School of Geography & Geosciences

Environmental Geography (EG) modules

EG3020 Global Climate Change

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	9.00 am - 10.00 am Wed and Thu, 2.00 pm - 5.00 pm Tue			
Climate change is one of the most challenging environmental problems currently facing society. Recent global warming likely lies outside the range of natural variability when compared to the last 1000 or even 2000 years. This module addresses how this consensus view has been derived and considers the scientific evidence and arguments that underpin our current understanding of climate change. The module examines both strengths and limitations of long-term proxy climate records, historical datasets based upon direct observation, models of the climate system, and areas of greatest uncertainty within current knowledge. The impacts and policy responses to climate change are also introduced.				
Programme module type:	Compulsory for MGeol Earth Sciences and BSc Environmental Earth Sciences. Optional for Geography or Sustainable Development			
Pre-requisite(s):	Normally ES2002 or ES2003 or (GG2011 and GG2012)		**Anti-requisite(s):**	GG3265, GG3268
Learning and teaching methods and delivery:	**Weekly contact**: 2 x 1-hour lectures and 1 x 2-hour practical.			
	Scheduled learning: 44 hours		**Guided independent study:** 106 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment pattern:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr R Wilson			
Lecturer(s)/Tutor(s):	Dr R Wilson, Dr T Prave, Dr T Raub, Dr J Rae			

EG3031 Special Topic for Physical Geography

SCOTCAT Credits:	5	SCQF Level 9	**Semester:**	1
Academic year:	2016/7 & 2017/10			
Availability restrictions:	Available only to Geography students			
Planned timetable:	To be arranged.			
This module provides support and guidance for geography students taking one of the Earth & Environmental Science modules offered as part of the Geography degree (normally ES3020-ES3030). In addition Geography MA and BSc students taking 15-credit modules from the Science Faculty may find themselves 5 credits short and this module provides the necessary credit top-up.				
Programme module type:	Optional for Geography or Sustainable Development students also taking a 15-credit module in Earth & Environmental Sciences			
Pre-requisite(s):	GG2011 and GG2012			
Co-requisite(s):	EG3020 or ES3011			
Learning and teaching methods and delivery:	**Weekly contact**: Occasional tutorials.			
	Scheduled learning: 8 hours		**Guided independent study:** 42 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	No Re-Assessment available			
Module Co-ordinator:	Dr R Wilson			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

EG3032 Special Environmental Topic for Physical Geography

SCOTCAT Credits:	5	SCQF Level 9	**Semester:**	1
Academic year:	2016/7 & 2017/12			
Availability restrictions:	Only available to students on a Geography or Sustainable Development Honours programme.			
Planned timetable:	To be arranged.			
This module provides support and guidance for geography students taking one of the Earth & Environmental Science modules offered as part of the Geography degree. In addition Geography MA and BSc students taking 15-credit modules from the Science Faculty may find themselves 5 credits short and this module provides the necessary credit top-up. The present module is designed to pair with environmental science-based modules such as ES3011 Global Biogeochemical Cycles.				
Programme module type:	Optional for Geography or Sustainable Development students also taking any ES3000-level module			
Co-requisite(s):	Normally EG3020 or ES3011			
Learning and teaching methods and delivery:	**Weekly contact**: 2-hours of tutorials (x 4 weeks)			
	Scheduled learning: 8 hours		**Guided independent study:** 42 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	No Re-Assessment available			
Module Co-ordinator:	Dr A Zerkle			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

Earth Science (ES) modules

ES3001 Geological Mapping

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	To be arranged.			
This module provides training in independently constructing and interpreting geological maps and cross sections. It develops the student's abilities to recognise structures in both two and three dimensions and, by inferring how these structures have changed with time, to develop four-dimensional intellectual skills. The module provides training in defining geological sampling strategies and field report writing.				
Programme module type:	Compulsory for BSc Geology and BSc Environmental Earth Sciences, joint degrees with Biology and Chemistry, and MGeol Earth Sciences			
Pre-requisite(s):	Normally ES2001 and ES2002			
Required for:	ES3006, ES3010			
Learning and teaching methods and delivery:	**Weekly contact**: 4 map and cross-section practicals (3 hours each) and lectures over 11 weeks and occasional 2-hour fieldwork tutorials.			
	Scheduled learning: 19 hours		**Guided independent study:** 131 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr T Prave			
Lecturer(s)/Tutor(s):	Dr T Prave			

ES3002 Analytical and Statistical Methods in Earth Sciences

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	11.00 am - 1.00 pm Mon (analytical methods), 2.00 pm - 4.00 pm Thu (stats)			
This module covers the principles behind, and practical application of, analytical science and data handling in Earth Sciences. Four key analytical methods are presented and students operate instruments under technical supervision. Statistical training includes (i) understanding data types, (ii) data presentation and basic descriptive statistics, (iii) probability, (iv) hypothesis testing using parametric statistics, (v) correlation and regression, (vi) introduction to numerical methods. Each student will have an opportunity to research an unusual analytical method, relevant to their own interests. Skills taught here reinforce Earth Sciences honours teaching, particularly the independent research project module.				
Programme module type:	Compulsory for BSc Geology, Environmental Earth Science, joint degrees with Biology and Chemistry, and MGeol Earth Sciences			
Pre-requisite(s):	Normally ES2001 and (ES2002 or ES2003)			
Required for:	ES3003, ES3008			
Learning and teaching methods and delivery:	**Weekly contact**: Lectures, practicals, tutorials and lab time averaging 5 hours per week.			
	Scheduled learning: 55 hours		**Guided independent study:** 95 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	Oral Examination = 100%			
Modue Co-ordinator:	Dr A Finch			
Lecturer(s)/Tutor(s):	Dr A Finch, Dr R Wilson			

