

## **REGULATIONS FOR THE DEGREES OF MASTER OF SCIENCE (MSc) AND MASTER OF SCIENCE IN ENVIRONMENTAL MANAGEMENT (MSc[Env Man])**

For students admitted in 2012-2013 and thereafter

*(See also General Regulations)*

Any publication based on work approved for a higher degree should contain a reference to the effect that the work was submitted to the University of Hong Kong for the award of the degree.

The degree of Master of Science is a postgraduate degree awarded for the satisfactory completion of a prescribed course of study in one of the following four fields: Applied Geosciences, Food Industry: Management and Marketing, Food Safety and Toxicology, and Material Science.

The degree of Master of Science in Environmental Management is a postgraduate degree awarded for the satisfactory completion of a prescribed course of study in Environmental Management.

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### **Admission requirements**

- (i) a Bachelor's degree with honours of this University; or
  - (ii) another qualification of equivalent standard of this University or another University or comparable institution accepted for this purpose; and shall satisfy the examiners in a qualifying examination if required.
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**Sc21** A candidate who does not hold a Bachelor's degree with honours of this University or another qualification of equivalent standard may in exceptional circumstances be permitted to register if the candidate can demonstrate adequate preparation for studies at this level and satisfies the examiners in a qualifying examination.

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### **Qualifying examination**

#### **Sc22**

A qualifying examination may be set to test the candidate's academic ability to follow the course of study prescribed. It shall consist of one or more written papers or equivalent and may include a project proposal.

A candidate who is required to satisfy the examiners in a qualifying examination shall not be permitted to register until he/she has satisfied the examiners in the examination.

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### **Award of degree**

#### **Sc23**

- (a) To be eligible for the award of the degree of Master of Science or Master of Science in Environmental Management, a candidate
  - (i) shall comply with the General Regulations; and
  - (ii) shall complete the curriculum and satisfy the examiners in accordance with these regulations and syllabuses.
- (b) A candidate (both full-time and part-time) who has not satisfied the examiners for the award of the Degree of Master of Science in the field of Applied Geosciences but has achieved good grades in 30 credits including 18 credits of core courses in the PGDES and satisfied the

requirements for award of PGDES may be allowed to exit with PGDES, subject to the approval of the Faculty Board. Those who are allowed to take this exit path will not be re-admitted to the Degree of Master of Science in the field of Applied Geosciences.

### **Transfer of candidature into the Master of Science in the field of Applied Geosciences**

#### **Sc24**

- (a) Subject to the approval of the Faculty Board, a candidate who has registered for the PGDES may be allowed to transfer to read the Master of Science in the field of Applied Geosciences and advanced credits of up to 30 credits may be granted. Application for the transfer must be made prior to the BoE's recommendation for conferment of the PGDES, or before August 31 of the final year of PGDES, whichever is earlier.
- (b) A candidate who has transferred his/her candidature to the Master of Science in the field of Applied Geosciences will not be awarded the PGDES. If a candidate after transferring to the Master of Science in the field of Applied Geosciences fails to complete the Master of Science, he/she may be awarded the PGDES provided that he/she has satisfied the requirements of the PGDES.

### **Length of curriculum**

**Sc25** The part-time mode of the Master of Science and the Master of Science in Environmental Management shall extend over not less than two academic years of part-time study and the full-time mode of the Master of Science and the Master of Science in Environmental Management shall extend over not less than one academic year. Candidates in either degree shall not be permitted to complete the curriculum in more than 3 academic years, except with the approval of the Faculty Board.

### **Completion of curriculum**

**Sc26** To complete the curriculum of the Master of Science or Master of Science in Environmental Management, a candidate

- (a) shall follow courses of instruction and complete satisfactorily all prescribed written, practical and field work;
- (b) shall complete and present a satisfactory dissertation or project on an approved subject or complete courses with equivalent credits as a replacement; and
- (c) shall satisfy the examiners in all courses prescribed in the respective syllabuses.

