REGULATIONS FOR THE DEGREES OF BACHELOR OF SCIENCE AND MASTER OF RESEARCH (BSc&MRes)

For students admitted in the academic year 2021-22 and thereafter.

(See also General Regulations and Regulations for First Degree Curricula, and Regulations for Taught Postgraduate Curricula)

Definitions

BM1[1] For the purpose of these regulations and the syllabuses for the BSc and MRes degrees, unless the context otherwise requires:

"Science course" means any course offered by the Faculty of Science, and the BIOC prefix courses offered by the School of Biomedical Sciences.

"Course" means a course of study, with a credit value expressed as a number of credit-units as specified in the syllabuses for a degree curriculum.

"Syllabus" means courses taught by departments, centres, and schools, offered under a degree curriculum.

"Credits" or "credit-units" means the value assigned to each course to indicate its study load relative to the total study load under a degree curriculum. The study load refers to the hours of student learning activities and experiences, both within and outside the classroom, and includes contact hours and time spent on assessment tasks and examinations. Candidates who satisfactorily complete courses with a credit value earn the credits assigned to these courses.

Admission to the BSc and MRes degrees

BM2 To be eligible for admission to the BSc and MRes degrees, candidates shall:

(a) comply with the General Regulations;

(b) comply with the Regulations for First Degree Curricula and Regulations for Taught Postgraduate Curricula, and the latter with a waiver of Regulation TPG2(b); and

(c) satisfy all the requirements of the curriculum in accordance with these regulations and the syllabuses.

Period of study

BM3 The curriculum for the BSc and MRes degrees shall normally require eight semesters of full-time study, extending over not fewer than four academic years, and shall include any assessment to be held during and/or at the end of each semester. Candidates shall not in any case be permitted to extend their

[1] This regulation should be read in conjunction with UG1 of the Regulations for First Degree Curricula and TPG1 of the Regulations for Taught Postgraduate Curricula.

studies beyond the maximum period of registration of six academic years.

Selection of courses

BM4 Candidates shall select their courses in accordance with these regulations and the guidelines specified in the syllabuses before the beginning of each semester. Any change to the selection of courses shall be made only during the add/drop period of the semester in which the course begins, and such changes shall not be reflected in the transcript of the candidate. Requests for changes after the designated add/drop period of the semester shall not be considered.

Curriculum requirements and progression in curriculum

BM5 To complete the curriculum, candidates shall:

(a) comply with the General Regulations;

(b) pass not fewer than a total of 303 credits, consisting of not fewer than 240 credits for the BSc degree and 63 credits for the MRes degree, in the manner specified in these regulations and the syllabuses;

(c) for the completion of the BSc degree, candidates shall
  (i) satisfy the requirements prescribed in UG5 of the Regulations for First Degree Curricula[2], except that in the case of the Common Core Curriculum, only 24 credits shall be required, with one course from each Area of Inquiry; and
  (ii) take and pass not fewer than 240 credits, comprising 144 credits (or a higher credit requirement by the accredited bodies) of Science courses including all required courses in the intensive major programme of the BSc degree curriculum; and

(d) for the completion of the MRes degree, candidates shall
  (i) satisfy the requirements prescribed in TPG6 of the Regulations for Taught Postgraduate Curricula;
  (ii) take and pass not fewer than 63 credits, including 21 credits of Research postgraduate courses and 42 credits of research project as prescribed in the syllabus;
  (iii) satisfy the examiners in the courses by continuous assessments and/or by written examinations; and
  (iv) complete and present a satisfactory research report on an approved research project. The examiners may also prescribe an oral examination.

BM6

(a) Candidates shall normally be required to take not fewer than 60 credits nor more than 84 credits of undergraduate or undergraduate plus postgraduate courses in any academic year with a waiver of Regulation UG4(a) to (c) of the Regulations of First Degree Curricula, unless otherwise permitted or required by the Board of the Faculty. The maximum curriculum study load for the normative period of study and for the maximum period of registration of undergraduate courses are 288 credits and 432 credits respectively.

