

The following module specifications reflect the most current planning for module delivery in the 2021/22 academic year. In planning for module delivery in 2021/22 the University will continue to respond to the UK government's projected road map, and also to any further relevant national developments and public health requirements relating to the coronavirus pandemic. The University will continue to develop our approach to delivery and assessment in 2021/22 and these specifications may be subject to change in the event of updating national guidance or public health requirements. The specifications will be updated as soon as practically possible to reflect changes as they arise.

GL1101 The Rock Cycle - Our Dynamic Earth

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Geology
Credits: 30

Student Workload (hours)

Synchronous Lectures	
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	112
Synchronous Other	26
Asynchronous Lectures/Presentations	36
Asynchronous Other	
Guided Independent Study	126
Total Module Hours	300

Period: Academic Year
Occurrence: E
Coordinator: Marc Reichow
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework: Multiple Choice Tests (2 per semester)	40				
002	Coursework Group Poster	15				
003	Independent Project Work	40				
004	Leicester Award - reflective portfolio	5				

Intended Learning Outcomes

By the end of this module successful students will be able to:

- Outline the formation of the solar system, origin of elements and evolution of our planet Earth over time
- Define and link the main processes responsible for the formation and transformation of the three principle rock types and understand the holistic relationship and interplay between Earth's various layers
- Discuss rocks and minerals in terms of physical and chemical principles. Describe and identify common igneous, metamorphic and sedimentary rocks in hand specimen and thin section, and produce illustrated, technical descriptions and interpretations
- Use simple mathematical equations to calculate physical conditions in the Earth, mineral properties and interpret igneous, metamorphic and sedimentary processes
- Work effectively as part of a small team and reflect on experience of developing transferable skills

Teaching and Learning Methods

Lectures, workshops and practical classes

Assessment Methods

Tests, project and poster

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

GL1102 Micro to Macro: from rock properties to plate tectonics

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	10
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	42
Synchronous Other	
Asynchronous Lectures/Presentations	10
Asynchronous Other	
Guided Independent Study	88
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Stewart Fishwick
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Practical	20				
002	Multiple Choice Questions	20				
003	Examination	60		1.5		

Intended Learning Outcomes

By the end of this module, students should be able to:

- Re-arrange and solve equations describing the physical properties of the Earth's Interior
- Plot and use graphs to determine the rate of change of physical properties
- Manipulate data using appropriate computer software
- Have knowledge of, and describe, theories, concepts and principles associated with plate tectonics and the structural features of the Earth's Interior
- Present the analysis of geophysical data within a report, using professionally produced diagrams and writing.
- Consider and discuss uncertainties relating to geophysical data and methods

Teaching and Learning Methods

Lectures, workshops and practical classes

Assessment Methods

Exam, MCQ, Practical

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

GL1103 Palaeobiology and the Stratigraphic Record: evolution and diversity through time

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	9
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	18
Synchronous Other	
Asynchronous Lectures/Presentations	9
Asynchronous Other	18
Guided Independent Study	96
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Tom Harvey
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Open-book Examination	50		2		
002	Coursework	50				

Intended Learning Outcomes

By the end of the module, students should be able to:

- Identify the major groups of fossil invertebrates, and recall their modes of life, geological age ranges, and characteristic palaeoenvironments [test, exam and coursework]
- Describe the scientific utility of fossils in stratigraphy and palaeobiology [test, exam]
- Apply the principles of biostratigraphy and palaeoenvironmental reconstruction to help interpret a rock succession [test, exam]
- Outline the geological history of the UK as recorded in the stratigraphic record [exam]

Teaching and Learning Methods

Lectures, practical classes, demonstrations and work sheets

Assessment Methods

Examination and Coursework

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

GL1104 Natural Resources and the Environment

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	10
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	37
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	97
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Eva Marquis
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Exam	60		1.5		
002	Group Practical	20				
003	Coursework	20				

Intended Learning Outcomes

On completion of this module, successful students should be able to:

- o Demonstrate a broad knowledge of natural resource types including metalliferous, energy, water and renewable resources.
- o Recall key definitions relating to natural resources and formulae of common ore minerals/hydrocarbons.
- o Illustrate formation processes of natural resources using diagrams.
- o Evaluate the economic, environmental and social sustainability of natural resource exploitation using case studies.
- o Integrate a range of geological data to determine sub-surface structures and potential resource distribution.
- o Demonstrate use of equations in determining common properties of natural resources.
- o Work in pairs or small groups to synthesis geological, social, economic and environmental information using appropriate computer software to produce a presentation.
- o Use computer software to geospatially analyse data to map geological, environmental and social data relating to natural resources.

