



UNIVERSITY
of
TECHNOLOGY,
MAURITIUS

School of Sustainable Development and Tourism

BSc (Hons) Sustainable Environmental Planning and Management

PROGRAMME DOCUMENT

VERSION 4.2

BSEM 4.2

May 2017

University of Technology, Mauritius

La Tour Koenig, Pointe aux Sables, Mauritius

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BSc (HONS) SUSTAINABLE ENVIRONMENTAL PLANNING AND MANAGEMENT

A. PROGRAMME INFORMATION

With globalisation and population growth, countries around the planet are faced with environmental problems. Biodiversity degradation, global climate change, increasing floods and droughts, higher energy demands, rising waste generations are amongst the few examples influencing the environment.

Traditional sciences do not necessarily offer sufficient preparation for understanding environmental problems and providing adequate planning and management. More often, social, economical and political studies, complemented by various sciences, are the key elements for a sound and sustainable environmental planning and management. This programme looks at a broad range of issues surrounding the earth, its biodiversity and its conservation. It addresses the challenges of shaping the community, government, and corporate responses in the context of rapid environmental change in the contemporary world for the pursuit of sustainability.

This degree has been designed to meet the professional expansion needs in sustainable environmental planning and management on both national and international levels. The programme looks at a broad range of issues surrounding the earth, its biodiversity and its conservation. Students will develop relevant skills and knowledge in the field of environmental planning and management, in line with sustainable development.

B. PROGRAMME AIM

This programme aims to help students achieve an interdisciplinary approach to sustainable environmental planning and management. It encourages students to combine theoretical insights with practical awareness of the issues involved in the formulation and application of policies and projects for sustainable environmental development and planning.

The programme will provide students with broad interdisciplinary training and opens a wide range of stimulating careers in Local authorities, Regulatory bodies, Development agencies, Construction and property companies, Waste management organisations, Consultancy, and Conservation firms.

C. PROGRAMME OBJECTIVES

- Develop students' understanding of the contested nature of global environmental issues
- Instruct students to acquire essential skills for a sustainable environmental management and planning
- Develop an understanding of the process of environmental policy development, implementation and enforcement
- Provide practical skills and research development opportunities
- Provide a firm foundation for advanced studies on the environment

PART 1
REGULATIONS

D.GENERAL ENTRY REQUIREMENTS

As per UTM 'Admissions Regulations' and 'Admission to Programmes of Study at Degree Level'

E. PROGRAMME ENTRY REQUIREMENTS

Credits in Mathematics and at least one Science subject at O' level

F. PROGRAMME MODE AND DURATION

Full Time: Minimum 3 Years, Maximum 6 Years

Part Time: Minimum 4 Years, Maximum 7 Years

Each academic year includes two semesters.

G.TEACHING AND LEARNING STRATEGIES

The programme will employ a wide variety of teaching methods, including lectures, individual or group projects, presentations, workshops, life skills and good practice, field visits, work placement and talks by guest speakers.

Self-learning will be the key feature of the programme, enabling students to explore, investigate and research into the various topics, interact with practitioners, and work in teams on projects. Through-out the course, Case-Studies will be used so as to familiarise the students with real-life situations and to learn how to cope with these.

The University recognises the importance of practical experience and its value to employers. Work Placement holds a significant place in the degree as it allows students to obtain first-hand exposure before taking up employment after graduation.

H.STUDENT SUPPORT AND GUIDANCE

In addition to traditional lectures, group or individual tutorials, seminars and workshops are arranged for students.

I. ATTENDANCE REQUIREMENTS

As per UTM Regulations

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J. CREDIT SYSTEM

The modules carry 3 or 4 credits as per the programme structure.

Work placement (full-time mode) - 4 credits

Portfolio (part-time mode) - 4 credits

Dissertation- 9 credits

For the award of a Certificate, 36 credits are required

For the award of a Diploma, 72 credits are required

For the award of a Degree, 107 credits are required

1 credit = 15 hours of lecture

1 credit = 30 hours of practical/tutorials/seminars

1 credit = 75 hours of Work Placement

K. STUDENT PROGRESS AND ASSESSMENT

For the award of the Degree, all modules must be passed in the examinations, coursework and other forms of assessment.