ES3003 GIS and Spatial Analysis for Earth Scientists

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Planned timetable:	10.00 am - 1.00 pm Mon, Wed (lecture plus lab session) (Weeks 1 - 7)			
This module covers the principles behind, and practical application of, spatial analysis in Earth Sciences. This includes the analysis of primary and secondary datasets, how to access and import a variety of data types, and the fundamentals of various spatial analytical methods including spatial statistics and modeling within a GIS environment. The module also prepares students for the correct presentation of maps and datasets in the dissertation proposal and thesis.				
Programme module type:	Compulsory for BSc Geology and Environmental Earth Science, and MGeol Earth Sciences			
Pre-requisite(s):	Normally ES3002			
Learning and teaching methods and delivery:	**Weekly contact**: 6 lectures and 14 practicals and support sessions (Weeks 1 - 7).			
	Scheduled learning: 48 hours		**Guided independent study:** 102 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr R Robinson			
Lecturer(s)/Tutor(s):	Dr R Robinson			

ES3004 Processes and Products in Sedimentary Systems

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Planned timetable:	9.00 am - 10.00 am Tue - Thu (lectures), 2.00 - 5.00 pm Mon (practicals). 3 field days (9.00 am - 5.00 pm)			
This core module provides fundamental knowledge and training in describing, studying and interpreting sediments, sedimentary rocks and stratigraphic frameworks. The concepts and methodologies of process sedimentology, stratigraphy and sedimentary petrography will be taught, and training undertaken using fieldwork and practicals. The module serves as preparation for subsequent modules on related topics and for field-based modules, including Advanced Geological Mapping, the Research dissertation, and the fourth-year field course.				
Programme module type:	Compulsory for BSc Geology, Environmental Earth Science, joint degrees with Biology and Chemistry, and MGeol Earth Sciences			
Pre-requisite(s):	Normally ES2001 and (ES2002 or ES2003)			
Learning and teaching methods and delivery:	**Weekly contact**: Weekly lectures and practicals averaging 6 hours per week plus field training			
	Scheduled learning: 54 hours		**Guided independent study:** 96 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment pattern:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr T Prave			
Lecturer(s)/Tutor(s):	Dr T Prave, Dr M Singer, Dr R Robinson, Mr S Allison			

ES3006 Advanced Geological Mapping

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Not available to General Degree students.			
Planned timetable:	9.00 am - 5.00 pm Fri (map practicals)			

Geological maps are not just summaries of rocks - they are ways of conveying three-dimensional structure and geological history. This module starts with sessions on geophysics techniques and field-based skills training sessions and lab-based analysis of classic geology maps, followed by two one-week field courses. Field assessment comprises a geophyscial report, field notes and geological maps within holistic, problem-based exercises, determining the geology of the field areas from first principles. At the end of the module, students will not only have learned how to record, interpret and present field data, but also to visualise geology in four dimensions. This module is one of the most important for developing confidence in field techniques prior to independent research projects.

The costs associated with this module are partially supported by the Department.

Programme module type:	Compulsory for BSc Geology, joint degrees with Biology and Chemistry, and MGeol Earth Sciences	
Pre-requisite(s):	ES3001	
Required for:	ES4001	
Learning and teaching methods and delivery:	**Weekly contact**: 8 practical sessions through semester plus two residential field excursions.	
	Scheduled learning: 88 hours	**Guided independent study:** 62 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%	
	As used by St Andrews: Coursework = 100%	
Re-Assessment pattern:	2-hour Written Examination = 100%	
Module Co-ordinator:	Dr A Finch	
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff	

ES3007 Structural Geology and Tectonics

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Planned timetable:	10.00 am - 12.00 noon Thu (lectures), 2.00 - 5.00 pm (practicals)			
This module covers the principles of rock deformation and associated metamorphism, and the tectonic processes that drive this deformation. The goals of this module are: a) the development of skills in the structural analysis of rock bodies to gain an understanding of the geometries, sequencing, and kinematics of deformational features; b) understanding of tectonic principles and controls on rock deformation and mountain building.				
Programme module type:	Compulsory for BSc Geology and MGeol Earth Sciences			
Pre-requisite(s):	Normally ES2001 and ES2002			
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 2-hour lecture (x 11 weeks), 7 x 3-hour practicals during the semester and fieldwork			
	Scheduled learning: 55 hours		**Guided independent study:** 95 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment pattern:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	TBC			
Lecturer(s)/Tutor(s):	TBC			

ES3008 Geochemistry

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	10.00 am Tue and Thu (lectures), 2.00 - 5.00 Fri (practicals)			
This module provides an introduction to geochemistry: the study of the abundance, distribution and circulation of the chemical elements in minerals, rocks, soils, water and the atmosphere. Geochemical tools are a powerful means to the study of geological, economic and environmental problems. In the module we study the origin and distribution of the chemical elements in the Earth and solar system and review thermodynamics and kinetics as applied to Earth systems. We apply thermodynamics to make quantitative predictions regarding the outcome of chemical reactions associated with geological processes. We consider the behaviour of elemnts, mainly in low temperature ienvironments. Material covered includes use of stable and radiogenic isotopes, aqueous geochemistry and mineral precipitation and dissolution. We utilise geochemical tools to constrain changes in earth processes and climate, and to predict the impact of future change. The module includes a field trip to study river geochemistry and multiple practical sessions to develop the lecture concepts.				
Programme module type:	Compulsory for BSc Environmental Earth Science, MGeol Earth Sciences, BSc Geology and joint degrees with Biology and Chemistry			
Pre-requisite(s):	Normally ES2001 and/or ES2003			
Learning and teaching methods and delivery:	**Weekly contact**: 17 lectures, 15 hours of laboratory classes, 2 or more field classes over the semester.			
	Scheduled learning: 54 hours		**Guided independent study:** 96 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment pattern:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr N Allison			
Lecturer(s)/Tutor(s):	Dr A Finch, Dr M Claire, Dr N Allison, Dr J Rae, Dr A Burke			