### **Dissertation or Project**

**Sc27** The title of the dissertation or project shall

- (a) for the full-time mode of Master of Science (except MSc in Environmental Management), be submitted for approval by October 15 and the dissertation or project report shall be submitted not later than August 15 in the subsequent year;
- (b) for the full-time curriculum of MSc in Environmental Management, be submitted by October 15 and the dissertation shall be submitted by a date specified by the Board of Studies;
- (c) for the part-time curriculum (except MSc in Environmental Management), be submitted for approval by March 15 of the first year of study in which the teaching curriculum ends and

- the dissertation or project report shall be submitted not later than April 15 of the second year of study;
- (d) for the part-time curriculum of MSc in Environmental Management, be submitted by June 1 of the first academic year and the dissertation shall be submitted by a date specified by the Board of Studies.

**Sc 28** A candidate shall submit a statement that the dissertation or project represents his/her own work (or in the case of co-joint work, a statement countersigned by his/her worker, which shows his/her share of the work) undertaken after registration as a candidate for either degree.

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### Assessments

**Sc29** The assessment in any course shall consist of elements prescribed by the course teachers, and will normally comprise either written coursework alone, or coursework combined with formal examinations; in either case participation in field work or practical work may form part of the assessment.

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**Sc30** A candidate who has failed to satisfy the examiners

- (a) at his/her first attempt in any course in the examination held during any of the academic years of study may be permitted to present himself/herself for re-examination in the course or courses at a specified subsequent examination, with or without repeating any part of the curriculum;
  - (b) at his/her first submission of dissertation or project report may be permitted to submit a new or revised dissertation or project report within a specified period;
  - (c) in any prescribed fieldwork or practical work may be permitted to present himself/herself for re-examination in fieldwork or practical work within a specified period.
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**Sc31** Failure to take the examination as scheduled, normally results in automatic course failure. A candidate who is unable because of illness to be present at any examination of a course, may apply for permission to be present at some other time. Any such application shall be made on the form prescribed within two weeks of the examination.

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### Discontinuation

**Sc32** A candidate who

- (a) has failed to satisfy the examiners in more than half the number of credits of courses during any of the academic years or in any course at a repeated attempt, or
  - (b) is not permitted or fails to submit a new or revised dissertation or project report, or
  - (c) has failed to satisfy the examiners in their dissertation or project report at a second attempt,
- may be recommended for discontinuation of studies.
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### Examination results

**Sc33** At the conclusion of the examination, a pass list shall be published. A candidate who has shown exceptional merit at the whole examination may be awarded a mark of distinction, and this mark shall be recorded in the candidate's degree diploma.

**SYLLABUSES FOR THE DEGREE OF  
MASTER OF SCIENCE IN ENVIRONMENTAL MANAGEMENT  
*MSc(EnvMan)***

For students admitted in 2012-2013 and thereafter

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A candidate shall follow and be examined in at least 54 credits of courses including ten core courses (39 credits) and five elective courses (15 credits). For Part-time candidates, they will normally take 27 credits in their first year of study and 27 credits in their second year of study. A 3-credit course will normally consist of 18-24 hours of lectures, seminars, workshops and/or field trips.

**A. COURSE STRUCTURE**

The list of courses, and their contents set out thereafter, will be changed from time to time.

**FIRST YEAR**

**Core courses (27 credits)\***

ENVM7003	Introduction to ecology (3 credits)
ENVM7012	Environmental economics and analysis (3 credits)
ENVM7013	Sustainability, society and environmental management (3 credits)
ENVM7014	Environmental quality management (6 credits)
ENVM7015	Research methods and report writing in environmental management (3 credits)
ENVM7016	Environmental policy (3 credits)
ENVM7017	Environmental law in Hong Kong (3 credits)

And select one course from the following list:

ENVM7018	Environmental field studies (3 credits)
ENVM7019	Intensive residential field studies (3 credits)

By June 1 Part-time students must have submitted their dissertation titles to the Board of Studies. They will be expected to make a start on the work for this dissertation during the long summer vacation. Full-time students must have submitted their dissertation titles to the Board of Studies by October 15.

\* Alternative courses from other taught Masters programmes at HKU may be accepted at the discretion of the Programme Coordinator.