[2] Specific requirements are spelt out in the syllabuses.

(b) Candidates may, with the approval of the Board of the Faculty, transfer credits to the BSc degree for courses completed at other institutions at any time during their candidature. The number of transferred credits will be recorded on the transcript of the candidate, but the results of courses completed at other institutions shall not be included in the calculation of the GPA. The number of credits to be transferred shall not exceed half of the total credits normally required under the BSc degree of the candidates during their candidature at the University.

(c) Candidates have to achieve a CGPA of 3.6 or above at the end of Year 2 to remain enrolled in the BSc and MRes degrees, or else they have to switch to the 6901 BSc programme, and should from the next semester on refer to and comply with the relevant Regulations for the Degree of Bachelor of Science.

(d) Candidates shall be recommended for discontinuation of their BSc and MRes studies if they have:

(i) failed to complete successfully 36 or more credits of their BSc studies in two consecutive semesters (not including the summer semester), except where they are not required to take such a number of credits in the two given semesters, or
(ii) failed to achieve an average Semester GPA of 1.0 or higher for two consecutive semesters (not including the summer semester), or
(iii) exceeded the maximum period of registration specified in BM3, unless otherwise permitted by the Board of the Faculty.

(e) Candidates shall be recommended for discontinuation of their MRes studies only if they have fulfilled the requirements in BM5(c) for the completion of the BSc degree, but failed to fulfil the requirements in BM5(d) for the completion of the MRes degree within the prescribed maximum period of registration.

Advanced standing

BM7 Advanced standing for the BSc degree may be granted to candidates in recognition of studies completed successfully before admission to the University in accordance with UG2 of the Regulations for First Degree Curricula. Credits granted for advanced standing will be recorded on the transcript of the candidate but shall not be included in the calculation of the GPA.

Assessment

BM8 For the courses that candidates take for the BSc degree:

(a) Candidates shall be assessed for each of the courses for which they have registered, and assessment may be conducted in any combination of continuous assessment of coursework, written examinations and/or any other assessable activities. Only passed courses will earn credits.

(b) Candidates who are unable, because of illness, to be present at the written examination of any course may apply for permission to present themselves at a supplementary examination of the same course to be held before the beginning of the First Semester of the following academic year. Any such application shall be made on the form prescribed within seven calendar days of the first day of the candidate's absence from any examination. Any supplementary examination shall be part of that academic year's examinations, and the provisions made in the regulations for failure at the first attempt shall apply accordingly.

(c) Candidates shall not be permitted to repeat a course for which they have received a D grade or above for the purpose of upgrading.

(d) Candidates are required to make up for failed courses in the following manner: repeating the failed course by undergoing instruction and satisfying the assessment, or for elective courses, taking another course in lieu and satisfying the assessment requirements.

(e) There shall be no appeal against the results of examinations and all other forms of assessment.

BM9 For the courses and research project that candidates take for the MRes degree:

(a) 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.

(b) Candidates who have failed to satisfy the examiners
  (i) at the first attempt in any course in the examination held during any of the academic years of study may be permitted to present themselves for re-examination in the course or courses at a specified subsequent examination, with or without repeating any part of the curriculum;
  (ii) at the first submission of project report may be permitted to submit a new or revised project report within a specified period;
  (iii) in any prescribed fieldwork or practical work may be permitted to present themselves for re-examination in fieldwork or practical work within a specified period.

(c) Failure to take the examination as scheduled, normally results in automatic course failure. Candidates who are 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 seven calendar days of the examination.

Award of the BSc and MRes Degrees

BM10

(a) To be eligible for the award of the BSc and MRes degrees, candidates shall have:

  (i) comply with the General Regulations, the Regulations for First Degree Curricula and the Regulations for Taught Postgraduate Curricula; and

  (ii) successfully completed the curriculum and satisfy the examiners as stipulated under BM5.

(b) Candidates who have not satisfied the completion of the MRes degree in BM5(d) but have satisfied the requirements for the award of BSc degree may be allowed to exit with a BSc, subject to the approval of the Board of the Faculty.