ES3009 Igneous and Metamorphic Petrology

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	9.00 am Tue and Thu (lectures); 2.00 pm - 5.00 pm Mon (practicals)			
This is a core module within the BSc Geology and MGeol Earth Sciences degrees and delivered early in the Honours programme in order to provide a framework for interpreting major petrological processes acting within the Earth's crust and mantle. The module serves as preparation for subsequent modules on related topics and for field-based modules, including Advanced Geological Mapping, the Research dissertation, the Alps field course, Advanced Petrogenesis and Metallogeny.				
Programme module type:	Compulsory for BSc Geology, joint degrees with Biology and Chemistry, and MGeol Earth Sciences Optional for Environmental Earth Science degree.			
Pre-requisite(s):	Normally ES2001 and ES2002			
Required for:	ES4006			
Learning and teaching methods and delivery:	**Weekly contact**: 2 x 1-hour lectures (x 11 weeks), 3-hour practicals most weeks.			
	Scheduled learning: 50 hours		**Guided independent study:** 100 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 50%, Coursework = 0%			
	As used by St Andrews: 2-hour Written Examination = 50%, 2 x 2-hour Practical Examination = 50%			
Re-Assessment pattern:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr A Finch			
Lecturer(s)/Tutor(s):	Dr A Finch, Dr S Mikhail			

ES3010 Advanced Environmental Field Methods

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Planned timetable:	9.00 am - 5.00 pm Fri (Weeks 1 - 4)			
This forms the introduction to methodologies and training in applied environmental problems. This module starts with sessions on geophysics techniques and field-based skills training sessions. Specific environmental problems will be identified, and researched in detail before a one-week field excursion where an environmental impact problem will be addressed in the field. The costs associated with this module are partially supported by the Department.				
Programme module type:	Compulsory for BSc Environmental Earth Science			
Pre-requisite(s):	ES3001			
Required for:	ES4008			
Learning and teaching methods and delivery:	**Weekly contact**: 8 field-based skills training sessions, fortnightly seminar, one 1-week field excursion,and 1-week of lab-based data analysis .			
	Scheduled learning: 53 hours		**Guided independent study:** 97 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	Oral Examination = 100%			
Module Co-ordinator:	Dr M Claire			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES3011 Global Biogeochemical Cycles

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Planned timetable:	To be arranged.			

Environmental Earth Science is inherently multi-disciplinary, but many environmental science courses focus on specific reservoirs of the Earth system (e.g., the atmosphere, oceans, or continental crust), rather than examining the system as a whole. The study of global biogeochemical cycling crosses these disciplinary boundaries, following specific elements as they are cycled through the Earth surface by physical, chemical, and biological transformations. This module will focus on the cycling of five elements critical to life on Earth - Carbon, Oxygen, Sulfur, Phosphorus, and Nitrogen - using examples from both modern and ancient environments, and their response to human influence. An emphasis will be placed on understanding proxies utilized for unravelling these processes in the environment and in the rock record, along with modern quantitative methods used to constrain these cycles.

Programme module type:	Compulsory for Environmental Earth Sciences and MGeol Earth Sciences Optional for Geology, Biology and Geology, Chemistry and Geology	
Pre-requisite(s):	Normally ES2002 or ES2003, and ES3008	
Learning and teaching methods and delivery:	**Weekly contact**: 2-hour lectures (x 6 weeks and only 1 hour in week 7) and 3-hour practical sessions (x 7 weeks).	
	Scheduled learning: 36 hours	**Guided independent study:** 114 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%	
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%	
Re-Assessment pattern:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4	
Module Co-ordinator:	Dr A Zerkle	
Lecturer(s)/Tutor(s):	Dr A Zerkle, Dr M Claire, Dr S Mikhail	

ES3012 Advanced Geological and Environmental Field Methods

SCOTCAT Credits:	15	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Planned timetable:	To be arranged.			

This module combines geophysical, geological and environmental field training. It starts with lectures and practical sessions on geophysics field techniques and field-based skills training sessions, as well as advanced map interpretation sessions for classic geological regions in Scotland. The second part of the module involves a one-week residential field geology excursion to the famous Assynt region of the NW Highlands. The final part of the course is a second 4-day to 1 week field excursion where an environmental problem will be the focus of the training. Locations will vary from year to year depending on staffing, and could be in the UK or abroad. The department partially supports the financial costs associated with the fieldwork components.

Programme module type:	Compulsory for MGeol in Earth Sciences Optional for Chemistry and Geology		
Pre-requisite(s):	ES3001	**Anti-requisite(s):**	ES3006, ES3010
Learning and teaching methods and delivery:	**Weekly contact**: Lectures and practical sessions followed by two residential field classes.		
	Scheduled learning: 100 hours	**Guided independent study:** 50 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%		
	As used by St Andrews: Coursework = 100% (geophysics report = 33.3%; geological notebooks and maps = 33.3% and environmental report = 33.3%)		
Re-Assessment pattern:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4		
Module Co-ordinator:	Dr T Prave		
Lecturer(s)/Tutor(s):	Dr R Bates, Dr M Claire, Dr A Zerkle		

ES3099 Field Methods in Geosciences

SCOTCAT Credits:	30	SCQF Level 9	**Semester:**	2
Academic year:	2016/7			
Availability restrictions:	Available only to visiting students.			
Planned timetable:	none - field-based module.			