**SECOND YEAR**

**Core courses (12 credits)**

ENVM8004	Dissertation (9 credits) #
ENVM8006	Environmental impact assessment (3 credits)

**Elective courses (15 credits) [Indicative only: courses available will vary from year to year]**

ENVM8003	Conservation biology and management (3 credits)
ENVM8010	Earth science and environmental management (3 credits)
ENVM8011	Environmental auditing and reporting (3 credits)
ENVM8012	Environmental health and risk assessment (3 credits)
ENVM8013	Air and noise pollution control and management (3 credits)
ENVM8014	Special topics in environmental management (3 credits)
ENVM8015	Directed studies in environmental management (3 credits)
ENVM8016	Conservation and management of freshwater ecosystems (3 credits)
ENVM8017	Conservation and management of marine resources (3 credits)

ENVM8018	Urban planning and environmental management (3 credits)
ENVM8019	Corporate social responsibility (3 credits)

Relevant courses from other taught Masters programmes at HKU can be taken as electives with the agreement of both Programme Coordinators.

- # Students are also required to attend a colloquium at which presentations are made based on the work for the dissertations. The presentations will be assessed and this will contribute to the final grade awarded for the dissertation. Part-time students must submit their dissertation to Faculty of Science on or before the last Friday in May in the second academic year of study, whereas the dissertation submission deadline for full-time students would be set on the last Friday in June in the first academic year of study. On the successful completion of the degree, a copy of the outstanding dissertation may be lodged in the University Library for public access.

## B. COURSE CONTENTS

### Core Courses

#### **ENVM7003 Introduction to ecology (3 credits)**

This course deals with the ecological processes determining the distribution and abundance of organisms, and which in turn govern the structure and function of communities and ecosystems. The focus of the course is on how an understanding of ecology is important for environmental management. Together with lectures and student centered learning, this course also incorporates a practical fieldwork component based at the Swire Institute of Marine Science.

Assessment: Written examination (100%)

#### **ENVM7012 Environmental economics and analysis (3 credits)**

The aim of this course is to equip students with the ability to undertake an economic analysis of the environment. It examines the environment in the context of the market mechanism and policies for improving environmental performance. There is an emphasis on market failure and strategies for internalizing the external costs of environmental damage. A good deal of attention is paid to cost-benefit analysis and methodologies for the valuation of the environment. There is also a consideration of alternative policy instruments from an economic perspective. This course further examines means of managing resources in a way that is both economically and environmentally efficient.

Assessment: Course work (100%) (10% participation and performance at in-class discussion; 50% exercises; 40% take home examination)

#### **ENVM7013 Sustainability, society and environmental management (3 credits)**

This course begins with the intellectual debates on the definitions, conceptions and different schools of thought of the notion of sustainable development. The course then moves on to exploring ways of analyzing sustainable development at the macro- and the micro- levels, ranging from governance issues, frameworks, policies to projects. A number of tools for sustainable development are also explained including community engagement, sustainability assessment, life cycle assessment, etc. Each year there will be a special focus on a thematic area such as sustainable energy, low carbon living, or planning for sustainable cities, to illustrate the challenges of implementing both local and global sustainability.

Assessment: Course work (100%) (40% group project; 60% term paper)

**ENVM7014 Environmental quality management (6 credits)** (equivalent to 2 courses)

This course introduces students to the types, sources and effects of environmental pollution and some of the key principles and strategies used in combating pollution and managing environmental quality. Topics include water and air quality management, solid waste management and noise pollution control, with an emphasis on the situation in Hong Kong. Aspects of pollution control legislation and its enforcement, environmental education and conservation will also be covered.

Assessment: Course work (40%) and written examination (60%)

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**ENVM7015 Research methods and report writing in environmental management (3 credits)**

This course is intended both as preparation for the dissertation, which forms a major part of the second year of the programme, and as a general introduction to writing reports on environmental issues. It is taught as a series of lectures, seminars and workshops. Subjects covered include: selecting a topic; the scientific method; asking questions; searching for information; surveys and interviews; the case study approach; formats, styles and presentation; avoiding plagiarism; citing sources; giving oral presentations; dealing with the media; basic data processing and data analysis.