Teaching and Learning Methods

Lectures, practical classes, small group work, independent research, guided independent study in preparation for lectures and discussions.

Assessment Methods

Exam, Group Practical, Formative

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

Software familiarisation exercises; independent reading

GL1105 Geological Maps and Structures

Academic Year: 2021/2
Module Level: Year 1
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	37
Synchronous Other	
Asynchronous Lectures/Presentations	7
Asynchronous Other	
Guided Independent Study	106
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Sarah Lee
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
002	Examination	100		1.5		

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Outline and understand basic stratigraphic relationships
- Define the major classes of geological structure and be able to recognise and classify these on geological maps
- Extrapolate 3D geology from a 2D map
- Construct geological cross-sections
- Define the geological history of a map
- Use computer software to design your own 3D geological block models
- Locate yourself on a map and understand how to use compass bearings and pascings in order to mark features on a base map

Teaching and Learning Methods

Workshops and field exercise

Assessment Methods

Exam, Practical, Formative (within practicals and fieldwork training)

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

GL2101 Earth and Ocean Systems

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	11
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	22
Synchronous Other	2
Asynchronous Lectures/Presentations	
Asynchronous Other	29
Guided Independent Study	86
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Tiffany Barry
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination	60		1.5		
002	Report from guided independent study	40				

Intended Learning Outcomes

On successful completion of the module, a typical student should be able to:

- Demonstrate knowledge and understanding of key aspects of chemical and physical interactions between the mantle, crust, sediment reservoir, seawater and atmosphere, and how these 'reservoirs' might have changed over geological time.
- Discuss trends in the evolution of the Earth's mantle and ocean, assessing the factors involved.
- Undertake simple calculations and work with (manipulate, analyse, synthesise, discuss) a range of geochemical data used as proxies for key Earth and ocean processes.
- Learn to justify arguments based on quantifiable data and value judgements.
- Work independently and in teams to analyse and present information on selected Earth System processes, within a report.

Teaching and Learning Methods

The module will combine guided, independent learning for formal information necessary to learn for the module with Q & A tutorials, and practical sessions to develop deeper understanding of concepts and independent questioning of data. A range of literature styles will be explored, along with writing practices and scientific writing skills. Practicals will provide a range of skills and learning opportunities to reinforce material in the module and elsewhere in the degree.

Assessment Methods

Examination, Report

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

GL2102 Structure and Tectonics

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	16
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	32
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	60
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Stewart Fishwick
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Exam	50		1.5		
002	Group Presentation	30				
003	Practicals	20				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Identify and describe, quantitatively, common geological structures
- Explain deformation processes that create major rock structures
- Discuss and quantify principles of stress and strain
- Plot and interpret structural datasets
- Discuss theories, paradigms, concepts, and principles concerned with tectonics
- Synthesise multidisciplinary datasets to build deformation histories

Teaching and Learning Methods

Interactive lecture-practical sessions will introduce concepts of stress and strain, quantitative description of tectonic structures, and methods of structural data plotting, reduction, and interpretation. Structural plotting and display will be combined with GIS techniques, to develop data visualization techniques.

Assessment Methods

Essay and practical based exam questions, practical assessment and group presentation

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

GL2103 Magmatic and Metamorphic Processes

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	24
Synchronous Other	2
Asynchronous Lectures/Presentations	16
Asynchronous Other	
Guided Independent Study	108
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Marc Reichow
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Exam	30		2		
002	Coursework	70				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Describe the formation of igneous and metamorphic rocks from a variety of tectonic settings
- Describe some processes that are responsible for generating the range of igneous and metamorphic rocks and their textures
- Describe and identify a range of minerals, igneous rocks and metamorphic rocks in hand specimen and thin section
- Draw and interpret rock assemblages, mineral compositions and phase relationships on binary and ternary diagrams
- Evaluate geochemical data pertaining to igneous systems

Teaching and Learning Methods

Workshops, including introductory lectures followed by practical classes

Assessment Methods

Examination and coursework

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

Background reading and research in preparation for workshops.