Grading

BM11 Individual courses shall be graded according to one of the following grading systems as determined

by the Board of Examiners:

(a) Letter grading, 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) 'Distinction', 'Pass' or 'Fail', or

* (c) 'Pass' or Fail'.

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

***** Only applies to courses that candidates take for the MRes degree, and certain undergraduate courses with special permission given by Senate.

Honours classification of BSc Degree

BM12

(a) Honours classifications shall be awarded in five divisions: First Class Honours, Second Class Honours Division One, Second Class Honours Division Two, Third Class Honours, and Pass. The classification of honours shall be determined by the Board of Examiners for the Degrees of BSc & MRes in accordance with the following Graduation GPA scores, with all undergraduate courses taken (including failed courses, but not including courses approved by the Senate graded as 'Pass', 'Fail' or 'Distinction') carrying weightings which are proportionate to their credit values:

Class of honours	*GGPA range*
First Class Honours	3.60 – 4.30
Second Class Honours	(2.40 – 3.59)
Division One	3.00 – 3.59
Division Two	2.40 – 2.99
Third Class Honours	1.70 – 2.39
Pass	1.00 – 1.69

(b) Honours classification may not be determined solely on the basis of a candidate's Graduation GPA and the Board of Examiners for the Degrees of BSc & MRes may, at its absolute discretion and with

justification, award a higher class of honours to a candidate deemed to have demonstrated meritorious academic achievement but whose Graduation GPA falls below the range stipulated in UG9(a) of the higher classification by not more than 0.1 Grade Point.

(c) A list of candidates who have successfully completed all degree requirements shall be posted on Faculty noticeboards.

Assessment results of MRes Degree

BM13 On successful completion of the MRes degree, candidates who have shown exceptional merit may be awarded a mark of distinction, and this mark shall be recorded in the candidates' degree diploma.

SYLLABUSES FOR THE DEGREES OF
BACHELOR OF SCIENCE AND MASTER OF RESEARCH
(BSc&MRes)

A. Curriculum Structure

Each student must complete at least 240 credits in their Bachelor of Science (BSc) degree and 63 credits in the Master of Research (MRes) degree, with a total 303 credits for these 2 degrees.

The BSc Degree (240 credits):

To complete the BSc degree curriculum, you have to pass at least 240 credits, equivalent to 40 6-credit courses, which comprises:

(i) UG5:

- 2 English courses and 1 Chinese course for university language requirements (18 credits)
- 4 common core courses, including one course from each Area of Inquiry (24 credits)
- any other non-credit bearing courses as required (0 credit)

(ii) Intensive Science major:

- 24 - 25 courses for the intensive Science major including 2 Science Foundation courses, Disciplinary courses and capstone course(s) (144 - 150 credits)
- A choice of 8 - 9 courses as elective courses, or to fulfill the requirements of a minor (36-48 credits)

The intensive science majors available include the followings:

- Biological Sciences (Intensive)
- Chemistry (Intensive)
- Ecology & Biodiversity (Intensive)
- Geology (Intensive)
- Mathematics (Intensive)
- Molecular Biology & Biotechnology (Intensive)
- Physics (Intensive)

The syllabuses of the intensive science majors can be found at
https://webapp.science.hku.hk/sr4/servlet/enquiry

The MRes Degree (63 credits):

The MRes of the programme consists of course work and research project. Each student must complete at least 63 credits, including one compulsory course on research ethics (3 credits), 18 credits of Faculty-offered Research Postgraduate courses, and 42 credits of a research project. The project report of the research project will be in the form of a literature review paper and an original research paper in the relevant field. The below shows the current course list of the MRes component which is updated on a regular basis under the current quality assurance mechanism:

Core Course

INRE6033 Research Ethics for Graduate Students (Faculty of Science) (3 credits)

Elective Courses (6 credits each)