The programme will be assessed as follows:

1. Unless otherwise specified, written examinations shall be of duration of 2 hours for modules carrying 3 credits and not less than 3 hours for modules carrying 4 credits contributing 70% of the total marks. The assessment weightage per examination-based module is 70% for written examinations and 30% for continuous assessment such as seminars, presentations, class tests and written assignments. All modules are normally assessed over 100 marks, except for project/dissertation where it shall be as specified in the programme.
2. The following modules will be assessed 100% coursework as follows:
 - Remote Sensing will be assessed by project based assignment involving fieldwork, report and presentation
 - Research Methods for Environmental and Health Sciences will be assessed by project based assignment involving fieldwork, report and presentation
 - Life Skills and Good Practices will be assessed as per UTM *Life Skills and Good Practices* Guidelines.
 - Full-time students will be assessed for the Work Placement in Year 2 Semester 2 which will be conducted for a total of 300 hours as per the Work Placement Guidelines and Policy. The learning objectives for the Work Placement will be specified in a learning contract between the placement supervisor and the learner. The placement supervisor will be required to fill out a feedback appraisal form pertaining to student's performance during the placement. Students must demonstrate that they have achieved the learning objectives specified in the learning contract.
 - Part-time students will be assessed for Portfolio as per the portfolio guideline.
 - The overall pass mark for a module shall be 40%

L. EVALUATION OF PERFORMANCE

Grading

Overall Marks	Grade
$70 \leq X \leq 100$	A
$60 \leq X < 70$	B
$50 \leq X < 60$	C
$40 \leq X < 50$	D
$X < 40$	F
A-D	Pass
F	Fail

The % mark at Level 1 contributes a 20% weighting towards the degree classification.

The % mark at Level 2 contributes a 30% weighting towards the degree classification.

The % mark at Level 3 contributes a 50% weighting towards the degree classification.

M. DEGREE AWARD CLASSIFICATION

First Class with Honours	: CPA \geq 70
Second Class First Division with Honours	: $60 \leq$ CPA < 70
Second Class Second Division with Honours	: $50 \leq$ CPA < 60
Third Class with Honours	: $45 \leq$ CPA < 50
Pass	: $40 \leq$ CPA < 45
No Award	: CPA < 40

N. PROGRAMME ORGANISATION AND MANAGEMENT

Programme Development Committee:

Mrs. V. Ramasamy-Coolen
Mrs T. Makoondlall-Chadee
Assoc. Prof. Dr. C. Bokhoree
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O. PROGRAMME STRUCTURE AND PLAN
BSc (Hons) Sustainable Environmental Planning and Management– Full Time

YEAR 1							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L+ T	Credits	Code	Modules	Hrs/Wk L+ T	Credits
STAT 1402B	Essentials of Mathematics	3 + 2	4	ENVT 1115B	Global Environment Issues	3 + 2	4
SCI 1102B	Essentials of Chemistry	3 + 0	3	SSDV 1102B	Principles of Sustainability	3 + 0	3
COMM 1101B	Business Communication	3 + 0	3	OSHM 1216B	Environment and Health	3 + 2	4
ENVT 1113B	Mauritian Biodiversity	3 + 2	4	SSCI 1103B	Environmental Sociology	3 + 0	3
ENVT 1114B	Earth, Climate and the Ecological System	3 + 2	4	ENVT 1502B	Environmental Laws and Protection	3 + 2	4
→ Start of Level 1				→ End of Level 1			
YEAR 2							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L+ T	Credits	Code	Modules	Hrs/Wk L+ T	Credits
ENVT 2116B	Environmental Planning	3 + 2	4	WPL 2000B	Work Placement		4
LSGP2000B	Life skills and Good Practice		4	ENVT 2602B	Environmental Protection Technology I	3 + 2	4
ENVT 2303B	Environmental Economics	3 + 2	4	VLEN 2105B	Remote Sensing	3 + 2	4
ENVT 2401B	Environmental Impact Assessment	3 + 2	4	ENVT 2117B	Energy and the Environment	3 + 2	4
ENVT 2601B	Environmental GIS	3 + 2	4				
→ Start of Level 2				→ End of Level 2			
YEAR 3							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L+ T + DS	Credits	Code	Modules	Hrs/Wk L+ T + DS	Credits
STAT 3307B	Research Methods for Environmental and Health Sciences	3 + 2	4	OPS 3205B	Project Management	3 + 0	3
ENVT 3603B	Environmental Protection Technology II	3 + 2	4	ENVT 3404B	Environmental Monitoring and Modelling	3 + 2	4
OPS 3113B	Environmental Risk Management	3 + 0	3	ENVT 3111B	Coastal Zone Management	3 + 2	4
ENVT 3604B	Environmental Management Tools	3 + 2	4				
DISS3000B	Dissertation			DISS3000B	Dissertation		9
→ Start of Level 3				→ End of Level 3			

