POSTGRADUATE INSTITUTE OF SCIENCE
UNIVERSITY OF PERADENIYA

Master of Biodiversity, Ecotourism & Environment Management Degree Programme (SLQF Level 9)

Master of Science (M.Sc.) in Biodiversity, Ecotourism & Environment Management Degree Programme (SLQF Level 10)

1. INTRODUCTION

The growth of international tourism in recent years has been dramatic. The World Tourist Organisation estimates that, during the next decade, the flow of tourists in the Asia-Pacific region would grow at an annual rate of some seven percent–double the global average.

Tourism is one of Sri Lanka's fastest growing industries with over 800,000 foreign tourists visiting the country each year. It is a major source of foreign exchange, gross domestic product, income and employment. Most tourism trips are undertaken by international tourists for a range of reasons that include cultural, nature-related, historical and commercial purposes, on which Sri Lanka can offer much. Within this industry, ecotourism sector has recently emerged as a strong segment in Sri Lanka. The prospects for expansion of this trade, based particularly on international visitors, are significant.

Sri Lanka's tourism industry is a major user of biological resources. In addition to nature-based ecotourism, many aspects of tourism, through both marketing and actual experience, are dependent on Sri Lanka's natural environment. The strength of Sri Lanka's biodiversity is a major factor in determining the expansion of the tourism industry. In turn, the tourism industry can be a major force in the conservation of biodiversity of Sri Lanka.

Sri Lanka, although a small island of 65,610 km^2, is endowed with a profuse diversity of both flora and fauna. Together with the Western Ghats of India, it forms one of the thirty-five biodiversity hotspots of the world. The country has many Protected Areas, which provide the most important base for ecotourism. Among other natural resources of the country are many waterfalls, mountains, rivers, lagoons, coral reefs and the surrounding sea. There is also a rich cultural heritage in Sri Lanka which dates back to over 2,500 years. Several locations contain a great wealth of well-preserved relics of the ancient civilization. These too are of utmost importance to ecotourism in Sri Lanka. Among other features that interest ecotourists are the local arts and crafts, local produce, traditional professions and traditional medicine.

Poor countries such as Sri Lanka that are rich in biodiversity benefit from the income the ecotourists bring in. Rural people benefit from ecotourism without having to overexploit the forests or wetlands, as benefits to local people are integral in ecotourism. However, ecotourism could lead to the overuse of natural resources. Many ecotourist projects are not properly appraised. The guidelines that do exist mostly deal with the obvious issues such as changes in land use patterns, removal of forest trees, and frightening wildlife. What is not considered are the less obvious impacts such as transmission of diseases to wildlife. Subtle changes to wildlife health through disturbance of their daily routines or

increased stress levels, while not apparent to a casual observer, may cause lowered survival and breeding. The welfare of animals should be of paramount importance because without them there will hardly be any ecotourism. Ecotourism should be developed cautiously with careful attention to environmental damage.

Today, there is an alarming awareness regarding the urgent need for environmental protection in general and biodiversity protection in particular, biodiversity protection being part of the broader environmental protection. Numerous opportunities and benefits can be derived by strategically integrating biodiversity and environmental conservation requirements with future tourism needs.

This Masters degree programme deals with biodiversity and other natural resources, cultural heritage, local produce and traditional professions of Sri Lanka that interest an ecotourist. It would also show the importance of environment conservation and management in protecting biodiversity, natural resources and cultural heritage, which would in turn greatly benefit the ecotourism industry. Furthermore, it would discuss the negative impacts of ecotourism and how these could be mitigated. Identifying localities important for ecotourists and visiting those are an integral part of the programme. The programme will greatly benefit the young graduates who seek to engage in ecotourism as a profession, also those that are already in the tourist industry at managerial level, and particularly the graduate naturalists and guides who work freelance or in various tourist facilities. The programme will also be of immense importance to those that are interested in the conservation of biodiversity and other natural resources of Sri Lanka.

