0G-3A-13W-16C)

Prerequisite Modules: ENVS316 or equivalent.
Aim: To provide insight into the applications of GIS in a southern African context.
Content: Analysis of spatially-related problems facing the modern world, in the southern African context in particular; Advanced concepts of applied GIS; Concepts of geography as a spatial information technology; Use of case studies to illustrate different aspects of GIS theory; Use of GIS-software to acquire and apply analytical skills.
Practicals: Assignments, projects and a field excursion.
Assessment: Practical reports (25%), mini-project (25%), assignment (10%); 3 h theory exam (40%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Offered in either Semester 1 or 2. Students may be required to contribute to costs of fieldwork.

Internship

ENVS813 HC WC (0L-0T-0P-0S-160H-0R-0F-0G-0A-13W-16C)

Aim: To gain practical experience in a working environment.
Content: Research project on an appropriate topic during placement, under guidance of School and workplace supervisor.
Assessment: Research report (50%); Work practice report (50%).
DP Requirement: Not applicable.
Offered in either Semester 1 or 2. This module has no supplementary exam.

Sustainable Development

ENVS814 WC (0L-0T-16P-30S-91H-20R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours or Coursework Masters' programme.
Aim: To explore the relationship between people and Environment using sustainability as a conceptual framework.
Content: This module explores the concepts and principles of sustainability. It is divided into four main sections: theory and philosophy of environmentalism; defining sustainability; principles and management tools for sustainability: such as sustainability indicators, environmental economics, public participation, and policy processes and sustainability.
Practicals: Fieldwork project
Assessment: Theory assignment (25%), research report (25%); 3 h Exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Offered in either Semester 1 or Semester 2. Students may be required to contribute to the costs of the fieldtrip.

Tools of Environmental Management

ENVS815 WC (0L-0T-36P-39S-72H-10R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours or Coursework Masters' programme.
Aim: To expose students to a wide range of tools, over and above traditional EIA's, that are used in environmental management and to facilitate critical engagement as to their applicability in different situations.
Content: Evaluating sustainability status of various land use categories, risk assessment, environmental management systems, strategic environmental assessment, rapid rural appraisal, ecological footprint analysis, co-management agreements, role of predictive modeling, and environmental ethics.
Assessment: Assignment (25%), research report (25%); 3 h theory exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Offered in either Semester 1 or Semester 2. Students may be required to contribute to the costs of the fieldtrip.

Water Resource Management

ENVS817 PC WC (28L-0T-28P-28S-43H-30R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours or Coursework Masters' programme.
Aim: To provide students with an understanding of the significance as a life-sustaining resource and techniques of managing this resource.
Content: Global water issues. Hydrological concepts. Water management institutions. Policies and Water Act. Water scarcity and management of supply and demand. Sustainability of water resources. Catchment Management.
Practicals: 3 day field excursion and site visits.
Assessment: Article review (20%), term paper (20%), oral presentation (10%); 3 h exam (50%).
DP Requirement: 80% attendance lectures, fieldwork and seminars; 40% Class mark.
Offered in either Semester 1 or Semester 2. Students may be required to contribute towards costs of fieldwork.

Geography

Offered in the School of Environmental Sciences

Human Environments

GEOG110 H1 P1 W1 (39L-8T-30P-0S-67H-10R-0F-0G-6A-13W-16C)

Aim: To introduce students to basic concepts in human geography.

Content: The central themes in this module are society-space and nature-society linkages. These are grounded in the African social, economic and political context and further explored in relation to processes of globalisation and uneven development. Fundamental concepts are: global/ local interactions at different scales; spatial variation and spatial interaction; individual agency in the face of larger economic and social structures; human-environment interactions at different scales. Practicals form an integral part of the theory and utilise map skills.

Assessment: Class essay (15%), Theory test (15%), Practical test (20%), 3 h theory exam (50%).

DP Requirement: 80% attendance at practicals and tutorials; 40% Class mark.

Geographies of Urban and Rural Change

GEOG220 H2 P2 W2 (39L-5T-28P-0S-61H-20R-0F-0G-7A-13W-16C)

Prerequisite Modules: GEOG110.

Aim: To introduce students to spatial transformations in urban and rural contexts in southern Africa.