This module is designed exclusively for non-graduating overseas undergraduate students seeking advanced training in geological field methods. It consists of hands-on experience honing observational and mapping skills by participating in highly focused residential and one-day excursions and associated laboratory classes. The module takes full advantage of the University's location close to some classic geological locations, normally including the central Spain Sierra Norte region, the NW Highlands region including the Moine thrust system, the Buchan and Barrovian metamorphic zones in the Dalradian terrane, and the Carboniferous sequences of NE England and Fife.

Programme module type:	Available to visiting students only.	
Pre-requisite(s):	Must be studying Earth Science at an overseas university	
Learning and teaching methods and delivery:	**Weekly contact**: Occasional lectures, tutorials and practicals in addition to fieldwork - this is predominantly a residential field-based module.	
	Scheduled learning: 268 hours	**Guided independent study:** 32 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%	
	As used by St Andrews: Coursework = 100%	
Re-Assessment pattern:	No Re-Assessment available	
Module Co-ordinator:	Dr R Robinson	
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff	

ES4001 Field Excursion and Map Interpretation

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	12 days fieldwork in August - September. 9.00 am - 5.00 pm Fri (practicals)			
Building on the field training at Junior Honours level, this module develops the field observation and interpretation skills of collecting, recording, interpreting and synthesising data in the field and from geological maps and cross-sections. The field course will be thematic, examining and synthesising all aspects of a region to interpret a complex geological history. Theme and location may vary, but the excursion will generally be based within a well-exposed orogenic belt with the aim of traversing from the foreland to the interior. Fieldwork will be combined with map and aerial photograph interpretation and the construction of cross-sections. The Department partially supports the costs associated with the fieldwork component of this module.				
Programme module type:	Compulsory for BSc Geology Either ES4001 or ES4008 is compulsory for MGeol Earth Sciences			
Pre-requisite(s):	normally ES3006			
Learning and teaching methods and delivery:	**Weekly contact**: 2-week field course and 4 lab sessions.			
	Scheduled learning: 84 hours		**Guided independent study:** 66 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr T Prave			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES4002 Research Review, Essay and Seminar

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Availability restrictions:	BSc students may only take this module in semester 1, MGeol students can take this module in either semester.			
Planned timetable:	Not applicable.			
The student proposes an Earth Science topic, one that has not been directly covered in a module. They discuss the suitability of the topic with a lecturer who agrees to become adviser to the student. Student and adviser are required to meet 2 further times during the module. Literature and web-based research is conducted and the student writes a critical review of ca. 3,500 words. The same material is also presented in a 15 minute seminar to staff and classmates. Advice on critical writing and presenting talks is given a year before the start of the module, on entry to Junior Honours, for use throughout the Honours programme. The seminar is assessed by both lecturers and peers.				
Programme module type:	Compulsory for BSc Geology and Environmental Earth Science, and MGeol Earth Sciences			
Pre-requisite(s):	Admission to an Honours Earth Sciences programme or Environmental Earth Science			
Learning and teaching methods and delivery:	**Weekly contact**: Occasional lecture and 3 meetings with adviser spread across the semester.			
	Scheduled learning: 10 hours		**Guided independent study:** 140 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 15%, Coursework = 85%			
	As used by St Andrews: Practical Examination = 15%, Coursework = 85%			
Re-Assessment pattern:	Oral Examination = 100%			
Module Co-ordinator:	Dr S Mikhail and Dr T Raub			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES4003 Research Dissertation

SCOTCAT Credits:	45	SCQF Level 10	**Semester:**	Whole Year
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Available only to Single Honours BSc Earth Science students			
Planned timetable:	Not applicable.			
An individual research project which allows the student to pursue in depth a topic of personal interest. The student works largely independently of supervision and has the opportunity to demonstrate individuality, initiative and enterprise. Skills of planning and executing research are learnt, as well as the ability to work independently, and present the results orally and in dissertation form (up to 10,000 words). (Guidelines for printing and binding dissertations can be found at: http://www.st-andrews.ac.uk/printanddesign/dissertation/)				
Programme module type:	Compulsory for BSc Geology and Environmental Earth Science			
Pre-requisite(s):	Admission to an Honours Earth Sciences programme or Environmental Earth Science			
Learning and teaching methods and delivery:	**Weekly contact**: Regular meetings with supervisor arranged as required.			
	Scheduled learning: 20 hours		**Guided independent study:** 430 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 10%, Coursework = 90%			
	As used by St Andrews: Proposal = 5%, Oral presentation = 10%, Dissertation = 85%			
Re-Assessment pattern:	No Re-Assessment available			
Module Co-ordinator:	Dr T Raub and Dr S Mikhail			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES4007 Petroleum Exploration and Geophysics

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	11.00 am - 1.00 pm Thu (lectures), 2.00 - 5.00 pm Thu (practicals)			
The fundamental concepts, techniques and practices of the hydrocarbon exploration industry are presented. Students will gain a thorough understanding of the geoscience of petroleum exploration, particularly using geophysical methods, and a working knowledge of modern concepts in oil and gas geology.				
Programme module type:	Optional for BSc Geology, Environmental Earth Science, joint degrees with Biology and Chemistry, and MGeol Earth Sciences			
Pre-requisite(s):	Normally ES2001 and (ES2002 or ES2003)			
Learning and teaching methods and delivery:	**Weekly contact**: 17 lectures, 15 hours laboratory classes, field classes over the semester.			
	Scheduled learning: 38 hours		**Guided independent study:** 112 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment pattern:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr R Bates			
Lecturer(s)/Tutor(s):	Dr R Bates			