2. OBJECTIVES OF THE PROGRAMME

To provide

- a sound knowledge of the foundations of ecotourism and environment management
- adequate knowledge in principles of environment conservation and management in protecting biodiversity, natural resources, and cultural heritage which in turn greatly benefit the ecotourism industry

the training for interested graduates who seek to engage in ecotourism as a profession, and to those that are already in the tourism industry at managerial level, and particularly the graduate naturalists and guides who work freelance or in various tourist facilities

3. PROGRAMME ELIGIBILITY

Candidates having a bachelor's degree with 30 credits including relevant modules of Environmental Science or equivalent accredited prior learning experience are eligible to follow the programme. Eligible applicants shall face a selection examination followed by an interview, conducted by the PGIS. Employed candidates eligible for admission should produce evidence of leave granted to follow the programme and a letter of release from the Head of the Department/Institution.

4. PROGRAMME FEE

Category	**Programme Fee**	
	Master of Biodiversity, Ecotourism & Environment Management degree programme	**M.Sc. in Biodiversity, Ecotourism & Environment Management degree programme**
Local candidates	Rs 275,000/-	Rs 375,000/-
Foreign candidates	Rs 550,000/-	Rs 750,000/-

Students registered for the Master of Biodiversity, Ecotourism & Environment Management degree programme shall pay the Programme fee in full or in four installments. An additional payment Rs. 100,000/- should be made at the end of the first year to continue for the M.Sc. in Biodiversity, Ecotourism & Environment Management degree programme. Other payments including registration fee, medical fee, library subscription, examination fee and deposits (science and library) should be paid according to the procedure stipulated by the PGIS. (N.B. The Programme fees given above may be revised as per recommendation of the Board of Management of the PGIS.)

5. THE PROGRAMME STRUCTURE AND DURATION

This programme consists of three options for completion.

5.1 Masters Degree by Course Work

The Master of Biodiversity, Ecotourism & Environment Management degree can be obtained by completing course work only (without conducting any research project).

Course work, comprising of theory courses, and laboratory and/or fieldwork, shall be conducted over a period of two semesters of 15 weeks each. The total duration of the degree, including examinations, shall be about 12 months. Satisfactory completion of a minimum of 30 credits of course work with a GPA of not less than 3.00 is required for the successful completion of the degree (Students who do not satisfy the above criteria but obtain a GPA in the range 2.75 to 2.99 for course work of 25 credits are eligible for the Postgraduate Diploma in Biodiversity, Ecotourism, and Environment Management, and those who obtain a GPA in the range 2.75 to 2.99 for course work of 20 credits are eligible for Postgraduate Certificate).

5.2 Masters Degree by Course Work and Research (SLQF Level 10)

In addition to Masters Degree with course work (5.1), the Masters Degree (Research) requires a research project. The duration of the entire programme shall be 24 months inclusive of 5.1. Completion of all the requirements of 5.1 with a GPA of not less than 3.00 is a prerequisite for the Masters Degree (Research). The research project for this degree should be conducted on full-time basis, and completed during the second year. The research component is allocated 30 credits, totalling 60 credits for the entire programme. After successful completion of the research project, the student shall be eligible for the award of the M.Sc. in Biodiversity, Ecotourism, and Environment Management degree (Students who do not complete the research project within the stipulated time period shall be awarded the Master of Biodiversity, Ecotourism, and Environment Management degree).

5.3 Extension of the programme for M.Phil. or Ph.D.

After conducting research for a period of six months in the M.Sc. degree (research) programme, students who have demonstrated exceptional progress may apply for upgrading the degree status to M.Phil. The student should continue the research project and any additional research

work/assignments recommended by the PGIS for a total of two years (60 credits of research) to qualify for the award of the M.Phil. degree.

During the second year of research, students who have demonstrated exceptional and continuous progress may apply for upgrading the degree status from M.Phil. to Ph.D. The student should continue the research project and any additional research work/assignments recommended by the PGIS for another year on full-time basis (additional 30 credits) to qualify for the award of the Ph.D. degree.

