

REGULATIONS FOR THE POSTGRADUATE DIPLOMA IN EARTH SCIENCES (PGDES)

For students admitted in 2017-2018 and thereafter

(See also General Regulations and Regulations for Taught Postgraduate Curricula)

The Postgraduate Diploma in Earth Sciences is a postgraduate diploma awarded for the satisfactory completion of a prescribed course of study in Earth Sciences.

Admission requirements

ES1

- (a) To be eligible for admission to the courses leading to the Postgraduate Diploma in Earth Sciences, a candidate
 - (i) shall comply with the General Regulations and the Regulations for Taught Postgraduate Curricula;
 - (ii) shall hold a Bachelor's degree with honours of this University; or another qualification of equivalent standard of this University or another University or comparable institution accepted for this purpose; and
 - (iii) shall satisfy the examiners in a qualifying examination if required.
- (b) 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 demonstrates adequate preparation for studies at this level and satisfies the examiners in a qualifying examination.

Qualifying examination

ES2

- (a) A qualifying examination may be set to test the candidate's academic ability to follow the courses of study prescribed. It shall consist of one or more written papers or equivalent.
- (b) 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.

Award of diploma

ES3

- To be eligible for the award of the Postgraduate Diploma in Earth Sciences a candidate
- (a) shall comply with the General Regulations and the Regulations for Taught Postgraduate Curricula; and
- (b) shall complete the curriculum and satisfy the examiners in accordance with these regulations and syllabuses.

Period of study

ES4

The curriculum of the PGDES shall normally extend over one academic year of full-time study or two academic years of part-time study. Candidates shall not be permitted to extend their studies beyond the maximum period of registration of two academic years of full-time study or three academic years of part-time study, unless otherwise permitted or required by the Board of the Faculty.

Completion of curriculum

- ES5** To complete the curriculum of the PGDES, a candidate
- shall satisfy the requirements prescribed in TPG 6 of the Regulations for Taught Postgraduate Curricula;
 - shall follow courses of instruction and complete satisfactorily all prescribed written, practical and field work; and
 - shall satisfy the examiners in all courses prescribed in the respective syllabuses.
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Assessment results

ES6 An assessment of the candidate's coursework during his/her studies, including completion of written assignments and participation in field work or laboratory work, as the case may be, is taken into account in determining the candidate's result in each course.

- ES7** A candidate who has failed to satisfy the examiners
- at his/her first attempt in courses totalling not more than half of the number of credits of courses 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;
 - 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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ES8 A candidate who is re-examined in any course shall not be eligible for the award of more than a pass grade in that paper.

ES9 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.

Discontinuation

ES10 A candidate who has failed to satisfy the examiners in more than half the number of credits of courses to be examined during any of the academic years, or in any course at a repeated attempt; may be recommended for discontinuation for studies.

Grading systems

ES11 Individual courses of the PGDES shall be graded according to one of the following grading systems as determined by the Board of Examiners:

- Letter grades, their standards and the grade points for assessment as follows:

Grade	Standard	Grade Point
A+	Excellent	4.3
A		4.0
A-		3.7
B+	Good	3.3
B		3.0
B-		2.7

C+	Satisfactory	2.3
C		2.0
C-		1.7
D+	Pass	1.3
D		1.0
F	Fail	0

or

(b) 'Pass' or 'Fail'

Courses which are graded according to (b) above will not be included in the calculation of the GPA.

Assessment results

ES12 On successful completion of the curriculum, candidates who have shown exceptional merit may be awarded a mark of distinction, and this mark shall be recorded in the candidate's degree diploma.

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

ES13

- (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 45 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.
- (c) The Postgraduate Diploma in Earth Sciences and the Master of Science in the field of Applied Geosciences curricula are an impermissible combination. Candidates who are awarded the Postgraduate Diploma in Earth Sciences shall not be admitted to the Master of Science in the field of Applied Geosciences curriculum.

**SYLLABUSES FOR THE
POSTGRADUATE DIPLOMA IN EARTH SCIENCES (PGDES)**
(for students admitted in 2017-18 and thereafter)

A. COURSE STRUCTURE

To be eligible for the award of the Postgraduate Diploma in Earth Sciences a student shall complete all core courses and elective courses totalling 45 credits.