GL2105 Depositional Processes and Environments

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	34
Synchronous Other	
Asynchronous Lectures/Presentations	12
Asynchronous Other	
Guided Independent Study	104
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Catherine Russell
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Exam	60		2		
003	Group Practical	25				
004	Individual Project	15				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Describe a depositional environment, its component subenvironments, and the key depositional processes that operate in that environment
- Describe how an environment may evolve through time and the resulting sedimentary succession
- Interpret depositional environments by combining observations from sedimentary data including: mineralogy, textures & structures (in hand specimen, thin section and field images), graphic sedimentary logs, palaeoflow measurements & fossils
- Apply knowledge of processes and depositional environments and use stratigraphic techniques to interpret and correlate multiple sedimentary logs.

Teaching and Learning Methods

The approach is a mixture of lectures; short and long practical exercises; guided scheduled practical work; teamwork practicals; independent study

Assessment Methods

The assessment will be two of three essay questions and hopefully a practical element, though I can't confirm if that will be possible yet. Even if the practical element is not possible, the ILO's will still be able to be achieved.

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

Guided independent study will involve completion of activities provided throughout the course, as well as further reading and activities suggested by the instructor

GL2106 Introductory Mineral Deposits

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	18
Synchronous Small Group Teaching	12
Synchronous Practical Classes/ Workshops/Professional Placements	28
Synchronous Other	
Asynchronous Lectures/Presentations	8
Asynchronous Other	
Guided Independent Study	84
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Gawen Jenkin
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework Report	45				
002	Examination	40		2		
003	Coursework Practical Folder	10				
004	Coursework MCQ	5				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- List the chemical formulae of common ore minerals.
- Understand the principles and terminology of reflected light microscopy and use a reflected light microscope to accurately observe ore minerals and their textures
- Photograph, describe and identify the common ore minerals and their textural relationships in hand specimen, and reflected light and some in transmitted light. Explain the origin of the textures and paragenesis.
- Record information for revision and final report in an electronic practical folder.
- Describe the mineralogy, ore textures and geological and tectonic relationships of specified simple mineral deposits, and use these features to predict likely areas of mineralization.
- Explain societal uses of the ores produced and the economic and environmental implications of extraction.
- Discuss the competing ideas for the genesis of these deposits.
- Integrate information from the literature with their own observations to produce a report describing the geology and genesis of a chosen ore suite.
- Work effectively as a team of 3-4 students to: perform a literature search using electronic databases; use the internet effectively to find information and knowledge; collect, record and analyse data; analyse, synthesise and summarise information; use wordprocessing software to edit and collaboratively review drafts of a report; produce a final specifically formatted desk study report using a high standard of written English (including good use of grammar, spelling and sentence structure) as required for company reports; generate a video describing their results and interpretation; cite and reference information sources in a scientific report; manage time effectively and work to deadlines.

Teaching and Learning Methods

Integrated workshop sessions for learning about basic mineral deposit types.

An initial intensive lecture and practical course equips the students with the requisite skills to then undertake independent team project work.

Formative feedback during the module is given by a) advice in workshop sessions, b) peer and self-assessment of practical books of specific practicals, c) multiple-choice tests, d). marking of preliminary drafts of sections of report, e). consultation sessions.

Assessment Methods

Coursework MCQ, Exam, Formative test, Coursework Report, Coursework Practical Folder

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

GL2107 Major Events in the History of Life

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	12
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	23
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	115
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Sarah Gabbott
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Written exam	70		2		
002	Group project with individual report	20				
003	Group YouTube video	10				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- By the end of this module, typical students should be able to outline some of the major evolutionary innovations and macroecological events in the history of life on Earth and their impact on the biosphere.
- Students will be able to outline key evolutionary concepts describing the way in which life has evolved through the course of Earth history. Examples may include: adaptive radiation and biodiversification, functional morphology, mass extinction events, the importance of exceptionally-preserved deposits, human evolution and the Cambrian explosion.
- Students will be able to evaluate data that is used to indicate extinction events.
- Students will be able to communicate a scientific message to a non-scientific general audience through video
- Students will be able to assess life modes within a community of fossils

Teaching and Learning Methods

Lectures, practical classes, demonstrations and work sheets including directed extra reading.
 External teaching from Leicester Learning Institute on 'how to communicate through video'.

