ANNEXURE I: Curriculum outline of the Diploma in Nature Conservation offered by the School of Natural Resource Management of the NMMU.

Module Name	Module Code	Presented	Credits	NQF Level
FIRST YEAR				
Computer Usage I	FCR1121	Semester 1	10	5
Conservation Ecology I	NCE1121	Semester 1	10	5
Plant Studies I	NPS1111	Semester 1	12	5
Animal Studies I	NAS1111	Semester 1	12	5
Environmental Management I*	NEM1111	Semester 1	10	5
Resource Management I	NRM1121	Semester 1	10	5
Cost & Management Accounting I*	NAC1112	Semester 2	10	5
Human Resource Management I*	FMR1122	Semester 2	10	5
Conservation Ecology II	NCE2112	Semester 2	12	6
Animal Studies II	NAS2122	Semester 2	12	6
Environmental Law I*	JLA1112	Semester 2	10	6
SECOND YEAR				
Resource Management II	NRM2121	Semester 1	12	6
Animal Studies III	NAS3121	Semester 1	12	6
Plant Studies II	NPS2121	Semester 1	12	6
Environmental Education I*	NEE1111	Semester 1	10	5
Fire Ecology I*	NED1111	Semester 1	10	5
Human Resource Management II*	FMR2222	Semester 2	10	6
Soil Science I	NSS1112	Semester 2	12	6
Resource Management III	NRM3122	Semester 2	12	6
Conservation Ecology III	NCE3112	Semester 2	12	6
Plant Studies III	NPS3122	Semester 2	10	6
Environmental Education II*	NEE2112	Semester 2	12	6
THIRD YEAR				
Nature Conservation Applications I	NCP1111	Semester 1	60	6
Nature Conservation Applications II	NCP2112	Semester 2	60	6

* **New Modules**

SYLLABUS

MODULE CODE	MODULE NAME	CREDITS
FCR1121	*Computer Usage I*	*10*

PURPOSE

This module will provide students with the skills to use the relevant computer software programmes within a nature conservation environment.

LEARNING OUTCOMES

Students will be able to:

- *Explain the basic components of a computer.*
- *Use the internet for acquisition of information.*
- *Use functions associated with E-mail.*
- *Use basic functions of Wordprocessing software.*
- *Use basic functions of spreadsheet software for calculations and data manipulation.*
- *Compile a slide show for presentation purposes.*
- *Apply applicable software programme functions for use in the Forestry environment.*
- *Explain the basic principles and techniques for file management.*

CORE CONTENT

- *Internet and E-mail use*
- *Wordprocessing*
- *Spreadsheets*
- *Presentation software*
- *File Management*

ASSESSMENT

Continuous assessment

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NCE1111	*Conservation Ecology I*	*10*

PURPOSE

This module will teach students concepts and principles related to applying their knowledge of ecology in their day to day activities in the field of "Nature Conservation" and to create a basis of knowledge on which further ecology subjects can build.

LEARNING OUTCOMES

Students will be able to:

- *Discriminate among concepts related to the ecology of individuals (e.g., metabolic rate, energy flow, growth, etc.) to concepts related to population ecology (e.g., dispersal, what regulates population growth and demographic tables, r and K strategies, etc.) to concepts related to community ecology*
- *Explain the importance of biodiversity*
- *Relate factors of population regulation to real population dynamics*
- *Compare intraspecific and interspecific relationships of the biotic environment*
- *Explain how species co-exist or exclude each other by referring to concepts such as niche, resource partitioning, competitive exclusion, etc.*
- *Relate the importance of the theory of tropic levels and pyramids (of numbers and biomass) to how ecosystems function*
- *Summarise the flow of energy in ecosystems*
- *Compare the different nutrient cycles as well as carbon cycles and explain the anthropogenic impacts on these (including pollution, greenhouse effect and acid rain)*
- *Compare different levels of nutrient cycling and how organisms respond to these by using examples*
- *Discriminate between different environments in terms of geology and soils, topography, light and temperature, etc.*

CORE CONTENT

- *Ecology of the individual, population and community*
- *Population dynamics and regulation*
- *The environment; physical environment, habitat and trophic levels*
- *Energy transfer and nutrient cycling*

ASSESSMENT

Assignments, oral presentations, tests, practical assignments, 1 x 3 hour theoretical examination (100 marks-40% class mark + 60% examination mark)

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NPS1111	*Plant Studies I*	*12*

PURPOSE

This module will teach students concepts and principles related to applying their knowledge of plants in their day to day activities in the field of "Nature Conservation" and to create a basis of knowledge on which further plant-orientated and ecology subjects can build.