Core Courses (36 credits)	
GEOS7010	Geology principles and practice (6 credits)
GEOS7021	Geological fieldwork I (3 credits)
GEOS7027	Earth systems (6 credits)
GEOS7033	Geology of Hong Kong (6 credits)
GEOS7035	Intermediate Geology (6 credits)
GEOS8002	Professional practice in applied geosciences (3 credits)
GEOS8207	Global Climate (6 credits)
Elective Courses (9 credits)	
Evening courses (prerequisites and Grade bars may apply)	
GEOS8213	Global tectonics (6 credits)
ENVM7013	Sustainability, society and environmental management (3 credits)
ENVM7016	Environmental policy (3 credits)
ENVM7017	Environmental law in Hong Kong (3 credits)
ENVM8006	Environmental impact assessment (3 credits)
ENVM8012	Environmental health and risk assessment (3 credits)
ENVM8016	Conservation and management of freshwater resources (3 credits)
Daytime courses (prerequisites and Grade bars may apply)	
EASC2402	Field methods (6 credits)
EASC2407	Mineralogy (6 credits)
EASC3402	Petrology (6 credits)
EASC3403	Sedimentary environments (6 credits)
EASC3404	Structural geology (6 credits)
EASC3409	Igneous and metamorphic petrogenesis (6 credits)

Certain courses not included in the list above may be accepted as alternative electives at the discretion of the programme director. Students may take up to 6 credits of the listed EASC courses. Timetabling of courses may limit the availability of some elective courses. Certain courses have prerequisites and Grade bars. Teaching will take place mainly on weekday evenings but students are expected to undertake field and laboratory work during weekends. Full-time students attend the same evening classes as part-time students, most of whom have day-time employment. Concentrated teaching may be held at weekends.

B. COURSE CONTENTS

GEOS7010 Geology Principles and Practice (6 credits)

A review of fundamental concepts in geoscience, including earth and geological processes, surface processes, minerals and rocks, geological structures and geological map interpretation. The course also introduces the rocks and geological formations of Hong Kong.

Assessment: Course work (30%) and written examination (70%)

GEOS7021 Geological Fieldwork I (3 credits)

Self-directed study in the field over a 6-month period leading to the production of maps, field sheets, narrative accounts and other geological records for assessment. The fieldwork may be undertaken in

association with the excursions of the Department of Earth Sciences, the local learned societies or independently. (Marked on a pass/fail basis.)

Assessment: Course work (100%)

GEOS7027 Earth Systems (6 credits)

To provide an appreciation of the Earth System and the interfaces between its component parts, in order that students might appreciate how informed decisions can be made on the future exploitation and preservation of the planet. To provide a forum for discussion of global issues facing earth scientists.

Assessment: Course work (70%) and written examination (30%)

GEOS7033 Geology of Hong Kong (6 credits)

To provide an understanding of the principal components of the geology of Hong Kong and its regional setting, including the distribution and interpretation of the main rock types, age relationships; and superficial deposits; and the locations and orientations of the main regional and local structures.

Pre-requisite course: Pass in GEOS7010

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

GEOS7035 Intermediate Geology (6 credits)

The course gives an introduction to mineralogy, petrology and structural geology for non-geologists who have passed the prerequisite courses GEOS7010 and GEOS7021 to prepare them to take course GEOS7033 Geology of Hong Kong.

Pre-requisite courses: Pass in GEOS7010 and GEOS7021

Assessment: Course work (30%) and written examination (70%)

GEOS8002 Professional practice in applied geosciences (3 credits)

An examination of issues in professional practice in applied geoscience, including regulation of practice, professional ethics and law, contracts and risk management.

Assessment: Course work (30%) and written examination (70%)

GEOS8207 Global Climate (6 credits)

Processes in the oceans and atmosphere. Heating the system, development of ocean currents, winds, clouds, and resources. Effects of coupling, climate change, pollution. Atmospheric structure and composition, global ocean and atmospheric circulation patterns, El Niño-La Niña and case studies of ocean-atmosphere feedbacks, formation of winds, storms and ocean currents.

Assessment: Course work (30%) and written examination (70%)

GEOS8213 Global Tectonics (6 credits)

This course is intended to provide students with an understanding of the driving forces of Earth processes and the global outcome of these processes through an examination of direct and indirect observations, the evolution of hypotheses, and critical thinking.

