REGULATIONS FOR THE
POSTGRADUATE DIPLOMA IN EARTH SCIENCES
(PGDES)

For students admitted in 2016-2017 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

(a) shall satisfy the requirements prescribed in TPG 6 of the Regulations for Taught Postgraduate Curricula;

(b) shall follow courses of instruction and complete satisfactorily all prescribed written, practical and field work; and

(c) shall satisfy the examiners in all courses prescribed in the respective syllabuses.

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

(a) 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;

(b) 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.

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:

(a) 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 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.

SYLLABUSES FOR THE DEGREE OF
POSTGRADUATE DIPLOMA IN EARTH SCIENCES
(PGDES)

(For students admitted in 2016-17)

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 30 credits.

Core Courses (21 credits)

GEOS7010 Geology principles and practice (6 credits)
GEOS7011 Advanced geology of Hong Kong (6 credits) ***OR***
GEOS7033 Geology of Hong Kong (6 credits)
GEOS7021 Geological fieldwork I (3 credits)
GEOS7035 Intermediate Geology (6 credits)

Elective Courses (9 credits)

Evening courses (prerequisites and Grade bars apply)
GEOS7004 Earth Science and Environmental Management (3 credits)
GEOS7027 Earth systems (6 credits)
GEOS8201 Applied Geochemistry (3 credits)
GEOS8207 Global Climate (6 credits)
GEOS8213 Global tectonics (6 credits)

Daytime courses (prerequisites and Grade bars apply)
GEOS7034 Regional Geology (6 credits)
GEOS8214 Structural Geology (6 credits)
GEOS8215 Sedimentology (6 credits)
GEOS8218 Meteorology (6 credits)
GEOS8219 Igneous and Metamorphic Petrology (6 credits)
GEOS8220 Mineralogy and Geochemistry (6 credits)
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)
EASC4406 Earth dynamics and global tectonics (6 credits)
EASC4407 Regional geology (6 credits)
EASC4955 Integrated field studies (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 (Provisional)

GEOS7004 Earth Science and Environmental Management (3 credits)

The course examines major issues of earth science of relevance to environmental management. Case studies relevant to coastal cities will be presented. Topics include chemical composition of earth materials, geochemical surveys for pollution monitoring, geology and human health, environmental change in the Quaternary Period, fluvial and coastal processes and management, environmental impact of mining and dredging, geological aspects of land use planning, water resource management and waste disposal.

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

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%)

GEOS7011 Advanced Geology of Hong Kong (6 credits)

This advanced course examines specialist aspects of the rocks and geological formations and structures of Hong Kong and their significance in the context of geotechnical engineering, environmental management and resource development. Topics include volcanic and granitic rocks, sedimentary and metamorphic rocks, weathering processes, superficial deposits, geology and geological aspects of landslides.

Pre-requisite course: Pass in GEOS7010
Assessment: Course work (50%) and written examination (50%)

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%)

GEOS7034 Regional Geology (6 credits)

To examine the key events and phenomena associated with the tectonic evolution of East-SE-South Asia, including that of Hong Kong. Introduction; Tools; China assembly; China origins; Emeishan LIP, SW China; Mesozoic South China; Geology of HK: igneous; HK seds; deep structure; upper-level structure; Philippine Sea Plate-Taiwan; Tibet: India-Asia collision SE Asia (Java orogen, Sumatra orogen, Banda Sea, Molucca Sea, South China Sea); Formation and evolution of Archean crust in the Eastern Block of the North China Craton: Plate tectonics vs. mantle plumes; Paleoproterozoic amalgamation of the North China Craton; Late Mesoproterozoic to early Neoproterozoic igneous events in the Yangtze Block: review of recently proposed models; Supercontinents from Columbia, through Rodinia, to Pangea: records in Chinese blocks.

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%)

GEOS8201 Applied Geochemistry (3 credits)

Principles and hands-on experience of analytical techniques including nebulization ICP-MS, XRF and XRD; Basics of Environmental Geochemistry, Chemical Weathering, Clay Mineralogy, and Aqueous Geochemistry; Applications of Geochemistry to environmental problems; Case Studies, with an emphasis on Hong Kong

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%)

GEOS8214 Structural Geology (6 credits)

The course covers the mechanical properties of rocks and how they are deformed, geological maps and their use in interpreting structure. Topics which may be covered include: Stress-strain relationships; use of Mohr Circles, earthquakes, big faults, fault rocks; thrusts; folds; textures, kinematic indicators and strain analysis; Shear zones; extensional faulting; basins; strike-slip faults; joints; deformation mechanisms. Practical classes will look at the use of stereonets; theoretical maps, real maps and an introduction to stereograms. These sessions will be both quantitative and descriptive.

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

GEOS8215 Sedimentology (6 credits)

The course deals with sedimentary rocks and processes. Contents include some of the following: Physical properties of sediments; processes of weathering, transportation and deposition; sedimentary rocks, carbonates, siliclastic sediments, and sandstone petrography; diagenesis; sedimentary environments and facies; sedimentation and tectonics; geological record of environments through time.

Assessment: Examination (40%), laboratory reports (20%), presentation (10%) and test (30%)

GEOS8218 Meteorology (6 credits)

The course is a survey of the earth's atmospheric structure and its behaviour, instrumental observation, application of remote sensing to meteorological studies, weather elements and weather systems.

Assessment: Assignments (25%), examination (50%), project report (25%)

GEOS8219 Igneous and Metamorphic Petrology (6 credits)

The course provides a comprehensive treatment of the principles and techniques used in the study of igneous and metamorphic rocks and rock-forming processes. It covers petrogenesis, magmas and magmatic differentiation, igneous petrography, intrusive and extrusive rock suites, metamorphic processes & reactions and metamorphic facies and metamorphic petrography.

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

GEOS8220 Mineralogy and Geochemistry (6 credits)

The course provides students with an appreciation of mineralogical principles as a basis for understanding the petrography of igneous, sedimentary and metamorphic rocks. Its contents include the properties of minerals in hand specimen and thin section, the optical properties of minerals and the polarizing microscope and the characteristics of the major rock-forming minerals.

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

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%)

EASC4406 Earth dynamics and global tectonics (6 credits)

Review the concepts and processes that shape the configuration of the Earth, from core to crust. 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: Assignments (20%), essay (50%) and examination (30%)

EASC4407 Regional geology (6 credits)

This course is to examine the key events and phenomena associated with the tectonic evolution of East-SE-South Asia, including that of Hong Kong.

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

EASC4955 Integrated field studies (6 credits)

The aims of a geological field camp are to provide 1) essential training and experience in geological mapping techniques and 2) opportunities to study at first-hand areas of particular geological interest and importance of an overseas locality. The course requires integration of geological knowledge from multiple geological disciplines.

Assessment: Report (90%) and test (10%)

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 the university.

D. ACADEMIC ASSESSMENT

The following Grade Descriptors will be used in academic assessment:

Grade A	Is good, 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 generally competent 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.