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Programme Summary

Course Code	Course	Lecture hrs	Practical hrs	No. of Credits
ENM 511	Environmental Biology	21	18	2
ENM 512	Population Ecology and Human Impact on Resources	24	12	2
ENM 513	Biodiversity and Its Conservation	24	12	2
ENM 514	Tourism and Ecotourism in Sri Lanka	24	12	2
ENM 515	Ecotouristic Potential of Sri Lanka	24	12	2
ENM 516	Promotion of Ecotourism	24	12	2
ENM 521	Environment Management, and Sustainable Development	24	12	2
ENM 522	Legal Protection of Environment and Biodiversity	15	–	1
ENM 523	Pollution of Environment and Pollution Management	24	12	2
ENM 524	Habitat Management	24	12	2
ENM 525	Wildlife Management	24	12	2
ENM 526	Aesthetic Landscape Management in Tourist Facilities	20	20	2
ENM 527	Sri Lanka's Ecotourism Resource Base	15	30	2
ENM 599	Independent Study**[1]	500 notional hrs.		5
ENM 699	Research Project**	3000 notional hrs. (one year duration)		30

NC – No change

***[1] Compulsory for Master of Biodiversity, Ecotourism & Environment Management degree (SLQF Level 9)*

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6. PROGRAMME CONTENTS

ENM 526: Aesthetic Landscape Management in Tourist Facilities (*Minor revision: credit number increased from 1 to 2*)

Course code	ENM 526
Course title	Aesthetic Landscape Management in Tourist Facilities
Credits	2
Compulsory/optional	Compulsory
Prerequisites	None
Time allocation	24L; 12P
Aims	1. To understand landscaping and maintenance in a tourist facility 2. To understand plant production, quarantine measures in landscaping 3. To understand development of eco-tourism trade
Intended learning outcomes	At the end of the successful completion of the course, students will be able to, 1. Propose a landscape plan for a tourist facility 2. Identify different materials for landscapes according to functional basis 3. Design different garden styles for suitable tourist facilities 4. List and describe additional services for a landscape implementation project 5. Write down the requirements of the eco-tourism trade to enhance the use of landscapes sustainably
Content	Tourism vs. Eco-tourism and landscapes; Assessment of needs of eco-tourists; Use and enhancement of available landscape features to give maximum facilities to the eco-tourists; Requirements of tourist facilities fulfillment by landscaping and environmental concerns; Horticulture and garden layout plans; Using plants for their aesthetic appeal; Gardens of herbs, spices and medicinal plants; Aquaria and Terraria; Landscape design in tourist facilities; Maintenance of landscapes; Greenhouse management; Nursery production and management; Quarantine measures; Demonstrating local arts and crafts production, local professions and local medicinal practice and exhibiting natural products within tourist facilities; Providing nature-based outside activities that interest eco-tourists; Duties of a freelance/tourist facility-employed naturalist and eco-tourist guide.

in management planning; Conflicts among stakeholders in management; Importance of traditional practices in management; Using management plans for decision making; Sustainable development and conservation of resources; Land use policies and legislation; State, Provincial Councils and Local Authorities, NGOs, private sector and others in management of natural resources; Management for multiple uses; Education and Research in conservation management; Resource development and Environmental Impact Assessment (EIA) in Sri Lanka.

ENM 522: Legal Protection of Environment and Biodiversity (1 *credit*)
Environmental policy, Constitutional provisions for environmental protection and management; Environmental protection by the Provincial Councils; Principles and concepts of environmental law; Practice and enforcement of environmental law in Sri Lanka; Introduction to the Acts and Statutes related to environment conservation and management. Legal instruments in environmental protection with special reference to Environmental Protection Licensing (EPL) Scheme, Load based license fee concept etc. Public participation in environmental policy-making; International conventions and protocols related to environment; Environmental ethics; Environmental education; Environmental watchdogs.

ENM 523: Pollution of Environment and Pollution Management (2 *credits*)
Air pollution: Sources and Effects of air pollution; Classes of air pollutants; Urban air pollution; Air pollution in developed and developing countries; Air quality standards; Acid rain; Photochemical smog; Global warming; Ozone layer depletion; Effects of atmospheric pollution on plants, animals, materials and human health; Water pollution: Aquatic environment and water resources; Types and sources of water pollutants; Agricultural run-off and Eutrophication; Algal toxins; Heavy metals, Pesticides; Thermal pollution; Effects of water pollution on biota; Indicator organisms; Soil and land pollution: Accumulation of solid waste; Ground water pollution; Solid waste cycles; Toxic effects and Methods of solid waste disposal: Economic, aesthetic and environmental problems pertaining to solid waste; Management of other types of waste such as biomedical, chemical and hazardous waste.