P. BSc (Hons) Sustainable Environmental Planning and Management – Part Time

YEAR 1							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L+ T + DS	Credits	Code	Modules	Hrs/Wk L+T + DS	Credits
STAT 1402B	Essentials of Mathematics	3 + 2	4	ENVT 1114B	Earth, Climate and the Ecological System	3 + 2	4
SCI 1102B	Essentials of Chemistry	3 + 0	3	ENVT 1115B	Global Environment Issues	3 + 2	4
COMM 1101B	Business Communication	3 + 0	3	SSDV 1102B	Principles of Sustainability	3 + 0	3
ENVT 1113B	Mauritian Biodiversity	3 + 2	4				
→ Start of Level 1							
YEAR 2							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L+ T + DS	Credits	Code	Modules	Hrs/Wk L+ T	Credits
OSHM 1216B	Environment and Health	3 + 2	4	ENVT 2116 B	Environmental Planning	3 + 2	4
SSCI 1103B	Environmental Sociology	3 + 0	3	LSGP 2000 B	Life skills and Good Practice		4
ENVT 1502B	Environmental Laws and Protection	3 + 2	4	ENVT 2303 B	Environmental Economics	3 + 2	4
→ End of Level 1				→ Start of Level 2			
YEAR 3							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L+ T + DS	Credits	Code	Modules	Hrs/Wk L+ T + DS	Credits
ENVT 2401B	Environmental Impact Assessment	3 + 2	4	VLEN 2105B	Remote Sensing	3 + 2	4
ENVT 2601B	Environmental GIS	3 + 2	4	ENVT 2117B	Energy and the Environment	3 + 2	4
ENVT 2602B	Environmental Protection Technology I	3 + 2	4	PORT2000B	Portfolio		4
				→ End of Level 2			

YEAR 4							
Semester 1				Semester 2			
Code	Modules	Hrs/Wk L+ T + DS	Credits	Code	Modules	Hrs/Wk L+ T + DS	Credits
STAT 3307B	Research Methods for Environmental and Health Sciences	3 + 2	4	OPS 3205B	Project Management	3 + 0	3
ENVT 3603B	Environmental Protection Technology II	3 + 2	4	ENVT 3404B	Environmental Monitoring and Modelling	3 + 2	4
OPS 3113B	Environmental Risk Management	3 + 0	3	ENVT 3111B	Coastal Zone Management	3 + 2	4
ENVT 3604B	Environmental Management Tools	3 + 2	4				
DISS3000B	Dissertation			DISS3000B	Dissertation		9
→ Start of Level 3				→ End of Level 3			

Q. NON-PRESCRIPTIVE SYLLABUS OUTLINE

STAT 1402B: Essentials of Mathematics

Elementary Algebraic concepts; Functions and graphs; Linear and quadratic equations and inequalities; Differentiation: exponential, logarithmic functions and application; Application to rate of change; Integration and application; Further differentiation and integration; Descriptive Statistics and graphical summarise; Probability theory; Discrete and Continuous random variables and probability distributions; Sampling theory; Hypothesis Testing; Chi Square Test; Correlation Analysis and Regression Analysis; Analysis of Variance.