Assessment Methods

Written exam, Peer assessed you-tube video, Group project with individual report

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

GL2108 Principles of Geophysics

Academic Year: 2021/2
Module Level: Year 2
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	22
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	22
Synchronous Other	6
Asynchronous Lectures/Presentations	
Asynchronous Other	26
Guided Independent Study	74
Total Module Hours	150

Period: Academic Year
Occurrence: E
Coordinator: Richard England
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Final exam	40		1.5		
002	Assessed computer practical	20				
003	Coursework	40				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Understand the principles of different geophysical methods
- Use scientific computing software, e.g. Matlab
- Conduct a geophysical survey and check the quality of the data
- Relate geophysical measurements to structures within the Earth

Teaching and Learning Methods

Field demonstration of geophysical equipment and measurement procedures, lectures on geophysical methods, computer based practicals

Assessment Methods

Exam, practical, coursework, assessed practical

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

GL3102 Environmental Geoscience

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	20
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	16
Synchronous Other	2
Asynchronous Lectures/Presentations	10
Asynchronous Other	6
Guided Independent Study	86
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Toby White
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Examination (final)	80		1.5		
002	Practical Exercises	20				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Demonstrate the methods used to investigate or quantify the environment and environmental baselines, and discuss their limitations
- Describe the main modes of exposure of humans to potentially harmful environmental agents.
- Discuss the physico-chemical mechanisms of pollution (such as acid rain, ozone depletion)
- Critically assess the data for contamination in various environments.
- Outline and describe the range of environmental impacts that result from anthropogenic modification of the natural environment (e.g. by mining, urbanization or agriculture).
- Describe environmental mitigation techniques (such as waste disposal) and critically evaluate their necessity and usefulness.

Teaching and Learning Methods

Asynchronous narrated presentations, computer based practical exercises, synchronous Q&A sessions, and independent study.

Assessment Methods

Examination and Practical Exercises

Pre-Requisites
Co-Requisites
Excluded Combinations
Guided Independent Study: Indicative Activities

Independent reading, practical exercises and associated software exercises, exam technique session

GL3106 Planetary Science

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	9
Synchronous Small Group Teaching	0
Synchronous Practical Classes/ Workshops/Professional Placements	27
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	114
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Stewart Fishwick
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework - group preparation	40				
002	Coursework - report	60				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Discuss, describe & have knowledge of planetary exploration, structures, geochemical evolution, and thermodynamic processes.
- Describe how geophysical techniques are used to investigate planetary bodies within the solar system
- Use and manipulate equations in assessing & describing planets
- Construct, a professional written presentation that describes cutting edge scientific research in a form suitable for a lay audience
- Establish good small group working practices in order to provide background scientific information

Teaching and Learning Methods

Lectures and guided workshops, which may involve further discussions / seminars, or practical work

Assessment Methods

Coursework

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

Reading of scientific literature, practical / computational work on datasets, preparation of individual written reports

GL3107 Reflection Seismology

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	18
Synchronous Small Group Teaching	0
Synchronous Practical Classes/ Workshops/Professional Placements	27
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	105
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Richard England
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- List, describe use and assess the effectiveness of the techniques used in 2D seismic reflection data processing
- Design and small-scale seismic survey
- Demonstrate a knowledge of and apply the range of mathematical techniques available for analysis and filtering of digital time series data
- Process seismic data to produce a stacked section
- Prepare a technical report to a high standard (i.e. with correct spelling, grammar, sentence and paragraph construction and illustrated clearly).

Teaching and Learning Methods

Students follow a course of lectures and practical work covering the theory and practice of seismic reflection methods, averaging 2 x 1-hour lectures and 3 hours practical per week. During this they will be trained to process seismic data using a commercial standard seismic reflection data processing system (Landmark Promax or equivalent). Using this they will process example data. Private study time should be spent reinforcing the knowledge and skills being delivered. They will be advised on the production of a processing report and have an opportunity to examine an actual example of commercial practice.

Assessment Methods

Coursework

Pre-Requisites
Co-Requisites
Excluded Combinations
Guided Independent Study: Indicative Activities

Revision of mathematical techniques, processing seismic data, report writing.

GL3108 Geological Application of Microfossils

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	9
Synchronous Small Group Teaching	2
Synchronous Practical Classes/ Workshops/Professional Placements	8
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	4
Guided Independent Study	127
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Mark Williams
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	50				
002	Examination	50		1.5		

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Identify and describe a range of different microfossils
- Identify the biostratigraphy of a microfossil assemblage
- Determine the palaeoecology of a microfossil assemblage
- Critically appraise microfossil data used to establish past environment
- Write a concise, report on a bespoke microfossil dataset

Teaching and Learning Methods

Lectures, demonstrations, guided laboratory work, technical report writing

Assessment Methods

Examination
Coursework - report

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

Reading research papers, datasets and external websites as supplied via Blackboard. Guided microfossil analysis.