LEARNING OUTCOMES

Students will be able to:

- *Differentiate between the main categories of chemical compounds, and be able to explain the function and benefit of these to plants*
- *Relate cell structure to actual functioning of plants*
- *Understand the basic structure and functioning of DNA*
- *Identify the most common cell and tissue types in dicotyledonous plants and explain their structure and function.*
- *Interpret common natural phenomena in our daily lives, and relate these to dicotyledonous cell / tissues types, and how this is applied / useful in the field of conservation*
- *Recognise, and be able to compare various types of dicotyledonous plant structures and organs*
- *Recognise various types of non-seed bearing plants*
- *Interpret common natural phenomena in our daily lives, and relate these to the particular non-seed bearing plants involved*
- *Discuss the use of these non-seed bearing plants, their economic value, and importance to the nature conservator*

CORE CONTENT

- *The plant cell*
- *Plant anatomy*
- *Plant external morphology*
- *Basic plant physiology*
- *Systematics of the photosynthetic organisms: Bacteria, Fungi, Algae, Bryophyta, Pteridophyta.*

ASSESSMENT

Assignments, oral presentations, tests, practical assignments, 1 x 3 hour theoretical examination (100 marks-40% class mark + 60% examination mark)

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NAS1111	*Animal Studies I*	*12*

PURPOSE

The course will enable the student to acquire knowledge of general animal anatomy, the biology of selected invertebrate phyla and game diseases to facilitate the application of knowledge in practice.

LEARNING OUTCOMES

Students will be able to:

- *Define and describe the structure and function of important chemical compounds of animals.*
- *Define and describe the structure and function of the components of the animal cell.*
- *Define and discuss in terms of structure and function, the general characteristics and biology of important invertebrate phyla.*
- *Define and discuss the cause, symptoms, biology and control of important diseases of game and livestock.*
- *Apply the biology of invertebrate phyla and game/livestock diseases to conservation management.*
- *Read and critically review scientific information on invertebrate phyla and game/livestock diseases.*
- *Create oral and written projects to communicate scientific information on invertebrate phyla and game/livestock diseases.*

CORE CONTENT

- *Important chemical compounds.*
- *The animal cell.*
- *Characteristics and biology of invertebrate phyla.*
- *Characteristics and biology of diseases of game and livestock.*

ASSESSMENT

Assignments and tests for class mark; 1 x 3 hour theoretical examination (100 marks - 40% class mark + 60% examination mark)

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NEM1111	*Environmental Management I*	*10*

PURPOSE

To provide the student with an historical and contemporary orientation to environmental management.

LEARNING OUTCOMES

Students will be able to:

- *Provide a commentary of the history of conservation, with an emphasis on South Africa.*
- *Justify why it is important to conserve the environment from an ethical point of view.*
- *Provide a commentary of the current status of environmental management in South Africa.*
- *Demonstrate a familiarity with the current status of the Game and Eco/Afro tourist industries in South Africa.*
- *Demonstrate an awareness of the goals and objectives of prominent international and local conservation organizations.*
- *Demonstrate an understanding of the current international concept of protected areas.*
- *Recognise where the protected areas are in South Africa.*
- *Demonstrate a knowledge of the main principles of the World Conservation Strategy (Caring for the Earth).*
- *Demonstrate a basic knowledge of the most important conservation treaties and conventions to which South Africa belongs.*
- *Recount and demonstrate an awareness and basic understanding of the purposes of the National Conservation acts in South Africa.*
- *Discuss the contemporary issues in conservation and environmental management.*
- *Explain the concept of Integrated Environmental Management (IEM) and the tools used to achieve it (Environmental and Social Impact Assessments).*

CORE CONTENT

- *Conservation history*
- *Contemporary conservation*
- *Conservation organizations*
- *Community conservation*
- *Environmental Management*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NRM1121	*Resource Management I*	*10*

PURPOSE

To introduce the student to basic game ranch/reserve management activities.