ES4008 Environmental Excursion

SCOTCAT Credits:	15	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	12 days fieldwork in August - September. 9.00 am - 5.00 pm Fri (practicals)			
This module is designed to provide advanced field-based training in a variety of environmental and geochemical analytical techniques of utility to solving geo-environmental problems. The field course will be thematic and examine environmental aspects of a region using an integrated approach. Theme and location may vary. Additional post-trip analyses may include geophysical and remotely sensed data, GIS and laboratory work. The Department partially supports the costs associated with the fieldwork component of this module.				
Programme module type:	Compulsory for BSc Environmental Earth Science Either ES4001 or ES4008 is compulsory for MGeol Earth Sciences			
Pre-requisite(s):	ES3010			
Learning and teaching methods and delivery:	**Weekly contact**: 2-week field course and 4 lab sessions.			
	Scheduled learning: 84 hours		**Guided independent study:** 66 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr A Burke			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES4010 Joint Honours Research Project

SCOTCAT Credits:	30	SCQF Level 10	**Semester:**	Whole Year
Academic year:	2016/7 & 2017/8			
Planned timetable:	Not applicable.			
An individual research project allows the student to pursue in depth a topic of personal interest. The student works largely independently and has the opportunity to demonstrate individuality, initiative and enterprise. Projects will normally include an aspect of field and analytical science. Skills of planning and executing research are learned, as well as the ability to work independently, and present the results orally and in dissertation form (up to 7,000 words). (Guidelines for printing and binding dissertations can be found at: http://www.st-andrews.ac.uk/printanddesign/dissertation/)				
Programme module type:	EITHER (ES4010 and CH4448) OR ID4441 are compulsory for joint degrees with Chemistry			
Pre-requisite(s):	Admission to Joint Honours Geology and Chemistry			
Learning and teaching methods and delivery:	**Weekly contact**: Regular meetings with supervisor arranged as required.			
	Scheduled learning: 20 hours		**Guided independent study:** 280 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 10%, Coursework = 90%			
	As used by St Andrews: Proposal = 5%, Oral Presentation = 10%, Dissertation = 85%			
Re-Assessment pattern:	No Re-Assessment available			
Module Co-ordinator:	Dr S Mikhail and Dr T Raub			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES4011 Work Placement in Earth Sciences

SCOTCAT Credits:	30	SCQF Level 10	**Semester:**	1 or 2
Academic year:	2016/7 & 2017/8			
Planned timetable:	To be arranged.			
Practical experience of Earth Sciences is important to graduate job prospects and for students to understand the practical relevance of taught material course. This module is a platform for the students to obtain experience of the workplace through an 8-week industrial placement. The student finds their own work placement, some with the assistance of staff connections in industry and alumni. Work placements can be of a variety of forms, varying from office or lab-based work to engineering geology at sites in the UK to exploration geology across the world. The performance of the student in the workplace is assessed using similar criteria to those used when applying for Chartered (CGeol) status. The student reports on their activities during placement at the end of the placement period.				
Programme module type:	ES4011 or ES4012 is compulsory for MGeol Earth Sciences			
Pre-requisite(s):	Normally ES2001 and ES2002 and Entry to MGeol Earth Schiences			
Learning and teaching methods and delivery:	**Weekly contact**: Meetings.			
	Scheduled learning: 0 hours		**Guided independent study:** 0 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 30%, Coursework = 70%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	No Re-Assessment available			
Module Co-ordinator:	Dr R Robinson			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES4012 Research Placement in Earth Sciences

SCOTCAT Credits:	30	SCQF Level 10	**Semester:**	1 or 2
Academic year:	2016/7 & 2017/8			
Planned timetable:	To be arranged.			
Practical experience of Earth Sciences is important to graduate job prospects and for students to understand the practical relevance of taught material in the course. The present module is a platform for the students to obtain experience of the working in an academic research team through a research placement. The student finds their own placement by negotiating with staff. The performance of the student in the workplace is assessed using similar criteria to those used when applying for Chartered (CGeol) status. The student reports on their activities during placement at the end of the placement period.				
Programme module type:	ES4011 or ES4012 is compulsory for MGeol Earth Sciences			
Pre-requisite(s):	Normally ES2001 and ES2002 and Entry to MGeol Earth Sciences			
Learning and teaching methods and delivery:	**Weekly contact**: Meetings.			
	Scheduled learning: 0 hours		**Guided independent study:** 0 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	No Re-Assessment available			
Module Co-ordinator:	Dr R Bates			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES4031 Analytical Sciences

SCOTCAT Credits:	5	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Available to students on the MSc Geochemistry degree and Geography Honours programme.			
Planned timetable:	To be arranged.			
This module is designed to support students who do not have a strong background in the analytical methods used in Earth Science. These include, for example, students enrolled in BSc Geography or MSc Geochemistry degree programmes. The module comprises a series of seven lectures starting with the basic principles of accuracy and precision, which are then illustrated in the context of the most common analytical methods used in the geosciences. Students are asked to independently research an analytical method of interest. This is then presented in a poster imitating the poster sessions at major conferences. Posters are marked by both students (peer assessment) and staff (different weighting). The module will give students the necessary training to allow them to excel in other Earth Science modules.				
Programme module type:	Optional for Geography or Sustainable Development students.			
Anti-requisite(s):	EG4031			
Co-requisite(s):	Any Level 4 or 5 module for BSc students.			
Learning and teaching methods and delivery:	**Weekly contact**: 7 x 1-hour lectures and 1 x 8-hour poster presentation day over the semester.			
	Scheduled learning: 15 hours		**Guided independent study:** 35 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework (Poster session) = 100%			
Re-Assessment pattern:	No Re-Assessment available			
Module Co-ordinator:	Dr A Finch			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES5001 Expedition Field Course

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	SUMMER
Academic year:	2016/7 & 2017/8			
Planned timetable:	To be arranged.			