Content: Spatial transformations in urban and rural contexts are explored in light of appropriate theory drawn from urban, economic, cultural and political geography. Regional change is interpreted in the context of post-apartheid planning and development practice, as well as in the global economy. Particular attention is paid to contested urban landscapes and new urban forms; the impact of land reform initiatives & the spatial impacts of development theory and planning.

Assessment: Tests (20%), Assignments (20%), Practicals (10%), 3 h exam (50%).

DP Requirement: 80% attendance at practicals and tutorials; 40% Class mark.

Tourism Studies

GEOG301 H1 (27L-0T-48P-0S-63H-17R-0F-0G-5A-13W-16C)

Prerequisite Requirement: GEOG220 or at least 64C at level 2.
Aim: To introduce students to conceptual and theoretical aspects of leisure, recreation and tourism in the context of planning for sustainable tourism development.
Content: Conceptual and theoretical issues in leisure, recreation and tourism, historical development of tourism, the economics of tourism development, principles of sustainable tourism development, forms of tourism development, the sustainability of ecotourism, environmental policies and impact control measures, policy management and planning for tourism development in South Africa.
Practicals: Collection and analysis of data, report presentation and field excursion.
Assessment: Tests (25%), Assignments (5%), Practicals (20%), 3 h exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Students may be required to contribute to the costs of field trips.

Land Issues and Rural Development in SA

GEOG314 H2 (27L-0T-36P-0S-72H-20R-0F-0G-5A-13W-16C)

Prerequisite Requirement: 32C at Level 2.
Aim: To deepen understanding of land issues in the African context.
Content: Explanations of rural poverty (including globalization and HIV/AIDS), historical background to the land question in Southern Africa, land demand and use in Southern Africa, natural resources and rural development, rural livelihoods and food security, women/ gender and rural development, and enhancing conditions for the promotion of rural development.
Assessment: Assignments (15%), Tests (15%), Project (20%), 3 h theory exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.

Geography of Health

GEOG321 H2 (27L-0T-42P-0S-66H-20R-0F-0G-5A-13W-16C)

Prerequisite Modules: GEOG220.
Aim: To introduce students to the spatial and social determinants of disease, health and medicine.
Content: Historical development of medicine, conceptual issues, biomedical perspective and criticisms, alternate forms of therapy, social and environmental change, rural-urban health care delivery, development and health, primary health care and disease ecology in developing countries.
Practicals: Collection and analysis of health related data and report.
Assessment: Class essay (15%), Theory test (15%), Practical test (20%), 3 h exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Students may be required to contribute to the costs of field trips.

Geography of Development

GEOG325 P2 (18L-4T-26P-4S-80H-24R-0F-0G-4A-13W-16C)

Prerequisite Modules: GEOG220.
Aim: To highlight the shortcomings of mainstream models and theories of development, especially the inability to address problems of poverty and environmental sustainability.
Content: The module 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.
Assessment: Assignments (30%), Practicals (20%); 3 h exam (50%).
DP Requirement: 80% attendance at practicals; 40% Class mark.

Sustainable Cities and Development

GEOG330 H2 P2 (26L-0T-36P-4S-69H-20R-0F-0G-5A-13W-16C)

Prerequisite Modules: GEOG220 or 224.

Aim: To develop an understanding of sustainable urban processes in Sub-Saharan Africa, and to appraise these in the context of development theory and practice.

Content: Contemporary transformation and urban change within cities; strategies for urban sustainability and growth. Urban policies, democratization, decentralization and social movements. People-land relationships and urban land use in Africa.

Assessment: Assignments (25%), Practicals (25%); 3 h exam (50%).

DP Requirement: 80% attendance at practicals and tutorials; 40% Class mark.

Concepts and Methods in Geography

GEOG700 H1 P1 (20L-0T-8P-30S-79H-20R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours programme.

Aim: To consolidate the principles, philosophy and methods of Geography as an holistic, applied environmental science, within a spatial and temporal context.

Content: Debates on philosophical and methodological theories, concepts and paradigms informing and contextualizing methods with an emphasis on a variety of quantitative and qualitative methods available to conduct geographical research.

Practicals: Workshops, presentations and assignments.

Assessment: Assignments (20%), Essay (15%), Term paper (15%); 3 h exam (50%).

DP Requirement: 80% attendance at all academic contact activities; 40% class mark.

Students may be required to contribute to the costs of the fieldtrip.

Urban governance:managing sustainable cities

GEOG726 PC (30L-0T-36P-9S-62H-20R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours programme.