School of Biological Sciences

Course Code	Course Title
BIOL6007	Biostatistics
BIOL6014	Guided Study in Molecular and Cell Biology
BIOL6015	Advanced Experimental Techniques in Molecular and Cell Biology
BIOL8017	Advanced Studies in Environmental Sciences
BIOL8018	'Omics' and Systems Biology
BIOL8021	Presentation Skills and Research Seminars in Cell and Molecular Biology
BIOL8022	Science Communication
BIOL8023	Topics in Ecology & Biodiversity

Department of Chemistry

Course Code	Course Title
CHEM6101	Chemistry Seminars
CHEM6102	Research Techniques in Chemistry
CHEM6103	Special Topics in Chemistry
CHEM6108*	Introduction to Macromolecules *(CUHK)*
CHEM6109	Computational Chemistry
CHEM6111	Integrated Organic Synthesis
CHEM6112	Advanced Physical Chemistry
CHEM6113	Medical Chemistry
CHEM6114	Advanced Organic Chemistry
CHEM6115	Advanced Inorganic Chemistry
CHEM6116	Symmetry, Group Theory and Applications
CHEM6117	Modern Chemical Instrumentation and Applications
CHEM6118	Frontiers in Modern Chemical Science

Department of Earth Sciences

Course Code	Course Title
EASC6001	Research Seminars and Presentation of Thesis Proposal
EASC6005	Advanced Regional Geology
EASC6006	Special Topics in Earth and Planetary Sciences
EASC6007	Mass Extinctions
EASC6009	Earth Systems Through Time
EASC6010	Nanogeoscience

Department of Mathematics

Course Code	Course Title
MATH6014	Topics in Advanced Numerical Analysis
MATH6015	Topics in Artificial Intelligence and Machine Learning
MATH6101	Intermediate Complex Analysis
MATH6219	Topics in Applied Functional Analysis

MATH6224	Topics in Advanced Probability Theory
MATH6501	Topics in Algebra
MATH6502	Topics in Applied Discrete Mathematics
MATH6503	Topics in Advanced Optimization
MATH6505	Real Analysis

Department of Physics

Course Code	Course Title
PHYS8352	Quantum Information
PHYS8552	Condensed Matter Physics
PHYS8701	Physics Experimental Techniques
PHYS8751	Device Physics
PHYS8852	Photonics and Metamaterials

Remarks: * Course offered by sister institutions under Joint Centre for Advanced Study (JCAS), subject to further confirmation

Capstone Project

INRE7999 Research Project (42 credits)

Course contents

For the BSc:

Course contents of the courses prescribed in the BSc curriculum can be found at https://webapp.science.hku.hk/sr4/servlet/enquiry

For the MRes:

INRE6033 Research Ethics for Graduate Students (Faculty of Science)
The aims of this course are to reinforce the importance that the University places on the preservation of the values and principles of research integrity in all research conducted at the university; and to provide opportunities for students to further examine and discuss responsible conduct of research in their own disciplines, thereby enabling them to apply the principles and practices in their research field.

Students complete this course by fulfilling the course requirements in GRSC6101 Responsible Conduct of Research: https://gradsch.hku.hk/sites/default/files/content/4_current_students/coursework/general_coursework_requirements/GRSC6101.pdf, and GRSC6102 Stream-based Responsible Conduct of Research: https://gradsch.hku.hk/sites/default/files/content/4_current_students/coursework/general_coursework_requirements/GRSC6102.pdf in the same semester.

Assessment: Course work (100%)

BIOL6007 Biostatistics
This course aims to is to introduce students to the core ideas and concepts of statistical analysis with special attention to the modeling approaches used in biological sciences. The course will give students the skills and knowledge to understand how to apply these concepts using the R statistical programming language for data analysis. Although the course covers some basic concepts (experimental design, distributions, hypothesis testing), the main emphasis of the course is on model building and selection, linear models (regression and analysis of variance), basic random effects and mixed effects models.
Assessment: Assignments (40%) and Test (60%)

