UNIVERSITEIT
STELLENBOSCH
UNIVERSITY

Department of Forest and Wood Science

Academic Programmes for 2013

Postgraduate Diploma

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Updated: November 2012

Contents:

This document is an extract from the Faculty of AgriSciences Calendar for 2013

Postgraduate Programmes

Postgraduate programmes in Forestry and Wood Sciences may be taken after completion of the bachelor's programme. Students can, depending on their existing qualifications, enter a suitable postgraduate programme in one of their majors to obtain one of the following qualifications: Postgraduate Diploma in Forestry and Wood Sciences (PgDipFor), Bachelor of Science in Forestry and Wood Sciences with Honours (BScForHons), Master of Science in Forestry and Wood Sciences (MScFor), Doctor of Philosophy in Forestry and Wood Sciences [PhD (For)] or Doctor of Science in Forestry and Wood Sciences (DScFor) in the fields of Forestry and Natural Resource Sciences or Wood and Wood Products Sciences.

In order to pursue postgraduate studies in the Department of Forest and Wood Science, students must have achieved a minimum of 60% at the undergraduate level in all their modules or in the major module related to the intended postgraduate study direction. Deviations from this requirement are at the discretion of the chair of the Department.

Postgraduate Diploma

Programme Description
The postgraduate diploma programme in Forestry and Wood Sciences extends over one year and leads to the qualification PgDip in Forestry and Wood Sciences. Three-year BSc degrees and BTech degrees, as well as other qualifications approved by Senate for this purpose, give access to this programme. The PgDip programme consists of an approved curriculum which lays the foundation for specialisation in forestry disciplines. The post-graduate diploma allows access to the MScFor programme.

Compulsory Modules

Students must choose one of the compulsory modules

Forest Science 780 (24) – Forest Science Project
Research in the context of the forestry value chain; research design and methods; data capture and analysis; formulation of results and conclusions.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Wood Product Science 784 (24) – Wood Products Science Project
Wood Products Science research project with a focus on any aspect of materials science, product development or manufacturing; research design and methods, data capture and analysis, formulation of results and conclusions.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Elective Modules:

Students must choose a total of 96 credits from the elective modules but may not choose more than four of the 16-credit elective modules. However, Forest Science students need to take a total of 32 credits from the Wood Product Science models. Consequently, Wood Product Science students need to take a total of 32 credits from the Forest Science models.

Forest Science 723 (16) – Sustainable land use planning

Functions of land resources; threats; sustainability and sustainable land use; land use planning techniques; integrated land use planning concepts; land use planning and rural development; key factors in integrated land use planning.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Forest Science 761 (16) – Bio-energy systems

Bio-energy systems: production; harvesting and supply; biomass conversion; energy production; marketing of bio-energy; economics and political framework. Sources of biomass; global biomass production; biomass in southern Africa; potential and limitations; principles in biomass production systems; agriculture, forestry and agroforestry systems.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Forest Science 764 (16) – Energy production from wood and other biomass

Conversion of wood into energy, processing methods, determination of calorific values and other properties, comparison of different biofuels, environmental aspects, emissions.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Forest Science 766 (16) – Geo-information science for resource managers

The use of GIS in the context of natural resource research and management (agriculture, forestry, conservation); the nature of geographical data, data models, coordinate systems and map projections; sources of spatial data in Southern Africa; GPS and Remote Sensing technology use in GIS; GIS processes: data capture, ordering, storage and manipulation; specific emphasis on analysis of spatial patterns for natural resources; visual output for research publication.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Forest Science 772 (32) – Silviculture

Basic forest eco-physiology; silvicultural systems; characteristics of commercially important species and hybrids; site-species-market matching; stand regeneration; site, vegetation and nutrient management; pruning; thinning; risk management and sustainability.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Forest Science 773 (32) – Timber harvesting and transport logistics

Sustainable application of timber-harvesting operations and related logistics. This will include timber-harvesting techniques and nomenclature, harvesting methods and systems selection; harvest planning; optimal utilisation of forest biomass; work study and ergonomics; forest road network analysis and management and secondary transport operations and access development to satisfy sustainability principles.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Forest Science 774 (32) – Forest inventory and yield prediction