Fieldwork in Earth Sciences is key to graduate job prospects and is a platform for students to bring together the many aspects of Earth Sciences. The present module will involve the students not just in carrying out fieldwork, but also in the logistical and interpersonal sides of successful fieldwork design. Students will identify a field area for study in consultation with a member of the teaching staff, which includes several aspects of Earth sciences, such as igneous, sedimentary, economic and environmental geology. The students will form a team and divide the responsibilities for fieldwork and logistics. The assessment will include a memoir that will summarise the geological history of the area, similar to that published by a Geological Survey or the exploration industry. A (formatively assessed) presentation may be required if funding was provided by an external body. Some student groups may choose to use this module to carry out ambitious fieldwork in a remote setting.The students are responsible for finding the costs associated with the fieldwork component of this module, but external funding has been successfully won in recent years.

Programme module type:	Optional for MGeol in Earth Sciences.	
Pre-requisite(s):	Entry to Year 5 of MGeol Earth Sciences	
Learning and teaching methods and delivery:	**Weekly contact**: 5 hours of orientation/tutorials over 2 weeks	
	Scheduled learning: 10 hours	**Guided independent study:** 140 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%	
	As used by St Andrews: Coursework = 100%	
Re-Assessment pattern:	Oral Examination = 100%	
Module Co-ordinator:	Dr A Finch	

ES5003 Research Dissertation

SCOTCAT Credits:	60	SCQF Level 11	**Semester:**	Whole Year
Academic year:	2016/7 & 2017/8			

An individual research project on a topic in geological sciences which allows the student to pursue in depth a topic of personal interest. The student works largely independently of supervision and has the opportunity to demonstrate individuality, initiative and enterprise. Skills of planning and executing research are learnt, as well as the ability to work independently, and present the results orally and in dissertation form (up to 7,000 words). The project report will be as a publication-ready article in the manner of the journal "Geology".

Programme module type:	Compulsory for MGeol Earth Sciences.	
Pre-requisite(s):	Entry to Year 5 of MGeol Earth Sciences	
Learning and teaching methods and delivery:	**Weekly contact**: Regular meetings with supervisor arranged as required.	
	Scheduled learning: 30 hours	**Guided independent study:** 570 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%	
	As used by St Andrews: Coursework = 100% (Project proposal = 5%, Oral Presentation = 10%, Dissertation = 85%)	
Re-Assessment pattern:	No Re-Assessment available	
Module Co-ordinator:	Dr S Mikhail and Dr T Raub	
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff	

ES5005 Isotope Geochemistry: Theory, Techniques, and Applications

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	To be arranged.			

Isotope geochemistry has grown over the last 50 years to become one of the most important fields in the Earth sciences. The growth in the importance of isotope geochemistry reflects its remarkable success in solving fundamental problems in mantle formation, ore genesis, hydrology, hydrocarbon formation, crustal evolution, planetary formation, geochemical cycles, hydrothermal circulation, ocean circulation, and climate and environmental change. In this module, we will explore the theory of isotopes and their fractionation, including kinetic, equilibrium, and Rayleigh fractionation. We will also learn how isotope measurements are made, with an introduction to mass spectrometry methods, techniques, and analysis. The latter half of the course will be devoted to case studies and applications of isotopes to interesting problems across Earth Sciences including the evolution of the atmosphere, the formation of the solar system and planets, and climate and carbon cycle reconstructions. These case studies will introduce concepts such as clumped isotopes, isotope mass balance, mass independent fractionation, and radionuclide disequilibria.

Programme module type:	Optional for BSc Geology, BSc Environmental Earth Sciences and MGeol Earth Sciences.	
Pre-requisite(s):	For current BSc students, normally ES3008 or CH1401, CH1402, and CH2501.	
Learning and teaching methods and delivery:	**Weekly contact**: 2-hour lectures (x 10.5 weeks), 3-hour practical sessions (x 3 weeks)	
	Scheduled learning: 30 hours	**Guided independent study:** 120 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 50%, Coursework = 50%	
	As used by St Andrews: 2-hour Practical (Open Book) Examination = 50%, Coursework = 50%	
Module Co-ordinator:	Dr A Burke	
Lecturer(s)/Tutor(s):	Dr P Savage	

ES5006 Metallogeny

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Planned timetable:	9:00 am - 11:00 am Thu (lectures); 9.00 am - 1.00 pm (practicals)_			

The module focuses on the geodynamic setting, age, geometry and mineralogy of the principal metallic mineral deposits using a holistic approach (structural geology, geochemistry, isotope geochemistry, sedimentology, igneous geology, metamorphic geology, and geophysics). Current genetic models of ore deposits are reviewed with an emphasis on the geological processes required to create them. Finally, a roadmap to mineral exploration for each type of ore deposit is discussed.

Laboratory exercises involve geological problem solving using a mineral exploration industry focus involving the examination of geological maps and representative suites of samples (thin sections, hand samples, and outcrops) from different types of metallic mineral deposits.

A single day field excursion will be to the gold mine at Cononish or the lead mine at Wanlockhead to cover the geological context of the ore bodies and aspects of their exploration and production.