LEARNING OUTCOMES

Students will be able to:

- *Describe the types, working and maintenance of vehicles and craft used on game ranches/reserves.*
- *Describe the type, positioning and maintenance requirements of infrastructure on a game ranch/reserve (buildings; roads; fences; bomas; water provision).*
- *Describe the causes and advise on the control of soil erosion on game ranches/reserves.*
- *Describe the organisational management, staff deployment and security requirements of a game ranch/reserve.*
- *Apply basic map reading and mapping techniques on a game ranch/reserve*
- *Describe the biology of alien plants commonly found on game ranches/reserves in South Africa and implement measures to control their spread.*
- *Describe the biology and management of problem predators commonly found on game ranches/reserves in South Africa.*
- *Design and set out hiking trails on game ranches and reserves.*

CORE CONTENT

- *Game ranch/reserve management activities*
- *Game ranch/reserve infrastructure*
- *Problem plants and animals*
- *Cartography*
- *Security*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NAC1112	*Cost & Management Accounting I*	*10*

PURPOSE

To understand the basic principles of cost and management accounting for natural resource managers.

LEARNING OUTCOMES

Students will be able to:

- *Explain principles and terminology of cost and management accounting.*
- *Identify and describe the different elements of costs.*
- *Identify and apply different costing systems to determine budget and viability.*
- *Identify and calculate the various budgets to ensure effective and efficient business management.*

CORE CONTENT

- *Cost classification, behaviour and allocation*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
FMR1122	*Human Resource Management I*	*10*

PURPOSE

This module will prepare the students to understand and apply, as operational managers, the basic human resources management principles applicable to a nature conservation environment.

LEARNING OUTCOMES

Students will be able to:

- *Explain the relationship between a manager and a worker.*
- *Do job analyses and human resource planning through established techniques in industry.*
- *Explain principles of recruitment and selection.*
- *Discuss induction principles and compile induction programmes.*
- *Explain the principles of compensation management.*
- *Explain best operational practice in terms of health and safety in the workplace.*
- *Explain principles and models for performance management.*
- *Explain principles and techniques for training and development.*
- *Explain applicable labour laws.*
- *Discuss the principles and requirements of the Labour Relations Act.*
- *Explain the BEE Charter.*
- *Discuss the principles and requirements of the Employment Equity Act.*

CORE CONTENT

- *Human resources procurement*
- *Human resources development*
- *Human resources maintenance*
- *Labour relations*
- *Legal requirements for labour relations*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NCE2111	*Conservation Ecology II*	*12*

PURPOSE

This module will teach students concepts and principles related to applying their knowledge of freshwater and marine ecology in their day to day activities in the field of "Nature Conservation".

LEARNING OUTCOMES

Students will be able to:

- *Explain the ecology of rocky shores; including the zonation patterns on rocky shores and how these compare among South Africa's three major coastlines, animal's on rocky shores' adaptations to physical stress, and biological interactions*
- *Compare the ecology of the rocky shore to the ecology of sandy beaches*
- *Summarise the ecology of kelp bed and identify important kelp species*
- *Explain the concept of estuaries including limiting conditions, water flow and resources*
- *Explain the river systems as a continuum and compare the different reaches (upper, middle and lower) in terms of processes and organisms*
- *Summarise the concept of lakes and explain the ecology of lakes including evolution, annual cycles and food webs*

CORE CONTENT

- *Ecology of shores*
- *Ecology of kelp beds*
- *Ecology of estuaries*
- *Ecology of rivers and lakes*

ASSESSMENT

Assignments, oral presentations, tests, practical assignments, 1 x 3 hour theoretical examination (100 marks-40% class mark + 60% examination mark)

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *Conservation Ecology I*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NAS2122	*Animal Studies II*	*12*

PURPOSE

The course will enable the student to acquire knowledge of the biology of the Phylum Chordat to facilitate the application of knowledge in practice.