BIOL6014 Guided Study in Molecular and Cell Biology
This course aims at providing the student a guided approach to his/her chosen area of research study in endocrinology or microbiology. The guided study is coordinated by the student's research supervisor. Students are required to consult their supervisors and select topics that are related to their research project(s).
Assessment: Written assignments (50-70%) and continuous assessment (30-50%)

BIOL6015 Advanced Experimental Techniques in Molecular and Cell Biology
This course focuses on advanced techniques in experimental animal and microbial sciences to assist the student's research studies. The learning is coordinated and taught by the student's research supervisor. Students are required to consult their supervisors and select topics related to

their thesis studies from and not limited to the following: Advances in Growth Hormone Research, Signal Transduction within Animal Cells, Cell Culture and Biosensing Techniques and Design, Cytochemical and Cytometry Techniques, Gene Cloning and Related Techniques, Laboratory Animal Handling and Surgical Techniques, Protein and Peptide Analysis and Synthesis, Transgenic Biotechnology in Animals, Advanced Immunoassays and Immunotechniques, Clinical Laboratory Techniques.
Assessment: Written assignments (50-70%) and continuous assessment of laboratory performance (30-50%)

BIOL8017 Advanced Studies in Environmental Sciences
This course aims to provide student centered learning opportunities which will be designed for each individual student. Students will be required to take parts of existing advanced courses from the BSc curriculum (Environmental Science major) which are considered necessary for their particular needs and which they have not previously taken.
Assessment: Examination (70-80%) and continuous assessment (20-30%) depending on the studies selected

BIOL8018 'Omics' and Systems Biology
Recent progress in high-throughput omics technology has revolutionized the biological research. Genome-wide profiling of various biomolecules simultaneously by omics technology generates huge amounts of data, providing the potential to obtain a global and holistic view of the system. This course aims to introduce the technologies of Omics and Systems Biology, and overview of various applications of omics technology.

Synthetic biology is set to be the heart of future economy, promising to create new drugs, industrial materials and energy sources similar to chemical synthesis. The significance of this field has been promoted by the worldwide synthetic biology competition organized by MIT, i.e., iGEM competition. In this course, we will introduce some innovative ideas in synthetic biology and practice the skills needed for iGEM competition.
Assessment: Examination (50%) and assignment (50%)

BIOL8021 Presentation Skills and Research Seminars in Cell and Molecular Biology
This course aims to equip students with the skills needed to critique, construct and deliver scientific presentations effectively. Students are encouraged to think critically about the important elements of a good scientific presentation. The course will not only coach the students through the delivery of their own seminar, but also involving students in the preparation, discussion and analysis of seminars delivered by others.
Assessment: Course work (100%)

BIOL8022 Science Communication
This course aims to train the Ecology & Biodiversity research postgraduate to use a modern toolkit to develop effective communication of science while exploring other transferable skills related to professional development in the sciences.
Assessment: Course work (100%)

BIOL8023 Topics in Ecology & Biodiversity
This course aims to elevate RPg conceptual understanding of classic ecological concepts through the reading and discussion of classic papers in ecology and evolution.

Assessment: Course work (100%). Students will be expected to lead and participate in discussions.

CHEM6101 Chemistry Seminars
This course aims to provide students with the essential communication skills to give scientific presentation in both written and oral formats. Students taking this course will also have the chance to expose to recent development in frontier research in different areas of chemistry.
Assessment: Course work (100%)

CHEM6102 Research Techniques in Chemistry
This course aims to provide the principles and practice of some important and widely used research techniques in chemistry. Topics selected on the advice of the supervisor from: nuclear magnetic resonance spectroscopy and electron spin resonance spectroscopy, x-ray diffraction, mass spectrometry, material characterization, molecular modeling techniques, vibrational spectroscopy, laser spectroscopy, separation techniques, combinatorial chemistry.
Assessment: One 3-hour written examination (100%)

CHEM6103 Special Topics in Chemistry
This course aims to provide more advanced treatment in topics in chemistry. A research topic selected on the advice of the supervisor from: selected advanced topics of current interest in analytical chemistry, inorganic chemistry, organometallic chemistry, organic chemistry, physical chemistry and theoretical chemistry, etc.
Assessment: A written report of no less than 2,500 words (100%) to be submitted at the end of the course.