GL3109 Mineral Exploration and Evaluation

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	3
Synchronous Small Group Teaching	0
Synchronous Practical Classes/ Workshops/Professional Placements	31
Synchronous Other	
Asynchronous Lectures/Presentations	10
Asynchronous Other	3
Guided Independent Study	103
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: David Holwell
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework project - exploration	65				
002	Coursework project - evaluation	35				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Be aware of the major techniques used in mineral exploration
- Recognize and identify the presence and nature of orebodies on the basis of geochemical and geophysical data
- Review and analyse large datasets using relevant software programs
- Calculate economic metrics applicable to mineral resources, such as net present value, internal rate of return and payback period.
- Rank and critically evaluate different projects or project scenarios in terms of financial risk
- Critically evaluate data quality
- Summarise their work within a concise, professional style report

Teaching and Learning Methods

Lectures, laboratory practical classes (including software demonstrations and workshops), independent project work, project based workshops and surgeries.

Assessment Methods

Coursework project – exploration
 Coursework project - evaluation

Pre-Requisites
Co-Requisites
Excluded Combinations

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Guided Independent Study: Indicative Activities

- Analysis of data provided to students weekly in independent time.
- Browsing financial (commodities) news for contemporary information on industry.
- Software familiarization activities

GL3115 Archaeological Geophysics Field Course

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	6
Synchronous Other	40
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	104
Total Module Hours	150

Period: Semester 2
Occurrence: E
Coordinator: Richard England
Mark Scheme: UG Module Mark Scheme

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Final Report	70				
002	Pre-survey planning document	30				

Intended Learning Outcomes

On successful completion of the module, students should be able to:

- Understanding of capabilities of different geophysical methods
- Ability to plan geophysical fieldwork
- Ability to measure geophysical data and perform quality control
- Relate geophysical measurements to structures within the Earth
- Use computer based analysis methods on geophysical data

Teaching and Learning Methods

Field demonstration of geophysical equipment and measurement procedures, guided acquisition of new geophysical data, workshop on modern geophysical analysis methods and guided computer based analysis of field data

Assessment Methods

Pre-survey Planning Document and Final Report

Pre-Requisites

GL2108

Co-Requisites
Excluded Combinations
Guided Independent Study: Indicative Activities

Preparation of pre-survey report and final report, analysis of geophysical data, revision of previous lectures

GL3118 Crustal Dynamics

Academic Year: 2021/2
Module Level: Year 3
Scheme: UG
Department: Geology
Credits: 15

Student Workload (hours)

Synchronous Lectures	
Synchronous Small Group Teaching	
Synchronous Practical Classes/ Workshops/Professional Placements	60
Synchronous Other	
Asynchronous Lectures/Presentations	
Asynchronous Other	
Guided Independent Study	90
Total Module Hours	150

Period: Semester 1
Occurrence: E
Coordinator: Andrew Miles
Mark Scheme:

No.	Assessment Description	Weight %	Qual Mark	Exam Hours	Ass't Group	Alt Reass't
001	Coursework	100				

Intended Learning Outcomes

- Outline the major magmatic and tectonic processes involved in the formation of modern continental crust.
- Compare and contrast modern and ancient styles of crustal generation on Earth.
- Critically evaluate different methods of assessing crustal growth through Earth history using geochronology, geochemical techniques, open access geological databases, and discuss current scientific debate around the record of crustal growth through time.
- Understand geophysical techniques to describe and evaluate differences in the styles and mechanisms of deformation in continental and oceanic crust.
- Discuss how tectonically driven deformation and orogenesis in the continents influences silicate weathering and the Earth's hydrosphere on geological timescales.

Teaching and Learning Methods

Lectures, practicals, workshops and independent study

Assessment Methods

Coursework

Pre-Requisites
Co-Requisites
Excluded Combinations
Guided Independent Study: Indicative Activities

Directed reading related to the topics covered together with additional and related topics including new developments in the field. Attendance at online and in person seminars, including university-based and externally-hosted where possible. Completion of practical exercises and other problem questions from textbooks and other resources. Familiarisation with software and data collection from online databases.