LEARNING OUTCOMES

Students will be able to:

- *Define and describe the general characteristics of the Chordata.*
- *Define and describe the general characteristics of the Vertebrata.*
- *Define and discuss in terms of structure and function, the characteristics important in the success of the Vertebrata.*
- *Define and discuss in terms of structure and function, the general characteristics and biology of the Vertebrata.*
- *Apply the biology of the Vertebrata to conservation management.*
- *Read and critically review scientific information on the Vertebrata.*
- *Create oral and written projects to communicate scientific information on the Vertebrata.*

CORE CONTENT

- *Characteristics of the Chordata.*
- *Characteristics and biology of the Vertebrata.*

ASSESSMENT

Assignments and tests for class mark; 1 x 3 hour theoretical examination (100 marks - 40% class mark + 60% examination mark).

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *Animal Studies I*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NLA1112	*Environmental Law I*	*10*

PURPOSE

To introduce the students to the relevant Environmental Laws in South Africa and to demonstrate their application in the field of Conservation.

LEARNING OUTCOMES

Students will be able to:

- *Explain the provisions of the following Acts in South Africa:*
  - *Constitution of the Republic of South Africa Act 108 of 1996*
  - *National Environmental Management Act 107 of 1998*
  - *NEMA: Protected Areas Act 57 of 2003*
  - *NEMA: Biodiversity Act 10 of 2004*
  - *NEMA: Air Quality Act 39 of 2004*
  - *NEMA: Waste Act 59 of 2008*
  - *NEMA: Integrated Coastal Management Act 24 of 2008*
  - *Environment Conservation Act 73 of 1989*
  - *Conservation of Agricultural Resource Management Act*
- *Apply the provisions of these Acts to various sections of South Africa's natural resources*
- *Apply the provisions of these Acts to the main forms of environmental pollution in South Africa*
- *Apply the provisions of these Acts to the following activities in South Africa: Waste Management, Mining and Fracking*
- *Apply the provisions of these Acts to the Occupational Health and Safety Act*
- *Apply the provisions of these Acts to the following principles/concepts/divisions: Polluter Pays; Quantum of Damages; Causation; Remedies; Criminal Law; Reparation; Enforcement.*

CORE CONTENT

- *South African Constitution and Environmental Law*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NRM2111	*Resource Management II*	*12*

PURPOSE

This module will teach students concepts and principles related to applying their knowledge of marine and freshwater management in their day to day activities in the field of "Nature Conservation".

LEARNING OUTCOMES

Students will be able to:

- *Explain principles and theory (including physical oceans, intertidal zone, inshore and offshore marine resources and marine birds and animals) related to marine ecosystems and apply these to the management of marine resources*
- *Relate the ecology of marine ecosystems to the management of human activities in marine ecosystems*
- *Summarise guidelines for development of coastal zones*
- *Explain principles and theory of estuary and freshwater ecology and apply these to the management of the natural resources found within these ecosystems*
- *Recommend best practises for aquaculture*

CORE CONTENT

- *Marine management*
- *Freshwater management*
- *Aquaculture*

ASSESSMENT

Assignments, oral presentations, tests, practical assignments, 1 x 3 hour theoretical examination (100 marks-40% class mark + 60% examination mark)

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *Resource Management I*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NAS3121	*Animal Studies III*	*12*

PURPOSE

The course will enable the student to acquire knowledge of animal behaviour and population genetics to facilitate the application of knowledge in wildlife management.

LEARNING OUTCOMES

Students will be able to:

- *Define and discuss concepts of population genetics.*
- *Define and discuss concepts of animal behaviour.*
- *Apply population genetics and animal behaviour to conservation management.*
- *Read and critically review scientific information on population genetics and animal behaviour.*
- *Create oral and written work to communicate scientific information on population genetics and animal behaviour.*

CORE CONTENT

- *General concepts of population genetics.*
- *Factors influencing change in the genetic diversity of populations.*
- *Types of animal behaviour.*
- *Animal habitat selection.*
- *Animal feeding behavior.*
- *Animal anti-predator behaviour.*
- *Animal conflicts.*
- *Animal sexual selection.*

ASSESSMENT

Assignments and tests for class mark; 1 x 3 hour theoretical examination (100 marks - 40% class mark + 60% examination mark)

MODERATION

External

PRE-REQUISITES FOR THIS MODULE *Animal Studies II*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NPS2112	*Plant Studies II*	*12*

PURPOSE

This module will teach students concepts and principles related to applying their knowledge of common southern African plants and families as well as more common alien plants in their day to day activities in the field of "Nature Conservation".