CHEM6108 Introduction to Macromolecules *(CUHK)*
This is a postgraduate course offered by the Joint Centre for Advanced Study. Lectures will be delivered by faculty members from CUHK, HKUST, and HKU. Both introduction to macromolecular science and some frontier topics will be covered. The lectures will be held at the campus of these three institutions. Details will be announced at the beginning of the class.
Assessment: One 3-hour written examination (100%)

CHEM6109 Computational Chemistry
This course covers common topics in computational chemistry including molecular quantum chemistry and dynamics methods as well as the fundamental in machine learning. Topics include basic concepts, computational theories and practical problems in chemistry. It is offered to undergraduate and postgraduate students who are interested in advanced computational chemistry techniques.
Assessment: Assignments (50%); Examination (50%)

CHEM6111 Integrated Organic Synthesis
This course will present modern synthetic methods and synthetic planning. The course is organized into units based on target drug molecules. In each unit, the chemical biology of these compounds are briefly presented and the syntheses of these molecules are introduced, accompanied by in-depth discussions of the reactions involved with emphasis on their mechanisms, selectivity, stereochemistry, scope and limitations. Concept of synthetic design including retrosynthetic analysis, stereoselectivity and enantioselective control elements will be emphasized. A laboratory section provides training in the practical skills of synthesis.

Assessment: Assignments (10%); Examination (50%); Laboratory reports (25%); Test (15%)

CHEM6112 Advanced Physical Chemistry
This course covers advanced topics in physical chemistry. It is offered for students majoring in physical chemistry and for students who are interested in postgraduate studies. The course contents & topics include time-resolved spectroscopy methods, excited states and reactive intermediates, photophysics and photochemical processes, chemical reaction mechanisms, advanced quantum mechanical methods, reaction pathways and surface crossings.
Assessment: Assignments (50%); Examination (50%)

CHEM6113 Medical Chemistry
This course covers the chemical principles of drug design and drug action and uses as an introduction to research in areas of bioorganic chemistry, bioinorganic chemistry, medicinal chemistry, pharmaceutical chemistry, and biotechnology. The course contents & topics include Drug discovery, design, and development: lead discovery, pharmacophore, structure-activity relationships (SAR), computer-aided drug design, combinatorial chemistry and high-throughput drug screening, Drug-receptor interactions, Proteins (and enzymes) and nucleic acids as drug targets, Metals in medicine, DNA-Drug interactions, Drug metabolism and prodrugs and drug delivery.
Assessment: Assignments (30%); Examination (50%); Test (20%)

CHEM6114 Advanced Organic Chemistry
This course aims to provide students with knowledge in organic chemistry reaction mechanism and organic compound structure determination. The course covers chemical bonding, advanced stereochemistry, conformational analysis, techniques for investigating reaction mechanisms, reactive intermediates, rearrangement reactions, and pericyclic reactions.
Assessment: Assignments (25%); Examination (50%); Test (25%)

CHEM6115 Advanced Inorganic Chemistry
This course is to give further and more detailed treatment to topics in Inorganic Chemistry and new areas of interest. Problem based learning on selected advance topics will be introduced in the later part of the course. Selected advanced topics of current interest. Examples include metal-metal bonds and metalligand multiple bonds, inorganic and supramolecular photochemistry, lanthanide chemistry, bio-inorganic and medicinal chemistry, and activation of small molecules by metal complexes.
Assessment: Assignments (25%); Examination (50%); Test (25%)

CHEM6116 Symmetry, Group Theory and Applications
This course aims to introduce the concepts of symmetry and group theory and to apply them in solving chemical problems. This course also provides an introductory treatment of bonding theories, inorganic electronic and vibrational spectroscopy. The course contents & topics includes Symmetry elements and symmetry operations; symmetry point groups; reducible and irreducible representations; character tables; direct products; symmetry-adapted linear combinations; projection operators; hybrid orbitals; molecular orbital theory for organic, inorganic and organometallic systems; selected applications in electronic and vibrational spectroscopy.
Assessment: Assignments (25%); Examination (50%); Test (25%)