Assessment: 2 individual assignments (20%) and written examination (80%)

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**ENVM7016 Environmental policy (3 credits)**

This course focuses on processes of environmental policy making: how policy agendas emerge and evolve, the drivers and barriers influencing policy development, institutional structures for environmental policy making, stakeholder engagement, and the implementation of environmental policy. Theories of policy making are explored in relation to the environment and sustainable development. Environmental policy making systems and outcomes are reviewed through local and international case studies.

Assessment: Written examination (50%) and term paper (50%)

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**ENVM7017 Environmental law in Hong Kong (3 credits)**

This course focuses on the statutory interpretation of the four principal Ordinances and subsidiary legislation dealing with pollution in Hong Kong; namely the Water Pollution Control Ordinance, the Air Pollution Control Ordinance, the Noise Control Ordinance and the Waste Disposal Ordinance. Some consideration will also be given to the Dumping at Sea Ordinance, the Radiation Ordinance, the Merchant Shipping (Prevention and Control of Pollution) Ordinance, the Environmental Impact Assessment Ordinance, the Ozone Layer Protection Ordinance and international conventions effecting the law. Students will study the nature of environmental offences, including the requirement for proving “mens rea” (intent) in order for certain offences to be successfully prosecuted. Students will also be introduced to the principles of judge made law (the Common Law) and will learn to read and interpret relevant case law in order to better understand the current sentencing policies towards environmental offenders, both locally and in other Common Law jurisdictions.

Assessment: Course work (100%)

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**ENVM7018 Environmental field studies (3 credits)**

This is an experiential learning course. This course aims to broaden students' horizon and knowledge base on key aspects of environmental management and natural conservation through a series of field studies and visits to local and overseas organizations. Topics include conservation and biodiversity

management, waste and wastewater treatment processes, water treatment processes, and corporate environmental management in practices. Field studies will be conducted in form of guided visits, field work, and invited lectures or forums according to the topics involved. Study trips outside Hong Kong such as Macau, Mainland China and Taiwan may be considered. Students are required to attend at least 50% of all field trips organized over the two years of study period.

Assessment: Course work and participation and performance at in-class discussion (100%)

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### **ENVM7019 Intensive residential field studies (3 credits)**

This is an experiential learning course. This course aims to teach students with the field survey and study skills in biodiversity assessment through an intensive residential field course. Students taking this course have to conduct hands on field surveys of common plant and animal groups in Hong Kong such as vascular plants, mammals, birds, amphibians, reptiles and butterflies. Overseas field trip may be arranged for extra practices in field surveys.

Assessment: Course work and participation and performance at in-class discussion (100%)

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### **ENVM8004 Dissertation (9 credits) (equivalent to 3 courses)**

The dissertation is an individual, independent research project carried out under the supervision of one or more faculty members. Students may propose their own topics and approach possible supervisors, or they may consider those topics suggested by faculty members. Normally, the student develops the research outline in collaboration with his or her Faculty advisor(s) and then collects data, carries out analysis and writes the report prior to the research colloquium where the student will present his/her work. The candidate shall make a formal presentation on the subject of his/her dissertation as required by the programme organizers, during the final semester of the teaching programme.

Assessment: Individual presentation (10%), continuous assessment (10%) and a dissertation report of approximately 15,000-20,000 words (80%)

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### **ENVM8006 Environmental impact assessment (3 credits)**

Environmental Impact Assessment (EIA) is one of the most important contemporary instruments of environmental management. Used widely around the world to identify the impacts of development projects as well as strategic plans and policies, EIA plays a key role in many regulatory systems for the environment. This course reviews the development of different approaches to EIA, basic analytical principles, administrative and legal systems for EIA, assessments at the project and strategic levels (SIA), and case study applications in Hong Kong.

Assessment: Course work (100%) (50% group project; 50% term paper)

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## Elective Courses

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### **ENVM8003 Conservation biology and management (3 credits)**

Conservation biology is the essential scientific element in biodiversity conservation. The course will cover the basic principles and methods of conservation biology in a non-technical way. In reality, successful biodiversity conservation projects often require an integration of the welfare of local communities. As such, practical examples from Hong Kong and elsewhere will be used as case studies to illustrate the importance of different elements in conserving our biodiversity.