Assessment: Course work (70%) and written examination (30%)

ENVM7013 Sustainability, society and environmental management (3 credits)

This course begins with the intellectual debates on the definitions, conceptions and different interpretations of the notion of sustainable development. The course then moves on to exploring ways of analysing and implementing sustainable development at the macro- and the micro- levels, ranging from governance and institutional arrangements to projects and practice. A number of tools for sustainable development are also explained including community engagement and sustainability assessment. Each year there will be a special focus on a thematic area such as low carbon living, sustainable neighbourhood, farming revitalisation and environmental education etc to illustrate the challenges of implementing both local and global sustainability.

Assessment: Course work (100%)

ENVM7016 Environmental policy (3 credits)

This course focuses on processes of environmental policy making: the nature of policy making processes, how policy agendas emerge and evolve, environmental discourse and policy making, institutional structures for environmental policy making, collective action problems, policy integration, policy diffusion and convergence, policy failure 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: Course work (100%)

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%)

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 (50%) and written examination (50%)

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%)

ENVM8016 Conservation and management of freshwater resources (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. Technological and management methods in enhancing water supplies will also be introduced. 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%)

EASC2402 Field methods (6 credits)

This course is hands-on field and class-based that introduces basic geological field and mapping techniques and the use of geological equipment and air photographs, an overview of the geology of Hong Kong.

Assessment: Assignments (10%), Report (70%) and Test (20%)

EASC2407 Mineralogy (6 credits)

This course is to provide essential knowledge of mineralogy, to familiarize students with common minerals that are basis for study of petrography of igneous, sedimentary and metamorphic rocks.

Assessment: Assignments (50%) and examination (50%)

EASC3402 Petrology (6 credits)

To give students an understanding of the features in sedimentary, igneous and metamorphic rocks, as well as the ability to identify major rock types and their textures and structures in both hand specimens

and under microscope.

Assessment: Assignments (50%) and examination (50%)

EASC3403 Sedimentary environments (6 credits)

This course discusses the origin, diagenesis, classification and economic importance of sedimentary rocks. Students will learn features and processes of sedimentary geology, paleontology and depositional processes.

Assessment: Examination (40%), Laboratory reports (20%), Presentation (10%) and Test (30%)

EASC3404 Structural geology (6 credits)

The course covers the mechanical properties of rocks and how and why rocks deform, geological maps and their use in interpreting structure.

Assessment: Assignments (50%) and examination (50%)

EASC3409 Igneous and metamorphic petrogenesis (6 credits)

This course is to provide a comprehensive coverage of the principles and techniques used in the study of petrogenesis of igneous and metamorphic rocks and their cause-and-effect relationships with tectonic settings and crustal evolution.

Assessment: Assignments (50%) and examination (50%)

C. PROGRAMME LEARNING OUTCOMES

1. Can use the terminology and concepts required for a basic understanding of the Earth Sciences.
 2. Can recognise the common rocks and minerals; can explain the rock cycle; can describe the main geological structures and processes; can use plate tectonic theory to explain geological phenomena.
 3. Has a sufficient understanding of geology to be able to teach the earth science components of the Hong Kong Diploma of Secondary Education curriculum (for teachers).
 4. Has a sufficient understanding of the geology of Hong Kong to interpret the 1:20 000 Geological Maps and explain observations at key field localities in the context of the regional geological history.
 5. Effective in written communication.
 6. Knows the standards of conduct required by law, by the student's professional qualifying body and by the university and why it is important to uphold a high standard of professional ethics.
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D. ACADEMIC ASSESSMENT

The following Grade Descriptors will be used in academic assessment:

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| Grade A | Is very good or excellent in using basic principles and essential skills in practice. Requires very limited supervision. Is creative, work is virtually error free and writes well. Can apply learning in unfamiliar situations. |
| Grade B | Is good in using the basic principles and the essential skills in practice but requires some |

supervision.

Grade C Is able to state most of the basic principles but is poor at using them, and the essential skills, in practice without direction.

Grade D Marginal Pass and any Pass in a supplementary examination.

Fail Does not know most of the basic principles and has not mastered the essential skills used in practice.
