



Mzuzu University

CURRICULUM FRAMEWORK

Outline of courses offered throughout the programme

MSc – Forest and Environmental management

Programme	Courses Semester 1 Compulsory	Courses Semester 1 Optional
<i>MSc Forest and Environmental management</i>	Research methods and biometry	Wood Science and Forest products.
	Seminars	Forest Engineering
	Forest Resource Economics and Policy	Forest Engineering
	Forest Resource Use, Planning & Management	Agroforestry and Landscape ecology
	Research – Proposal development	Forest Science

Programme	Courses Semester 2 Compulsory	Courses Semester 2 Optional
<i>MSc Forest and Environmental management</i>	Research methods and biometry	Social forestry
	Seminars	Environmental Geomatics (GIS)
	Environmental Impact Assessment	
	Forest Ecology & Management	
	Research – Proposal development and defense	

Description of Courses

Forest Resource Use, Planning & Management. The course covers: Forest Planning; Forest Mensuration; Growth and Yield models and its application in Growth and yield

simulators, Quantitative silviculture, Yield regulation and forest economics, GIS and spatial analysis in forestry, Human resources management in forestry

Wood Science and Forest products. The course covers: Common characteristics of wood; Properties controlling the technical performance of wood; Natural growth phenomena affecting wood quality; Effect of site and silviculture on wood quality; The genetics of wood; Sawmilling and wood drying; Composite wood products; Deterioration of wood and wood products and methods of protection.

Forest Engineering. The course covers: Forest Road Engineering; Forest Road System Management; Forest Operations Analysis; Production Planning; Strategic and Tactical Planning Techniques; Forest Operations Design; Forest Transportation Systems; Harvesting Management; Logging Mechanics

Forest Resource Economics and Policy. The course covers:: The economics of optimal management of cultivated and natural forests; Optimal rotation age and harvesting in timber production; Managing forests for their non-timber services; The multiple ecosystem services of forest and their contributions to human wellbeing; Economic valuation of goods and services of forest ecosystems; Forest resource rents and their capture and distribution under different property rights regimes; Regulation and taxation of forest users; Designing logging concessions and forest exploitation policies; Forest resource accounting and optimal management of the resource rents; Communities and forests

Forest Ecology & Management. The course covers: Structure and function of natural forests, species composition and diversity, disturbance processes & regimes, recovery (succession) concepts and theory, biodiversity in forest ecosystems, energy and nutrient flux in natural forest ecosystems, Resource assessment and planning, Silvicultural systems and management of natural forests (and woodlands), natural regeneration and forest rehabilitation management for sustainability of natural forest ecosystems, reproductive biology, multiple use for timber and non timber forest products, forest rehabilitation (invader plants, mining, degraded forests)

Silviculture. The course covers: Understand the development of modern plantation forestry, Commercial Plantation species, Forest Pests and Diseases, Forestry Site Classification, Basis of Forestry Rotation Length (Economics, Biological, Wood quality), Effect of silvicultural practices on wood quality (managing wood quality), Forest management regimes for different species and end products, Fire management, fire management systems, Principles of tree improvement, Propagation techniques for forestry systems and bio-renewable resources, ecological basis of silviculture

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

Forest Science. The course covers: What is forestry? Global forest resources, Natural forests and plantations in Southern Africa, Forestry systems (Natural, Multipurpose forests, Plantation forestry, Agroforestry), Sustainable forestry development policy and legislation, Silviculture and management of plantations, Forest certification, Effects of site and silviculture on wood quality, Forest harvesting, utilization and forest wood products, Non-timber forest products of natural and plantation forests, Forests and woodlands management (Forest planning; Forest mensuration, Growth & yield estimates and regulation), Environmental management of natural and plantation forests, Climate change and Forestry, Carbon monitoring

Social forestry The course covers: Definitions, concepts and critique of social forestry, Community based natural resources management, Participation and empowerment in CBNRM, Common property resources and property rights regimes, Payment for ecosystem services, Institutional analysis, Problem analysis, Project planning, monitoring and evaluation, Policy and legislative framework for CBNRM, Social and environmental impact assessment, Current and future trends in natural resources management, Entrepreneurship and forest business management, Rural development and development paradigms, Land use planning, Agroforestry, concepts of development and extension, Socio-psychology, PRA and RRA, Forestry extension.

Research methods and biometry: The course covers: Concepts of the scientific research process, Definition of basic and applied research, problems tree analysis, proposal writing, principles of scientific report writing and presentation, hypotheses development and testing, types of experimental designs, principles of experimental design, statistical tests and interpretation of data, multiple comparison tests, contrasts, regression analysis, principal component analysis, statistics for social research, non-parametric methods, statistical packages.

Environmental Impact Assessment focuses on the understanding of the current approaches, concepts and requirements for environmental impact assessments. In particular, specific knowledge on the types of environmental impacts caused through the different phases (e.g. construction, operation and decommissioning) of energy production infrastructure will be gained.

Environmental Geomatics (GIS) delivers a knowledge of the concepts and foundations underlying Geographical Information Systems (GIS), Earth Observation (EO) and Global Positioning Systems (GPS), an understanding of different remote sensing platforms, instruments and data types, and builds an appreciation of the use of GIS and EO in environmental management.

Seminars: The course covers will enhance students' creativity and independence in literature search. Students are expected to review literature on a chosen topic. Topics include: Choosing a topic, literature review and Paper Presentation.