LEARNING OUTCOMES

Students will be able to:

- *Explain the basic morphologic structure of seed bearing plants (particularly the flower)*
- *Explain the basic principles of grouping and naming seed bearing plants and be familiar with the taxonomic structure of these*
- *Know selected examples of common southern African seed bearing plants (flowering and non-flowering) and compare various plant taxa*
- *Apply common South African identification keys to identify unknown specimens of seed bearing plants*
- *Have the skills and knowledge to produce good herbarium (and photographic herbarium) specimens*
- *Explain plant-animal interactions*

CORE CONTENT

- *Basic principles of grouping and naming seed bearing plants*
- *Identification of indigenous and alien seed bearing plants*
- *Preserving plant specimens*

ASSESSMENT

Assignments, oral presentations, tests, practical assignments, 1 x 3 hour theoretical examination (100 marks-40% class mark + 60% examination mark)

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *Plant Studies I*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NEE1111	*Environmental Education I*	*10*

PURPOSE

To provide the students from various backgrounds with the knowledge, skills and understanding of communication, enabling them to work effectively in all communities, conservation areas and with various groups and individuals.

LEARNING OUTCOMES

Students will be able to:

- *Evaluate the principles and models of communication*
- *Explain the barriers to communication (cultural and religious)*
- *Apply communication principles in business administration, public speaking, problem solving and conflict resolution*
- *Acknowledge the impact of culture and religion on the environment*

CORE CONTENT

- *Communication models*
- *Barriers to communication*
- *Interviewing*
- *Speeches and talks*
- *Communication in business administration*
- *Culture and religions impact on the environment*
- *Problem solving*
- *Conflict resolution*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NED1111	*Fire Ecology I*	*10*

PURPOSE

This module will provide students with an understanding of the principles of fire management in order for them to manage veldfires.

LEARNING OUTCOMES

Students will be able to:

- *Describe and explain environmental elements that can influence fire behaviour. (Range: fuel, weather, topography).*
- *Describe fire behaviour as a factor in effective fire control.*
- *Identify and explain dangerous situations while suppressing veld fires.*
- *Explain best operational practices in terms of safe fire fighting procedures.*

CORE CONTENT

- *Fuel*
- *Weather*
- *Topography*
- *Fire behaviour*
- *Fire line safety*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
FMR2222	*Human Resource Management II*	*10*

PURPOSE

This module will prepare the students to understand the concepts of management in contemporary South Africa and apply these concepts within the nature conservation environment.

LEARNING OUTCOMES

Students will be able to:

- *Explain general management principles.*
- *Explain the dimensions, activities and levels of management.*
- *Explain concepts of the micro and macro-business environment.*
- *Explain contemporary theories and approaches to management.*
- *Explain planning principles and models, i.e. levels of planning, strategic planning, decision making, goal setting.*
- *Explain concepts and principles associated with organising.*
- *Explain models and principles of communication and interpersonal relations.*
- *Explain principles and models for leading, i.e. motivation, leadership, change management, handling of conflict and diversity management.*
- *Explain principles underlying individuals at work and the role and dynamics of groups and teams in the workplace.*
- *Explain concepts and principles associated with control.*
- *Explain the principles of ethics, corporate governance and social responsibility from an organisational point of view.*
- *Explain the principles of mentoring and coaching.*

CORE CONTENT

- *Management principles, activities, roles and environment*
- *Motivation*
- *Leadership and ethics*
- *Change and diversity*
- *Groups*
- *Future demands*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NSS1112	*Soil Science I*	*12*

PURPOSE

This module will provide students with the underlying principles associated with key soil factors that influence ecosystem composition, function and structure in the South African context.