SCI 1102B: Essentials of Chemistry

Principles of inorganic chemistry: Atomic structure and periodicity, modern electronic theory of atoms, chemical bonding, the chemistry of selected metals and non-metals, radioactivity; Mole calculations; Formulae and percentage composition; Electronic configuration and the periodic table; Essentials of organic chemistry: nomenclature and chemistry of the function groups. Applications of chemistry: an introduction to analytical chemistry, gas chromatography and biochemistry – metabolism of lipids, carbohydrates and proteins

COMM 1101B: Business Communication

Importance of communicating effectively; Internal & external Communication; Verbal & non Verbal communication; Process of communication; Communication Barriers; Intercultural communication; Teamwork; Conflict & communication; Writing for business audiences – letters, reports, memorandums, e-communication; Interviews – preparing for job interviews, letter of application, curriculum vitae writing; Grooming; Customer Service and Communication

ENVT 1113B: Mauritian Biodiversity

Definition of biodiversity; Measurement of biodiversity; Mauritian terrestrial, aquatic and marine biodiversity; speciation and extinction; relationship between biodiversity and Mauritian geography and topography; effects of biodiversity on ecosystem functioning; cost of maintaining biodiversity and cost of loss of biodiversity

ENVT 1114B: Earth, Climate and Ecological System

Introduction to earth system science; The sun and the solar system; The earth as part of the solar system; Earth materials; Mineral and rock forming processes; Origin mode of magma, volcanoes and igneous rocks; External structure of the earth; Formation of continents; Plate tectonics; Continental movement; Hydrosphere; Surface water processes; Soil water processes; Concept of Ecosystem; Ecological Equilibrium and population dynamics; Atmosphere; Weather systems; Climate; The biosphere; Origin and evolution of life; Impact of man; Mineral and energy sources; Global changes; Population, community and ecosystem effects

ENVT 1115B: Global Environment Issues

Impacts, mitigation and adaptation to the greenhouse gas problem; Global importance of other atmospheric pollutants: ozone pollution, acid rain and radioactive fallout; Global effects of pollution in the oceans: with consideration of ocean resources; Global forest resources, biodiversity, species loss and habitat destruction; Mass media, globalisation and the environment; Business and industry, environmental NGOs, government and the population

SSDV 1102B: Principles of Sustainability

Broad overview of the origins & concept of sustainability; The guiding principles for the development process; Key concepts & drivers of sustainability; Roles of stakeholders, institutions, the business community, government, consumers & NGOs; Sustainable development issues & socio-cultural sustainability; The tripple bottom line: economics, environment & equity; Resource production & consumption; Environmental impacts & environmental indicators; Climate change; Fundamental ecological concepts; Ecosystem services; Sustainable industry & business; The future of energy; Eco-efficiency & carbon trading

OSHM 1116B: Environment and Health

Introduction to biological, chemical and physical health hazards in the environment; Impact Assessments; Transport of Hazardous Materials; Disease Prevention; Environmental health; Climate change and health; Emergency Preparedness and Response; Partnership approaches to service delivery and sustainable environmental health development initiatives

SSCI 1103B: Environmental Sociology:

Relationship between human societies and the environment; Ecological issues; responsible consumption and production; population, food and hunger; human ecological footprint; environmentalism movements; gender, race, justice, culture and environmental issues; environmental ethics.

ENVT 1502B: Environmental Laws and Protection

Introduction to environmental law, its sources, principles and methods of regulation, along with the issue of liability for environmental harm; Importance of politics and political systems in sustainable environment development; The Environment Protection Act; The Constitution, Environment and Human Rights; Global environmental changes and political process; International treaties; National and international land resource, planning and environmental policy and policy development; The law relating to pollution control and waste control; Interaction between land use and development policy; Enforcement of environmental law and regulations; environmental policy analysis; Property rights and protected areas management; The role of NGOs in policymaking.