CHEM6117 Modern Chemical Instrumentation and Applications

This course aim of the course is to provide an understanding of modern instrumentation, covering both fundamental principles and practical aspects of instrument design. The course will be of particular benefit to those pursuing a higher research degree or a career in technical sales/service.
Assessment: Assignments (10%); Examination (50%); Laboratory reports (25%); Test (15%)

CHEM6118 Frontiers in Modern Chemical Science
This course aims to introduce students to the newest concepts and technological breakthroughs in chemical sciences. Throughout the course, students will be introduced to how the interplay among molecules, materials, and interfaces leads to unprecedented functionalities that contribute to innovations in biology and medicine, smart materials, and sustainable energy schemes.
Assessment: Assignments (30%); Essay (35%); Presentation (35%)

EASC6001 Research Seminars and Presentation of Thesis Proposal
This course enables students to present their research proposals and receive a broad and timely suggestions and critiques. Students are required to present their thesis proposals, and should attend the weekly seminar series held in the department. Students are required to enroll for this course of their first year of their degree programs and orally present the thesis proposal (20-30 minute talk) before submitting their biannual progress reports.
Assessment: Class participation in weekly seminars (50%) and presentation (50%); to be assessed by departmental staff members

EASC6005 Advanced Regional Geology
This course aims to provide an overview of the regional geology, including current major problem in regional geology (e.g., climate-erosion-tectonics interactions) and how multi-disciplinary approaches are used to solve regional geological questions (e.g., integration of thermochronology and tectonic reconstruction). Additional emphasis is placed on east Asian tectonics, as this our home region and a focal site of much regional geological discovery over the past ~ 40 years. A major project, each of which can be tailored to correspond with the research interests of the postgraduate student, will be the dominant graded element.
Assessment: Continuous assessment (100%)

EASC6006 Special Topics in Earth and Planetary Sciences
This course aims to provide in depth knowledge of selected special topics in earth and planetary sciences, including engineering and environmental geology, hydrogeology, engineering geophysics, quaternary geology, astrobiology and planetary sciences. Directed studies in a focused field of research recommended by the research group/supervisor, and writing of review reports and critiques.
Assessment: Continuous assessment (100%)

EASC6007 Mass Extinctions
This course aims to review five mass extinction events in earth history. The instructor will first explain the concepts of background extinction rate and major extinction events. Later students will learn the causes and effects for five mass extinction events. Additionally we will discuss if the 6th extinction event is coming.
Assessment: Continuous assessment (100%)

EASC6009 Earth Systems Through Time

Evaluate various integrative Earth systems in space and time. Course Contents & Topics: Biogeochemical and tectonic processes that influence Earth's surface environment. Each semester topics may cover: "Origin of the Continental Crust", "The Carbon Cycle", "Oxygenation of the Atmosphere", "Mountains and Climate", amongst others.
Assessment: Continuous assessment (100%)

EASC6010 Nanogeoscience
This course provides an overview of nanomaterial properties and nano-scale processes that take place in solids, fluids/droplets, vapors and across reacting interfaces with an emphasis on the Earth and environmental sciences.
Assessment: Continuous assessment (100%)

MATH6014 Topics in Advanced Numerical Analysis
This course delves into advanced topics in numerical analysis, providing students with a comprehensive understanding of key concepts and methods.
Assessment: Coursework (50%); Examination (50%)

MATH6015 Topics in Artificial Intelligence and Machine Learning
Selected topics in artificial intelligence that are of current interest will be discussed in this course.
Assessment: Coursework (50%); Examination (50%)

MATH6101 Intermediate Complex Analysis
The objective is to familiarize students with analytic, algebraic and geometric concepts and techniques in the study of Complex Analysis in a single variable beyond an introductory course on functions of a complex variable.
Assessment: Written midterm test and end-of-term assessment (100%)