LEARNING OUTCOMES

Students will be able to:

- *Explain the importance of various soil forming factors in the natural environment.*
- *Explain the role of different soil components in natural ecosystems.*
- *Explain the role of soil physics and chemistry in the functioning of soils.*
- *Classify soils according to the key that forms part of the Taxonomic System for the classification of South African Soils.*
- *Explain the implications of specific soils for natural resource management.*
- *Interpret soil maps as management tools to increase management efficiency in a nature conservation environment.*

CORE CONTENT

- *Geology.*
- *Soil formation and components.*
- *Soil biology.*
- *Soil physics and chemistry.*
- *Soil classification.*
- *Soil mapping.*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *None*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NRM3122	*Resource Management III*	*12*

PURPOSE

To introduce students to wildlife management practices on a game ranch/reserve and to emphasize how rural development can be of benefit to these management practices.

LEARNING OUTCOMES

Students will be able to:

- *Construct a management plan for a game ranch/reserve.*
- *Describe the role of social behaviour in the management of game.*
- *Describe the supplementary feeding requirements of game in captivity and in the natural grazing lands of South Africa*
- *Describe the process of habitat evaluation for wildlife introductions.*
- *Determine the carrying capacity, stocking rate and harvest quotas for large herbivores on game ranches/reserves.*
- *Describe the basic principles, infra-structure, equipment and techniques required for the successful capture, translocation and release of game.*
- *Describe the difference between conservation and preservation management and apply these concepts to the management of pest and problem animals, threatened and endangered game, large herbivorous game, predators and game birds.*
- *Describe the genetic consequences of farming with wildlife in small areas and make appropriate recommendations to ensure sustainable population sizes.*
- *Describe what impact unemployment and poverty in underdeveloped rural areas may have on game ranches/reserves in South Africa*
- *Describe how managers of game ranches/reserves can get involved in the upliftment of underdeveloped rural communities.*
- *Describe the latest methods used for the practical rehabilitation of wildlife habitats*
- *Plan and apply monitoring programmes for wildlife populations on a game ranch/reserve*
- *Analyze wildlife monitoring data with basic descriptive and inductive statistical techniques*
- *Review the wildlife security situation in South Africa and describe how to manage anti-poaching units*
- *Read and critically review scientific information on wildlife management practices.*
- *Create oral and written projects to communicate scientific information on wildlife management practices.*

CORE CONTENT

- *Game ranch/reserve planning and management*
- *Wildlife management*
- *Wildlife monitoring*
- *Wildlife security*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

External

PRE-REQUISITES FOR THIS MODULE	*Resource Management II*
CO-REQUISITES FOR THIS MODULE	*None*

MODULE CODE	MODULE NAME	CREDITS
NCE3112	*Conservation Ecology III*	*12*

PURPOSE

This module will teach students concepts and principles related to applying their knowledge of the ecology related to biomes and alien invasive plants (and animals) in their day to day activities in the field of "Nature Conservation".

LEARNING OUTCOMES

Students will be able to:

- *Discriminate among the different biomes and the driving forces important in the distribution of biomes*
- *Explain how fire is important in the ecology of certain biomes*
- *Compare the different biomes in terms of distribution, species abundance, plant structure, reproductive ecology and physiological traits and processes*
- *Relate community structure and dynamics of different biomes to the processes that give rise to these*
- *Summarise the characteristics of ecosystems that are easily invaded by alien invasives and explain why and how alien invasives can invade a novel ecosystem*

CORE CONTENT

- *South African Biomes*
- *Alien invasive ecology*

ASSESSMENT

Assignments, oral presentations, tests, practical assignments, 1 x 3 hour theoretical examination (100 marks-40% class mark + 60% examination mark)

MODERATION

External

PRE-REQUISITES FOR THIS MODULE *Conservation Ecology II*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NPS3122	*Plant Studies III*	*10*

PURPOSE

To introduce students to the main rangeland management practices carried out on wildlife ranches/reserves in the biomes of South Africa.

LEARNING OUTCOMES

Students will be able to:

- *Review broad-scale vegetation classification in South Africa.*
- *Describe the main characteristics and factors controlling the distribution and palatability of vegetation types in southern Africa.*
- *Classify veld management units on a game reserve.*
- *Describe the process of Adaptive Management and its application in arid and semi-arid rangelands.*
- *Define rangeland monitoring and describe and apply the most common techniques used to monitor the herbaceous and woody layer in the different biomes of South Africa.*
- *Describe how grazing/browsing and fire effects plant production.*
- *Describe and compare the principles behind the following grazing management practices carried out in South Africa:*