Programme module type:	Optional for BSc Geology and MGeol Earth Sciences, and Joint Degree BSc Chemistry and Geology.	
Pre-requisite(s):	For current BSc & MGeol students, normally ES3009 or CH1401, CH1402, and CH2501.	
Learning and teaching methods and delivery:	**Weekly contact**: 1- or 2-hour lectures (23 hours over 11 weeks); 2-hour or 3-hour practical sessions (14 hours over 5 weeks); 4 hours of oral presentations; 9 hours of field work	
	Scheduled learning: 50 hours	**Guided independent study:** 100 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 50%, Coursework = 50%	
	As used by St Andrews: 2-hour Practical (Open Book) Examination = 50%, Coursework = 50%	
Re-Assessment pattern:	2-hour Practical (Open Book) Examination = 50%, Coursework = 50%	
Module Co-ordinator:	Dr J Cloutier	
Lecturer(s)/Tutor(s):	Dr A Finch	

ES5009 Geodynamics

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Academic year:	2017/8			
Planned timetable:	9.00 am - 10.00 am Tue and Wed; 9.00 am - 5.00 pm Fri (Weeks 2,5,9)			

A study of the geodynamic evolution of Earth's crust since the Archaean, the evolution of convergent and divergent margins, and the relationships between tectonics, erosion and climate. The module contrasts geodynamic evolution in the Archaean, Proterozoic, Palaeozoic, Mesozoic and Cenozoic using a number of case studies, including examples visited in the field. The module develops skills of geodynamic interpretation, field observation, use of numerical models, report writing and oral presentation.

Programme module type:	Optional for MGeol Earth Sciences, BSc Geology, Environmental Earth Science, and joint degrees in Biology and Chemistry.		
Pre-requisite(s):	Normally ES2001 and (ES2002 or ES2003)	**Anti-requisite(s):**	ES4009
Learning and teaching methods and delivery:	**Weekly contact**: 2 x 1-hour lectures(x 11 weeks) , plus 2 extended laboratory classes, and 2 days in the field during the semester.		
	Scheduled learning: 50 hours	**Guided independent study:** 100 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%		
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%		
Re-Assessment pattern:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4		
Module Co-ordinator:	TBC		
Lecturer(s)/Tutor(s):	Dr T Raub		

ES5010 Advanced Geochemistry

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Planned timetable:	To be arranged.			

Many of the environmental challenges facing society revolve around the cycling of natural materials between fluid and solid phases. Some of the most fundamental aspects of Earth System development are investigated through geochemical methodologies that characterise and interrogate processes operating at the interface between the solid Earth and the fluid Earth. Further, the processes that concentrate many natural resources are a result of fluid-solid interactions that can be studied using organic and aqueous geochemistry. This module focuses on training in the state-of-the art techniques and methodologies that are tools that can be applied widely to address questions about environmental changes and chemistry in sediments and natural waters and, as well as utilisation and exploitation of hydrocarbon resources and Earth System evolution through time.

Programme module type:	Optional for MGeol Earth Sciences, BSc Geology, Environmental Earth Science, and joint degrees in Biology and Chemistry.	
Pre-requisite(s):	Normally ES3008	
Learning and teaching methods and delivery:	**Weekly contact**: 1-hour lecture (x 10 weeks) 5 x 3-hour practical sessions and 1 x 8-hour session of project presentations over the semester.	
	Scheduled learning: 33 hours	**Guided independent study:** 117 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 30%, Coursework = 70%	
	As used by St Andrews: Coursework = 100%	
Re-Assessment pattern:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4	
Module Co-ordinator:	Dr E Stueeken	
Lecturer(s)/Tutor(s):	Dr P Savage, Dr S Mikhail	

ES5011 Water in the Environment

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	To be arranged.			

Water is fundamental to life on Earth and the functioning of healthy ecosystems and societies. However, fresh water is unevenly distributed across the continents, presenting challenges for maintaining adequate supplies to support ecosystem functioning and the growth and development of modern human society. Furthermore, humans interact with the hydrosphere in ways that contribute to degradation of water quality. These problems of water quantity and quality are exacerbated by fluctuations and trends in climate that contribute to accentuated flooding and drought cycles in particular regions. The ability of current and future generations to understand, predict, and ameliorate such problems requires a solid understanding of hydrology in terms of the hydrological cycle, its forcing by climate, portioning of water between surface and subsurface, water availability to ecosystems, the role of water in biogeochemistry, geochemistry associated with water, rock and/or soil interactions, or and the management of floods and water shortages. This course provides a combination of the underpinning hydrological theory and the analytical tools required to better understand and ameliorate problems of water in the environment. It will allow students to read and evaluate primary scientific research and it will challenge them to conduct modelling experiments to assess hydrological responses to various external factors. The module assessment will consist of analytical problem solving, simulated communication of hydrological science to government officials and the media, and an exam of short answers and essays.

Programme module type:	Optional for BSc Environmental Earth Science, MGeol Earth Science.	
Pre-requisite(s):	Normally ES3008 but students with relevant chemistry background considered.	
Learning and teaching methods and delivery:	**Weekly contact**: 20 hours of lectures, 6 hours of laboratory work and 4 hours of tutorials over the semester.	
	Scheduled learning: 30 hours	**Guided independent study:** 120 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 40%, Practical Examinations = 15%, Coursework = 45%	
	As used by St Andrews: 2-hour Written Examination = 40%, Coursework (including Technical Brief, Media Interview and Qualitative analysis exercise) = 60%	
Re-Assessment pattern:	2-hour Written Examination = 100%	
Module Co-ordinator:	Dr M Singer	
Lecturer(s)/Tutor(s):	Dr M Singer	