Aim: This module examines the experience of urban planning and management in developing countries.

Content: Democratisation, neo-liberal growth strategies and globalisation in the context of cities. The reorientation of policies and instruments of city management in order to improve efficiency, social equity and sustainability. Urban policies; decentralisation and democratisation; public-private partnerships; community participation; social movements; sustainable environments; poverty alleviation; case studies. Critical appraisal of urban reconstruction strategies in South Africa.

Practicals: Workshops/Projects

Assessment: Presentations (20%), assignments (30%); 3 h exam (50%).

DP Requirement: 80% attendance at lectures, practicals and seminars; 40% Class mark.

Offered in either Semester 1 or 2.

Urban Studies

GEOG727 H2 (20L-0T-8P-30S-79H-20R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours programme.

Aim: To develop a critical understanding of the nature of contemporary cities and the key theories used to examine urban processes.

Content: The key processes & types of development through which contemporary cities are evolving, reviewing issues in urban geographical literature from the developed and developing worlds. Urban competition, social upliftment, gentrification, the formation of spaces of the hyper-real and mechanisms for strengthening the position of cities in the global economy. The module interrogates the impacts on cities with special consideration of the nature of African and South African cities.

Practicals: Application of urban theory.

Assessment: Presentations (20%), assignments (30%), 3h Exam (50%).

DP Requirement: 80% attendance at all academic contact activities; 40% class mark.

Geographical Sciences Research Project

GEOG730 PY WY (0L-0T-0P-40S-440H-0R-0F-0G-0A-26W-48C)

Corequisite: GEOG700.

Aim: To gain experience in the formulation, planning and execution of a research project in the Geographical Sciences.

Content: To identify & execute a significant research project in one of the sub-disciplines of Geography within the natural sciences, requiring the student to collect, analyse and interpret data; integrate practical & theoretical knowledge; develop independent critical thought and communicate the results effectively in both written & oral reports. The projects will be decided in discussion between the supervising staff & the individual student. The project must be submitted in the format as required by one of the journals of the discipline appropriate to the selected project.

Assessment: Oral presentations (20%), Dissertation (80%).

DP Requirement: Not applicable.

Year-long Module. This module has no supplementary exam. Students may be required to contribute to the costs of the fieldtrip. For students in the Faculty of Science and Agriculture only.

Natural Resources & Sustainable Land Use

GEOG733 PC WC (20L-0T-38P-10S-62H-27R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours programme.

Aim: To examine NRM and SLU issues utilising problem-based, interdisciplinary and field-orientated approaches.

Content: Resource management theories and debates, ecosystem management, field-based methodologies, sustainable land use, natural resource management strategies, institutional dynamics, conflict resolution, policy aspects, constraints and capacities.

Practicals: Workshops, projects and fieldwork.

Assessment: Essays (30%); seminars (20%), presentations (10%); 3 h exam (40%).

DP Requirement: 80% attendance at all academic contact activities; 40% class mark.

Offered in either Semester 1 or 2. Students may be required to contribute to costs of fieldwork.

Rural Development & Land Reform

GEOG735 PC WC (0L-0T-26P-36S-68H-27R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours programme.

Aim: To examine rural change and challenges in developing contexts.

Content: Social differentiation in rural areas, rural governance and political dynamics, knowledge systems and social capital, rural-urban linkages, food security and agricultural issues, off-farm income generating/ livelihood sustaining activities, rural service provision, appropriate technologies, review of relevant rural development policies, monitoring/ management and research issues in rural development.

Practicals: Workshops, projects and a field excursion.

Assessment: Assignments (25%), Research report (25%); 3 h exam (50%).

DP Requirement: 80% attendance at all academic contact activities; 40% class mark.

Offered in either Semester 1 or Semester 2. Students may be required to contribute to costs of fieldwork.

Geography Sciences Research Project

GEOG740 HY PY (0L-10T-0P-10S-300H-0R-0F-0G-0A-26W-32C)

Corequisite: GEOG700.

Aim: To gain experience in the formulation, planning and execution of a research project in Geography within the social and human sciences.

Content: To identify & execute a significant research project in one of the sub-disciplines of Geography, requiring the student to collect, analyse, & interpret data; integrate practical & theoretical knowledge within the appropriate framework in the human sciences or at the interface between the natural & social sciences; to develop independent critical thought, and communicate the research results effectively in both written and oral reports. The research projects will be decided in discussion between the supervising staff and the individual student.