  Continuous grazing, Rotational grazing, Zero grazing, Species orientated approach, Event orientated approach and Rotational resting.
- *Describe and compare the use of fire as a management tool in the different biomes of South Africa.*
- *Describe the application of the Fire Act on game ranches/reserves in South Africa*
- *Describe the principles behind the clearing of invasive plant species.*
- *Describe the different techniques used to clear invasive plant species*
- *Describe the practices commonly used to establish and manage pastures on a game ranch/reserve.*
- *Read and critically review scientific information on rangeland management practices.*
- *Create oral and written projects to communicate scientific information on rangeland management practices.*

CORE CONTENT

- *Vegetation classification*
- *Vegetation Monitoring*
- *Rangeland Management*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

External

PRE-REQUISITES FOR THIS MODULE *Plant Studies II*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NEE2112	*Environmental Education II*	*12*

PURPOSE

- *To install an appreciation in students for the need to interact with people from all walks of life in order to achieve sustainable natural resource management and biodiversity conservation.*
- *Introduce the student to contemporary social approaches to natural resources management and biodiversity conservation.*

LEARNING OUTCOMES

Students will be able to:

- *Review the history of environmental education*
- *Critique contemporary approaches to biodiversity conservation and natural resource management*
- *Organise a show or display*
- *Explain current practices of working with the disabled in an environmental education context.*

CORE CONTENT

- *Environmental education – history and origin and the South African context*
- *Guiding and interpretive services for abled and disabled persons*
- *Shows and displays*
- *Community based natural resource management*
- *Stewardship and extension*

ASSESSMENT

1 x 3-hour examination, 40% class mark + 60% examination mark.

MODERATION

Internal

PRE-REQUISITES FOR THIS MODULE *Environmental Education I*

CO-REQUISITES FOR THIS MODULE *None*

MODULE CODE	MODULE NAME	CREDITS
NCP1111 / NCP2112	*Nature Conservation Applications I & II*	*60+60=120*

PURPOSE

This module will equip students with technical skills to function effectively while performing management tasks within the nature conservation environment.

LEARNING OUTCOMES

During experiential training students must take part in nature conservation operations to provide them with basic competencies in the following activities:

- *Participate and apply practical and theoretical knowledge in Administration, Planning and Organization (general office work, general organisational duties, annual plan of operations, management plan).*
- *Participate and apply practical and theoretical knowledge in Financial Management (budgeting, cash flow management, purchases, wages and financial bookkeeping).*
- *Participate and apply practical and theoretical knowledge in Human Resource Management (liaison, housing, settling disputes, safety and loss control, community relationships and extension as well as training and education).*
- *Participate and apply practical and theoretical knowledge in Natural Resource Management (conservation management duties, objectives of conservation management, management methods for planning, practical execution and monitoring for erosion prevention and control; alien invasion prevention and control; fire protection and use of fire; veld management; game management; water management; law enforcement and patrols).*
- *Participate and apply practical and theoretical knowledge in Research and Specialized Services (data collection and surveys/monitoring, game capture and culling, human/animal conflict, data banks and GIS, Environmental Impact Assessments, conservancies, law enforcement outside reserves).*
- *Participate and apply practical and theoretical knowledge in Environmental Education (plan, organise and present educational programmes; plan, organise and set up temporary in and outside reserve; liaison with and assistance to local communities; outputs in auditory, written and visual media).*
- *Participate and apply practical and theoretical knowledge in Estate Management and Maintenance (management and maintenance of vehicles, estate infrastructure such as stores and equipment; buildings and fences; roads and hiking trails).*

The learning outcomes of this module are: the compilation of a comprehensive report in which the student describes and discusses the aspects covered; a presentation in which the student describes the aspects covered; a logbook which records the aspects covered by the student.

CORE CONTENT

- *Administration, Planning and Organization*
- *Financial Management*
- *Human Resource Management*
- *Natural Resource Management*
- *Research and Specialized Services*
- *Environmental Education*
- *Estate Management and Maintenance*

ASSESSMENT
Report, logbook and presentation evaluated according to policy and guidelines of the School.

MODERATION
N/A

PRE-REQUISITES FOR THIS MODULE	*90% of credits of the two years of academic study*
CO-REQUISITES FOR THIS MODULE	*None*