ENM 524: Habitat Management (*2 credits*)
Forest types and grasslands in Sri Lanka; Spatial distribution; Vegetation dynamics; Successional and cyclical changes; Deforestation and reforestation with special reference to Sri Lanka; Forest dieback; Forest conservation and management; Roles of the Forest Department and Department of Wildlife Conservation in forest management; Forest protection and law enforcement; Important timber species and extraction of timber and other forest produce for sustained yield; Use of maps, aerial photographs, satellite imageries; GIS, its capacity and application; Management of Wetlands; Coastal habitat Management: Coral and sandstone reefs, estuaries and lagoons, mangroves, sea-grass beds, salt marshes and sand dunes, and their management; Coastal zone developmental activities, Effects of storms and tsunamis on the coastal zone.

ENM 525: Wildlife Management (*2 credits*)
Wildlife management strategies and techniques; Categories of Protected Areas; Design, establishment and management of reserves and Protected Areas; Forest corridors; Genetically Effective Population Size (EPS); Viability of populations and Extinction of species; Concept of Minimum Viable Population (MVP); Rescue and recovery of near extinctions. Management of threatened and endangered species; *In-situ* and *ex-situ* conservation; Animal rights of captive wildlife; Mitigation of conflicts with wildlife; Economics, Politics and Ethics pertaining to conservation; Use of Protected Areas and Buffer Zones for human needs; Legislation on trading (import and export) wildlife (including ornamental species) and wildlife products; International conventions related to wildlife conservation (e.g. CITES, RAMSAR) and their relevance to Sri Lanka; Impact of biotechnology on the conservation of biota.

ENM 527: Sri Lanka's Ecotourism Resource Base (Field-oriented) (*2 credits*)
Natural phenomena: mountains (climbing); waterfalls, caves, sea (diving and surfing), rivers (boating, canoeing & kayaking and white water rafting) and lagoons (boating); Specific Tropical Rain Forests and Dry Forests and Forest plantations; Tea plantations; Ornamental plants, Medicinal plants, and

6	Prof. H. M. D. N. Priyantha *B.Sc. (Peradeniya), Ph.D. (Hawaii)* Dept. of Chemistry, UOP	Physical/Analytical Chemistry and Environmental Chemistry
7	Prof. H. M. S. P. Madawala *B.Sc. (Peradeniya), Ph.D. (Cambridge)* Dept. of Botany, UOP	Ecophysiology
8	Dr. M. W. S. K. Yatigammana, *B.Sc., M.. Sc. (Peradeniya), Ph.D. (Queens, Canada)* Dept. of Zoology, UOP	Limnology and Environmental Science
9.	Mr. W. M. C. S. Wijesundara *B.Sc., M. Sc., M. Phil. (Peradeniya)* Dept. of Zoology, UOP	Ecology
10	Dr. J. W. Damunupola *B.Sc. (Peradeniya), Ph.D. (Queensland)* Dept. of Botany, UOP	Horticulture
11	Dr. A. M. T. A. Gunaratne *B.Sc. (Peradeniya), Ph.D. (Aberdeen)* Dept. of Botany, UOP	Ecology
12	Dr. G. A. Nalin Suranjith *B.Sc. (Peradeniya), Ph.D. (Kentucky)* Dept. of Botany, UOP	Seed Biology and Food Science
13	Prof. S. Wijesundara *B.Sc., M.Phil.(Peradeniya), Ph.D. (New York)* National Institute of Fundamental Studies, Hantana.	Plant Ecology
14	Dr. A. M. A. S. Attanayake *B. Sc., M. Sc. (Peradeniya), Ph.D. (Hong Kong)* Royal Botanical Gardens, Peradeniya.	Plant systematics and reproductive biology
15	Mr. M. Ekanayake *B. Sc. (Peradeniya), PG Dip. (Peradeniya)* A. Baur & Co. Travel. Ltd., Colombo.	Outside Expert

9. PROGRAMME COORDINATORS

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