ENVT 2116B: Environmental Planning

Introduction to Environmental Planning and issues; Approaches to environment planning; Property rights; Governance and finance structures for planning; Declaration of areas for nature reserves, Pollution control, Local zoning controls to separate incompatible land uses; Preparing for climate change; Emerging issues for planning; Principles of management planning for areas, sites and species; Emergence of fundamental principles of urban planning control and regulation; Statutory planning process and legislation; Urban planning in the context of equity and social responsibility; the roles of planners; the nature and consequences of planning; Environmental Planning Instruments: Strategic planning, Green plants; Types of planning controls, current development planning approval

and appeals processes, Conservation and heritage protection and its impact on development and land use rights and economic value; Sustainable community development

LSGP2000B: Life Skills and Good Practices

Employability Skills Development, Prevention of Corruption (as per topics proposed by ICAC and covering 24 hours of lecture), Good Governance, Personal Development Skills, Coping Skills, addressing Societal Challenges including Substance Abuse, Poverty, Climate Change, Social Media and Family problems.

ENVT 2303B: Environmental Economics

The Environment and the Economy; The Market and the Environment: Environmental Goods and Market Failure; The Valuation of Environmental Goods and Services; Concept of renewable and non-renewable resources, and comparisons between sustainable and non-sustainable resource allocation practises; Environmental public goods; Microeconomics Policy Instruments; Difficulties in practice – examples from around the world; Tradable permits for non-uniformly mixed pollutants –some of the available tradable permit systems and schemes. Examples from around the world; International Environmental Agreements: especially Kyoto Protocol with CDM & JI, the EU-Emission Trading Scheme and Copenhagen Climate Change

ENVT 2401B: Environmental Impact Assessment

Environmental Impact Assessment (EIA), its key aspects, limitations and recent developments; State of the Environment (SoE) reporting; Life Cycle Analysis (LCA), its key aspects, methods, limitations and recent developments; Environmental audit; Economic instruments: standards, taxes, charges, levies and incentives; marketable permits; deposit-refund schemes; and negotiation; Strategic Environmental Assessment; Climate Impact Assessment; Assessing, managing, reviewing and regulating the potential environmental impacts from industrial and other large scale activities in society; Corporate social responsibility and sustainability reporting

ENVT 2601B: Environmental GIS

Basics, concepts and applications of Geographical Information Systems (GIS); Functions of GIS systems; Basic geographic concepts: features, attributes and theme; Map projection systems and coordinate systems; Categories of GIS data; Geo-processing procedures; Creating soil/plant polygons, organizing views and calculating areas of polygons; Spatial interpolation, classification analysis and geostatistics

ENVT 2602B: Environmental Protection Technology I

Water and Waste Water Management: Water treatment and supply and associated impacts, Urban waste water treatment (domestic and industrial) and associated impacts, Floods and flood control.

Transport: Environmental issues associated with the use of transport - air quality, waste, land take, habitat destruction, health, Predictions for the future and their implications, Alternatives to the car - public transport, cycling, walking, cleaner technologies. Current issues in the provision and supply of food - GM crops and organic growing, food miles, food co-operatives, agriculture; Biodiversity: Managing urban greenspace for competing priorities, Greenways; Planning and Land Use

VLEN 2105B: Remote Sensing (100% coursework)

This module is designed to give students practical experience of applying remote sensing to the broad fields of land resource assessment and monitoring environmental change. It allows students to apply and extend their remote sensing and image processing skills through undertaking directed projects of a geographical and/or environmental nature. The module has a strong practical and applied focus with substantial directed and independent IT practical work using image processing software.

Principle, theory and applications of remote sensing; Generalized processes of remote sensing; Remote sensing data and image interpretation; Land cover mapping; Project planning; Monitoring environmental change

ENVT 2117B: Energy and Environment

Environmental issues associated with the supply and use of energy; Alternatives to current energy provision - renewable energy sources, energy conservation initiatives (domestic and industrial); Global energy overview; Energy services - end use analysis; Energy resources - hydrocarbon, nuclear, renewable; Demand side management - efficiency and conservation; Energy and the environment - carbon, acid depositions, waste; Energy Insecurity and Sustainable Energy; Energy Policy: Developed World and Developing World; Energy Planning