Assessment: Group presentation (20%), individual quiz (20%) and written examination (60%)

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### **ENVM8010 Earth science and environmental management (3 credits)**

This course examines major issues of earth science of relevance to environmental management. Case studies based on past experiences with application to Hong Kong and other major coastal cities are emphasized. Topics include: chemical composition of earth materials; geochemical surveys; aspects of human health; quaternary record of environmental change; aspects of water resource management; natural and human-induced hazards; coastal management; aspects of waste disposals, etc.

Assessment: Course work (40%) and written examination (60%)

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### **ENVM8011 Environmental auditing and reporting (3 credits)**

This course is dedicated to the construction of an integrated environmental management system (EMS). The course considers the design of the EMS, its implementation and issues of continuous improvement. Environmental auditing is dealt with in the context of the systems-based approach. This course examines audit methodology, measurement and quality assurance. The approach is extended to the auditing of supply chains (particularly in China). Emphasis is placed on practical approaches to improving environmental performance over time. Methods and techniques of reporting on systems and auditing include both environmental reports as well as social and sustainable development reports.

Assessment: Course work (100%) (12% participation and performance at in-class discussion; 54% projects and case studies; 34% take home exam)

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### **ENVM8012 Environmental health and risk assessment (3 credits)**

Environmental Risk Assessments (ERAs) are a tool to determine the likelihood that contaminant releases, either past, current, or future, pose an unacceptable risk to human health or the environment. Currently, ERAs are required under various regulations in many developed countries so as to support decision-makers in risk characterization or the selection of cost-effective remedial cleanup. This course introduces the theory and practice of human and ecological risk assessments. Students completing the course will gain a sound knowledge of the concepts and principles of ERAs, management and communication as applied in practice; understand the basic risk assessment tools (i.e. prospective, retrospective and tiered approaches) to environmental risk management; be able to select and apply the simpler tools to tackle risk issues; and appreciate the interpretations of risk and its role in environmental policy formulation and decision making.

Assessment: Course work (40%) and written examination (60%)



**ENVM8013 Air and noise pollution control and management (3 credits)**

This advanced course focuses on various technical aspects related to air and noise pollution control and their management issues. The topics include micrometeorology; air dispersion modelling; advanced air pollution control (e.g. process modification, energy audit and emission trading); case studies on control of emissions from stationary and mobile source; concept of sound propagation; basic principles of noise control; noise impact assessment and technical mitigation measures for construction, industrial, road traffic, railway and aircraft noise.

Assessment: Course work (10%) and written examination (90%)

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**ENVM8014 Special topics in environmental management (3 credits)**

The contents of this course will vary from year to year, depending on the availability of teachers and topics, and will be announced before course selection each year. Hot topics in Hong Kong or overseas that are related to environmental management will be selected. Examples of such topics could include urban tree management; slope greening; nature conservation versus development in rural Hong Kong and China. With careful consideration of different needs of various stakeholders, various management options are reviewed and evaluated.

Assessment: Course work and participation and performance at in-class discussion (100%)

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**ENVM8015 Directed studies in environmental management (3 credits)**

This course provides an opportunity for students to study a topic of particular interest under the supervision of a specialist (i.e., a Faculty member) or undertake an internship under the supervision of an experienced Environmental Practitioner. The contents of this course will be agreed individually between the student and the supervisor, and may include research project, directed reading, written assignment, laboratory or field work, and/or other activities relevant to environmental management.

Assessment: Reading exercise and report; or mini project and report; or mini review depending on the agreement between student and supervisor (100%)

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**ENVM8016 Conservation and management of freshwater ecosystems (3 credits)**

Freshwater is an essential requirement of humans, plants and animals, but only a tiny fraction of the water on Earth (0.03%) is available for use. As water is used by humans in multiple ways and is subject to a variety of anthropogenic impacts, there is potential for conflict among different interest groups. Such conflicts will be exacerbated by ongoing changes in global climate that impact water availability. If global water use is to be sustainable, environmental requirements for water to maintain biodiversity as well as ecosystem goods and services need to be taken into consideration alongside human demands. This course offers an introduction to the problems associated with human use of water and current patterns of water resource management, and explains how the characteristics of natural systems constrain sustainable use of water. Emphasis will be placed on examples of river and lake management that can indicate the reasons for success and failure of sustainable water resource use, with reference to regional examples. Students taking this course will gain an appreciation of the trade-offs inherent in water resource management, and the practices that can be adopted to conserve freshwater biodiversity in the complex context of maintaining human livelihoods.