Coverage of forest mensuration techniques to determine tree diameter, tree height, stem form and volume, stem weight, biomass and carbon content; quantitative characterisation methods of forest structure; layout and implementation of forest inventories in natural and plantation forests; consideration of spatial aspects as well as aspects of accuracy and efficiency of inventories; theories of tree growth; tree growth and its relation to wood quality; simulation of tree and stand growth with empirical models.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Forest Science 775 (32) – Forest management

Forestry planning and planning systems, forestry business environment and levels of planning; forest finance and economic analysis, forest investments, trade in forest products, forestry markets, valuation of forests, land and services; international resource policies, REDD, carbon trade, renewable energy policies, forest certification.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Forest Science 776 (32) – Forest propagation and tree improvement

Genetic tree improvement of forestry species; principles and practices of tree propagation and nursery management; principles of sexual and asexual tree propagation; population genetics, quantitative traits and continuous variation within forestry species.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Forest Science 785 (32) – Forestry development

Agroforestry systems; community-based natural resource management; non-timber forest products; integrated land-use systems and green landscapes; land resources and productivity in forest systems, socioeconomic aspects of forest systems, planning for agroforestry diagnosis and design, management and sustainability of forest ecosystems.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Wood Product Science 414 (16) – Wood products manufacturing

Basic wood products manufacturing with a focus on the primary manufacturing sector. Background to and economics of wood products manufacturing. Focus on production of solid wood (industrial or furniture wood) in sawmills and further processing in secondary industries; Processing equipment; introduction to computer-based equipment.

Home department: FOREST AND WOOD SCIENCE

Wood Product Science 424 (16) – Furniture design and construction

Introduction to the history of furniture design, theory of furniture design, ergonomics of furniture, product development, construction of furniture and joinery products (e.g. windows, doors and staircases), machining principles, technical documentation used in the woodworking industry.

Home department: FOREST AND WOOD SCIENCE

Wood Product Science 434 (16) – Wood products manufacturing

The manufacturing of secondary wood products such as furniture and joinery products. Fundamental principles, wood cutting principles, manufacturing methodologies (such as nested-based manufacturing). Material preparation, material machining, CNC technologies, case studies of manufacturers, wood working machinery.

Home department: FOREST AND WOOD SCIENCE

Wood Product Science 464 (16) – Industrial wood finishing

Composition and properties of various coatings and finishes used in the wood products industry. Surface preparation, coating application technologies (spraying, dipping, roller coating, etc.), curing technologies of finishes, testing of coatings and dry films, environmental aspects of finishing.

Home department: FOREST AND WOOD SCIENCE

Wood Product Science 754 (16) – Wood based constructions

Structural analyses of wood-based constructions; the design and scaling of beams, columns and axially loaded elements; durability, dimensional stability, load duration, moisture and load sharing in wood-based constructions; structural grading; timber design codes.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Wood Product Science 781 (32) – Wood quality factors

Tree growth; Bulk, macroscopic, cellular, cell wall, ultra-structural and molecular properties of wood; Tree to tree and within tree variability of the most important anatomical, physical and chemical properties; Wood quality.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Wood Product Science 782 (32) – Primary wood processing

Theory of wood drying; drying technology: drying methods, kiln types and schedules; drying defects. Physical/chemical and biological degradation of wood; wood-protecting chemicals and treatment methods; environmental aspects of treatments, preservatives and preservative treated products. Adhesion; structure, types, properties and application of adhesives; manufacture and properties of composite products: particleboard, plywood, fibreboard, wood cement, wood plastic, laminated wood and paper; analytical methods.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Wood Product Science 783 (16) – Mechanical properties of timber and bio-energy

Testing and methods of analysis used to evaluate and grade structural timber; factors having an influence on the mechanical performance of the timber; conversion of wood into energy, processing methods, determination of calorific values and other properties, comparison of different biofuels, environmental aspects, emissions.

Subject to continuous assessment.

Home department: FOREST AND WOOD SCIENCE

Application process:

Prospective students can visit the following links for applications:

- Undergraduate studies: http://www.maties.com/
- Postgraduate studies: http://www0.sun.ac.za/pgstudies/

For more information on the programmes offered at the Department of Forest and Wood Science, please visit the following links:

- Calendar 2013: http://www.sun.ac.za/university/jaarboek/
- Website of department: http://www.sun.ac.za/forestry