MATH6219 Topics in Applied Functional Analysis
This is a graduate to advanced undergraduate university level course on applied functional analysis, which aims at introducing to students the basic knowledge of using functional analysis on various applied topics in mathematics. This course would lay a foundation for students in studying more advanced mathematical courses.
Assessment: Coursework (50%); Examination (50%)

MATH6224 Topics in Advanced Probability Theory
Depending on the instructor, this course focuses on selected topics in probability theory.
Assessment: Project reports (50%); Test (50%)

MATH6501 Topics in Algebra
To provide students specializing in mathematics with the opportunity to study some topics in algebra in greater depth.
Assessment: Assignments + Project (50%); Oral Presentation (50%)

MATH6502 Topics in Applied Discrete Mathematics
This is a follow-up of the course MATH3600. It introduces students to some powerful linear algebra and probabilistic methods that have been used with striking success in discrete

mathematics, and covers some of the most fundamental and beautiful results obtained by these methods.
Assessment: Coursework (50%); Examination (50%)

MATH6503 Topics in Advanced Optimization
To learn a selection of advanced and up-to-date topics in continuous optimization, including theory, numerical algorithms and applications.
Assessment: Assignment (10%); Essays (20%); Oral Presentation (20%); Research Project Report (30%); Written Midterm (20%)

MATH6505 Real Analysis
To introduce the basic ideas and techniques of measure theory and the Lebesgue integral.
Assessment: Coursework (50%); Examination (50%)

PHYS8352 Quantum Information
This course covers the theory of quantum information and computation and its applications in physics and computer science.
Assessment: Assignments (20%); Examination (50%); Test (30%)

PHYS8552 Condensed Matter Physics
This course introduces many-body physics in quantum matter. Systems consisting of many particles (bosons or fermions) display novel collective phenomena that individual particles do not have, for example, ferromagnetism and superfluidity. It aims to introduce students the general principles behind these phenomena, such as elementary excitations, spontaneous symmetry breaking, adiabatic theorems, emergent topological phases of matter, etc. Theoretical language useful in the interpretation of experiments, such as linear response theory and response functions, will be discussed. This course is intended for both experimentalists and theorists. While there are no official prerequisites, students who would like to take this course are assumed to have sufficient knowledge on quantum mechanics and statistical mechanics.
Assessment: Assignments (40%); Essay (60%)

PHYS8701 Physics Experimental Techniques
This course provides a detailed account of some common experimental techniques in physics research. It introduces the basic working principles, the operational knowhow, and the strength and limitations of the techniques.
Assessment: Attendance (20%); Presentation (40%); In class quizzes (40%)

PHYS8751 Device Physics
This course aims at presenting a comprehensive introductory account of the physics and operational principles of some selected and yet classic semiconductor devices, microelectronic and optoelectronic. The text is primarily designed for postgraduates but can be of interest to senior undergraduates in physics, electrical and electronic engineering and materials science. Students are assumed to have acquired some basic knowledge of quantum mechanics, statistical mechanics, and solid state physics, through a review of the physics and semiconductors will be given in the beginning of the course.
Assessment: Assignments (20%); Examination (50%); Test (30%)

PHYS8852 Photonics and Metamaterials

This course aims at providing the fundamental understanding of the interaction of light with structured media whose unit cells are much smaller than the wavelength of light, and the design and functionalities of various metamaterial-based photonic devices. The course text is primarily designed for senior undergraduate students and postgraduate students and requires some knowledge on electromagnetism and optics. On the other hand, it will also be of interest to graduate students since it includes some most recent results in the field of metamaterials and nanophotonics.
Assessment: Assignments (50%); Examination (50%)

INRE7999 Research Project

This course aims at providing students with an opportunity to pursue their own research interest under the supervision of a teacher. The period of the research project will last for the 1st semester, 2nd semester until the summer semester.
Assessment: Project report (80%); Oral examination (20%)