Assessment: Dissertation (80%) and oral presentations (20%).

DP Requirement: Not applicable.

Year-long Module. This module has no supplementary exam. Students may be required to contribute to the costs of the fieldtrip. For students in the Faculty of Humanities, Development and Social Science only.

Advanced Tourism Studies

GEOG744 HC (0L-0T-38P-30S-62H-27R-0F-0G-3A-13W-16C)

Prerequisite Requirement: Entry into an appropriate Honours programme.
Aim: To develop critical expertise in the analysis of tourism issues in the developing world.
Content: Concepts and theoretical aspects of tourism, the production of tourism spaces, places and forms, globalization and tourism, trends in tourism development, tourism impacts, tourism and sustainable development and tourism in Southern Africa.
Practicals: Workshops, projects, and field excursions.
Assessment: Term paper (20%), Assignments (20%), Seminar presentations (10%); 3 h exam (50%).
DP Requirement: 80% attendance at all academic contact activities; 40% class mark.
Offered in either Semester 1 or 2. Students may be required to contribute to costs of field trips.

Soil Science

Offered in the School of Environmental Sciences

Introduction to Soil Science

SSCI212 P1 (18L-4T-18P-0S-24H-12R-0F-0G-4A-13W-8C)

Prerequisite Modules: CHEM110.
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, structure and water infiltration. Laboratory analysis of particle size, pH, exchangeable cations, extractable acidity and hydraulic conductivity.
Assessment: 2 theory tests (20%), prac laboratory reports & tutorial reports (13%), 2 h exam (67%).
DP Requirement: 80% attendance at practicals; 40% Class mark.
Credit may not be obtained for both SSCI212 and SSCI217.

Introduction to Soils & the Environment

SSCI217 P1 (37L-6T-33P-0S-54H-25R-0F-0G-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 & trace elements and fertilizer sources. Water retention & movement; water availability; infiltration and evaporation. Soil compaction, aggregate stability and crusting.
Practicals: Field: texture; colour, structure, infiltration; soil identification; land evaluation. Laboratory: particle size; pH; cation exchange properties; P; C; hydraulic conductivity; fertilizer sources; assessment of variability.
Assessment: 2 theory tests (17%), laboratory & field reports & tutorials (16%), 3 h exam (67%).
DP Requirement: 80% attendance at practicals and tutorials; 40% Class mark.
Credit may not be obtained for both SSCI212 and SSCI217.

Pedology
SSCI230 P2 (36L-0T-61P-0S-40H-19R-0F-0G-4A-13W-16C)
Prerequisite Modules: SSCI217 or 212.
Aim: To provide an understanding of the field study of soils.
Content: The morphology, genesis 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 day field trips held on weekends is compulsory. A compulsory one week field mapping project may also be held and students are required to contribute towards the costs.
Assessment: 2 tests (20%), & project reports (20%), 3 h exam (60%).
DP Requirement: 40% Class mark.

Soil Fertility & Plant Nutrition
SSCI320 P2 (36L-5T-40P-0S-51H-23R-0F-0G-5A-13W-16C)
Prerequisite Modules: SSCI217 or 212.
Aim: To provide a scientific and practical understanding of the management of agricultural and horticultural soils for sustainable crop production.
Content: Soil testing and plant analysis as aids to making fertilizer recommendations and 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 soil acidity, tolerance of crops to acidity, use of lime and gypsum as ameliorants.
Practicals: Soil fertility evaluation involving a glasshouse experiment.
Assessment: 2 tests (20%), project report (30%), 3 h exam (50%).
DP Requirement: 80% attendance at practicals; 40% Class mark.

Soil Water Use & Management
SSCI351 P1 (17L-4T-18P-0S-25H-12R-0F-0G-4A-13W-8C)
Prerequisite Modules: MATH133; 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 flow through soils.
Assessment: 2 theory tests (17%), laboratory project report (16%), 2 h exam (67%).
DP Requirement: 40% Class mark.

Soil Structure & its Management
SSCI352 PC (18L-3T-18P-0S-25H-12R-0F-0G-4A-13W-8C)
Prerequisite Modules: SSCI217 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 properties, crusting and hard setting. Quality of irrigation water and liquid wastes and their effects 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 various soil structural characteristics.
Assessment: 2 theory tests (20%), laboratory project report (13%), 2 h exam (67%).
DP Requirement: 40% Class mark.
Offered in either Semester 1 or 2.