Assessment: Written examination (100%)

**ENVM8017 Conservation and management of marine resources (3 credits)**

The marine environment has been an important source of its fortunes but today suffers from a range of perturbations, from pollution and habitat destruction, to communities loss and over-exploitation. This course primarily deals with pressing issues of marine resource conservation and management in Hong Kong. An overview of the current global situation of marine resources will be presented with an emphasis on the local situation. The past and present exploitation of marine resources and human impacts on the marine ecosystem are addressed with a view to identifying problems and providing practical solutions. Real cases are taken from Hong Kong as example to illustrate the crisis and its management options. Various management options are reviewed and evaluated with careful consideration of different needs of various stakeholders. The key topics of this course include marine pollution, habitat destruction, biological invasion, biodiversity conservation, fisheries, mariculture and harmful algal bloom.

Assessment: Course work (50%) and written examination (50%)

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**ENVM8018 Urban planning and environmental management (3 credits)**

This course lays down the challenges of achieving environmental sustainability in cities. It highlights the important role of urban planning and its related tools and instruments in managing development pressure, mitigating environmental impacts and conserving the ecological sensitive areas. The course provides an introduction to the fundamental aspects of planning and focuses on essential concepts and methods in environmental planning and conservation policy where their application to resolving urban conflicts is discussed. These include land-use planning, planning law and enforcement, public-private partnership, management agreements, conservation trusts, etc. The course debates on the effectiveness of various planning approaches through real-life case studies in the local, regional and international contexts.

Assessment: Course work (100%) (40% group project; 60% term paper)

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**ENVM8019 Corporate social responsibility (3 credits)**

Corporate social responsibility (CSR) focuses on the business sector's reaction and contribution to achieving sustainability. In recent years, the scope has extended from contributing to the social welfare of the society to improving the environmental performance for cost reduction, brand building and environmental conservation. The course reviews business relationships with the environment and biodiversity expressed in the concepts of sustainable production and consumption. It examines the commonly used tools in CSR, including environmental management systems, life-cycle analysis and clean production. The course also emphasizes the importance of learning about current practice in the business sector, and thus guests from corporate sector will be invited to share their experience with students.

Assessment: Course work (100%) (40% group project; 60% term paper)

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## **Appendix A: Recommendations for specialization in various streams by selecting relevant elective courses**

If candidates would like to follow a specialized scope of study in the MSc Programme in Environmental Management, they may select one of the four recommended streams as shown below:

### **I. Biodiversity Conservation and Management**

ENVM7003 Ecology (3 credits)\*  
 ENVM8003 Conservation Biology and Management (3 credits)  
 ENVM8006 Environmental Impact Assessment (3 credits)\*  
 ENVM8016 Conservation and Management of Freshwater Ecosystem (3 credits)  
 ENVM8017 Conservation and Management of Marine Resources (3 credits)

### **II. Methods and Techniques in Environmental Management**

ENVM7012 Environmental Economics and Analysis (3 credits)\*  
 ENVM8006 Environmental Impact Assessment (3 credits)\*  
 ENVM8011 Environmental Auditing and Reporting (3 credits)  
 ENVM8012 Environmental Health and Risk Assessment (3 credits)  
 ENVM8018 Urban Planning and Environmental Management (3 credits)

### **III. Pollution Management and Control**

ENVM7014 Environmental Quality Management (6 credits)\*  
 ENVM8006 Environmental Impact Assessment (3 credits)\*  
 ENVM8012 Environmental Health and Risk Assessment (3 credits)  
 ENVM8013 Air and Noise Pollution Control and Management (3 credits)

### **IV. Thematic Approaches to Environmental Management**

ENVM8010 Earth Science and Environmental Management (3 credits)  
 ENVM8014 Special Topics in Environmental Management (3 credits)  
 ENVM8015 Directed Studies in Environmental Management (3 credits)  
 ENVM8018 Urban Planning and Environmental Management (3 credits)  
 ENVM8019 Corporate Social Responsibility (3 credits)

\*Core courses