WPL 2000B/PORT 2000B: Workplacement (upon set-up and running of Placement Unit)

Workplacement assessment: Performance Appraisal Form (Supervising Officer/Employer)
Portfolio (Supervising Officer/Employer + Academic)

STAT 3307B: Research Methods for Environmental and Health Sciences (100% coursework)

Introduction to survey research methodology: The research process, Formulating the research problem, Research questions and research objectives; Experimental, cross-sectional, longitudinal, quantitative and Qualitative Research Design: Types of samples and sampling methods; Data collection methods; Questionnaire Design; Ethical consideration in Research; Data analysis: Introduction to SPSS: statistical techniques used for analysing simple environmental data; Writing up research results: Structure of a report/dissertation, Referencing.

ENVT 3603B: Environmental Protection Technology II

Waste and the environment: the environmental context of wastes: solid/liquid industrial/commercial/municipal; hazardous/inert; the waste stream; estimating waste quantities; The 4 R's: reduction, reuse, recycling and recovery: waste minimisation options; recycling strategies; waste recovery plants; Landfill: landfills as reactors; landfills as final disposal; landfill site selection and design; Incineration: MSW incineration; hazardous waste incineration; waste to energy plants; Waste management options: handling and treatment; principles of pollution control; impact assessment; economic considerations; Organisation of the waste industry: Legislative requirements; the Duty of Care

OPS 3113B: Environmental Risk Management

Models for exposure of biota, scope of environmental risk and assessment; Evaluating and characterization of environmental risk: principles, processes, perceptions, tools, techniques - matrices, process-based models, cost-benefit analyses; Chemical hazard identification; Water, air, food and health risk assessment; Soils, monitoring of environmental health, ecotoxicology and ecological risk assessment; Risk-Benefit, Tradeoffs and Cost-Benefit Analysis; Risk decision making, management and Mitigation strategies; case studies

ENVT 3604B: Environmental Management Tools

Environmental management systems (EMS); EMS and relevant standards; quality management system ISO 9001, environmental management system ISO 14001, life cycle assessment ISO 14040 (LCA), Occupational health and safety system ISO 18001 (OHSAS), cleaner production (CP), eco-management and audit scheme (EMAS); pollution prevention and continual improvement. Procedure for accidents; specifications for chemical industry; Integrated Pollution Prevention and Control (IPPC); Dynamic concept for best available techniques (BAT).

OPS 3205B: Project Management

Introduction, Philosophy & Concepts; Project Lifecycle; Project Selection; Planning Fundamentals; Network Scheduling; PERT & CPM; Resource Planning & Allocation; Cost Estimating & budgeting; Scope Management; Managing Risks in Projects; Project Control, Evaluation, Reporting & Termination; Project Organisation structure & Integration; Project Quality Management; Project Communication; Teams & Leadership

ENVT 3404B: Environmental Monitoring and Modelling

Measuring environmental phenomena; Environmental monitoring; Evaluating and characterization of environmental risk: principles, processes, perceptions, tools, techniques - matrices, process-based

models, cost-benefit analyses; Models and modelling; Biogeochemical models; Hydrological models; Geomorphological models; Modelling pollutants in aquatic systems; Introduction to simulation modelling within Physical Geography and the Environmental Sciences; system thinking methodologies, feedback mechanisms, causal loop diagram, stock and flow systems, application of system dynamics tools

ENVT 3111B: Coastal Zone Management

Scope of coastal zone management; Overview of ecosystems and processes relevant to management; Coastal pollution impacts; Role of marine reserve in coastal zone management; Global warming and sea level rise; Current local and international situations; Physical, biological and social issues in the marine, littoral and coastal hinterland; Hydrological processes; sea defence, managed retreat; Development and development control, tourism and recreational management, interpretation; Marine and terrestrial protected areas in the coastal zone

DISS 3000B: Dissertation

A 10,000-12,000 words dissertation will have to be submitted at the end of the semester. The work submitted should conform to the Undergraduate Dissertation Guidelines. Topics studied by students should be relevant to the discipline and deal with contemporary issues in the field.