Contaminants of the Soil Environment

SSCI371 P1 (18L-4T-18P-0S-25H-12R-0F-0G-3A-13W-8C)

Prerequisite Requirement: 40% in CHEM120.
Prerequisite Modules: CHEM110, (SSCI217 or 212).
Aim: To provide an understanding of the causes and consequences of contamination of soils.
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: 1 theory test (17%), laboratory project report (16%), 2 h exam (67%).
DP Requirement: 40% Class mark.

Soil Processes,Ground Water,AtmosPollution

SSCI372 P2 (18L-4T-18P-0S-25H-12R-0F-0G-3A-13W-8C)

Prerequisite Modules: SSCI217 or 212.
Aim: To provide an understanding of soil processes that lead to pollution of waterways and the atmosphere.
Content: Leaching losses of nitrate and other solutes from soils; principles and modelling of solute movement: factors affecting leaching and effects on groundwater pollution. Processes involved in gaseous emissions of nitrous oxide, ammonia and methane from soils including denitrification, ammonia volatilization and methanogenisis. Extent and consequences and such losses.
Practicals: A laboratory project on soil processes leading to environmental pollution.
Assessment: 1 test (17%), laboratory project report (16%), 2 h exam (67%).
DP Requirement: 40% Class mark.

Chemical Processes in the Soil Environment

SSCI710 P1 (18L-4T-18P-0S-25H-12R-0F-0G-3A-13W-8C)

Prerequisite Requirement: 40% in CHEM120.
Prerequisite Modules: CHEM110, (SSCI217 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 processes in agriculture and environmental protection.
Practicals: Laboratory measurements of chemical properties and processes in soils.
Assessment: One theory test (17%) and a written laboratory project report (16%), 2 h exam (67%).
DP Requirement: 40% Class mark.

Biological Processes in the Soil Environment

SSCI760 PC (18L-4T-18P-0S-25H-12R-0F-0G-3A-13W-8C)

Prerequisite Modules: SSCI217 or 212.
Aim: To provide an understanding of biota and the biological processes that occur in soils.
Content: Nature of microorganisms and fauna that inhabit soils. Role of the soil microbial biomass and soil enzymes in nutrient availability and as indicators of soil quality. Role 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: One theory test (17%) and a written laboratory project report (16%), 2 h exam (67%).
DP Requirement: 40% Class mark.
Offered in either Semester.

Sustainable Soil Fertility Management

SSCI770 P2 (18L-4T-18P-0S-24H-12R-0F-0G-4A-13W-8C)

Prerequisite Modules: SSCI217 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, alternative agricultural practices, 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: Two tests (20%), written field/ laboratory report(13%), 2 h exam (67%).
DP Requirement: 40% Class mark, compulsory attendance at all academic contact activities.

Pedological Processes in the Environment

SSCI780 P2 (18L-4T-20P-0S-22H-10R-3F-0G-3A-13W-8C)

Prerequisite Modules: 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 modelling; 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: One theory test (17%) and written reports (16%) on practical work, 2 h exam (67%).
DP Requirement: 40% Class mark.

Soil Science Seminar

SSCI792 PY (0L-0T-0P-160S-0H-0R-0F-0G-0A-26W-16C)

Prerequisite Modules: SSCI217 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.
Assessment: Written review paper (70%), oral presentation (30%).
DP Requirement: Not applicable.
Year-long Module. This module has no supplementary exam.

Research Project in Soil Science

SSCI793 PY (0L-0T-320P-0S-160H-0R-0F-0G-0A-26W-48C)

Prerequisite Requirement: 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.
Assessment: Written scientific paper (75%), oral presentation (25%).
DP Requirement: Not applicable.
Year-long Module. This module has no supplementary exam.

Advanced Topics in Soil Science

SSCI794 PY (0L-0T-50P-0S-100H-10R-0F-0G-0A-26W-16C)

Prerequisite Modules: SSCI217 or 212.
Aim: To introduce students to a range of advanced topics in soil science.
Content: Selected advanced topics and contemporary issues in soil science from an environmental and agricultural perspective.
Practicals: Field trips and laboratory exercises.
Assessment: Assignments (100%).
DP Requirement: Not applicable.
Year-Long Module. This module has no supplementary exam.