ES5013 Advanced Petrogenesis

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	1
Academic year:	2016/7			
Planned timetable:	10.00 am Mon and Tue (lectures). 10.00 - 1.00 pm Wed or Fri (practicals)			
The Earth's crust is largely created by acid and basic magmatism and many of the planet's critical resources are formed from igneous processes. The module explores the nature of that magmatism, the petrography and geochemistry of the minerals and rocks created, and the petrogenesis and evolution of the magma. The petrological characteristics of the continental crust and of the upper mantle, the principal sources of acid and basic magmas, are examined in detail for the influence which these have on the magmas created by partial melting. The economic significance of alkaline rocks as the hosts for many of the world's critical metals is considered.				
Programme module type:	Optional for BSc Geology and MGeol Earth Sciences			
Pre-requisite(s):	Normally ES3009			
Learning and teaching methods and delivery:	**Weekly contact**: 18 lectures, 15 hours of laboratory work, 18 hours of field-related study over the semester			
	Scheduled learning: 50 hours		**Guided independent study:** 100 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 50%, Coursework = 0%			
	As used by St Andrews: 2-hour Written Examination = 50%, 3-hour Practical Examination = 50%			
Re-Assessment pattern:	2-hour Written Examination = 100%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr A Finch			
Lecturer(s)/Tutor(s):	TBC			

ES5050 Earth's Greatest Hits

SCOTCAT Credits:	15	SCQF Level 11	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Planned timetable:	Lectures: 11.00 am - 12.00 noon Thu, Seminars: 10.00 am - 1.00 pm Wed			
This module is based around current "hot topics" in Earth science research. It will introduce cutting-edge science questions about how our planet has evolved from a ball of molten rock to the habitable blue planet it is today, and some of the major changes in its chemistry, biosphere, and climate that have happened along the way. Topics will vary from year to year, depending on staff participating in the module and the advances in Earth science research. This module is research-led, requiring that you read, digest, and discuss a number of topical papers each week. For some of these topics there is no given answer; instead you gain an in-depth understanding of the current state of research. Topics are introduced in lectures and then discussion seminars, organised around student presentations, are designed to encourage debate and critique of the arguments presented in the research papers.				
Programme module type:	Optional for Earth Sciences MGeol, Environmental Earth Sciences BSc, Geology BSc.			
Pre-requisite(s):	Normally ES2001, ES2002 and/or ES2003 for BSc and MGeol students			
Learning and teaching methods and delivery:	**Weekly contact**: 7 hours of lectures and 21 hours of seminars over the semester.			
	Scheduled learning: 30 hours		**Guided independent study:** 120 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 60%, Coursework = 40%			
	As used by St Andrews: Coursework (10% participation in discussion groups; 60% oral presentations; 30% review paper) = 100%			
Re-Assessment pattern:	2-hour Written Examination = 100% No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr J Rae			
Lecturer(s)/Tutor(s):	Earth & Environmental Sciences academic and research staff			

Geography (GG) modules

GG3100 Reconstructing Past Environments

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Available every year.			
Planned timetable:	To be arranged.			
This module focuses on how we can use many strands of evidence to reconstruct past environments. Focusing on the period since the end of the last Ice Age (approximately the last 20,000 years), we discuss topics such as post-glacial sea level change, Holocene vegetation development and the prehistoric 'wildwood', and the changing nature of human impacts on the environment right up to the present day. The module includes field excursions and laboratory classes where you will learn to read the record of change locked up in peats, sediments and other environmental materials. Assessment includes a broad mixture of group and individual coursework, focused on using primary observations to understand how our world has changed over time.				
Programme module type:	Optional for all degrees involving Geography			
Pre-requisite(s):	Passes at Grade 11 or better in GG2011, GG2012, or in SD2001			
Learning and teaching methods and delivery:	**Weekly contact**: 1-hour lecture (x 4 weeks) , 2-hour seminar (x 5 weeks), 2-hour practical classes (x 3 weeks), 4-hours fieldwork (x 3 weeks)			
	Scheduled learning: 32 hours		**Guided independent study:** 168 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 30%, Coursework = 70%			
	As used by St Andrews: Coursework (including 30% Lab/fieldwork) = 100%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr K Roucoux			
Lecturer(s)/Tutor(s):	Various			

GG3221 Geographies of Identity and Power

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	Offered on a two-year cycle			
Planned timetable:	2.00 pm - 4.00 pm Tue			
Drawing on theories of gender and sexuality, this module charts how political questions about identity and power have become central to a broad range of contemporary issues. This module introduces key concepts in the theorisation of gender and sexuality, contextualises their development in the social sciences more generally, and applies them to a range of contemporary geographic issues including: power, segregation, inequality, representation and the political.				
Programme module type:	Optional for all degrees involving Geography			
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012, or in SD2001 and SD2002			
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 2-hour lecture (x 10 weeks) and 1 x 2-hour revision session.			
	Scheduled learning: 22 hours		**Guided independent study:** 178 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr M B Sothern			
Lecturer(s)/Tutor(s):	Dr M B Sothern			

GG3224 HIV/AIDS in sub-Saharan Africa

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	Offered on a two-year cycle			
Planned timetable:	11.00 am - 1.00 pm Wed			
This module makes the case for a social-scientific, not merely biomedical understanding of HIV/AIDS in sub-Saharan Africa. It addresses the geographies of this phenomenon, exploring the politics of scaling, uneven global distributions, social contexts that facilitate its spread and the situatedness of sexual decision-making. The module investigates the role of gender relations, poverty, migration and youth. It also explores the everyday geographies of those living with AIDS, and evaluates proposed local and global solutions. The module is reading- and seminar-based. It utilises action-based assessment that challenges students to take their learning out of the classroom and transmit it to other contexts.				
Programme module type:	Optional for all degrees involving Geography			
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012, or in SD2001 and SD2002			
Learning and teaching methods and delivery:	**Weekly contact**: 1-hour lecture (x 8 weeks) , 1-hour seminar (x 8 weeks), 2-hour practical classes (x 2 weeks) and 1 x 2-hour feedback/revision session.			
	Scheduled learning: 22 hours		**Guided independent study:** 178 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr M G Kesby			
Lecturer(s)/Tutor(s):	Dr M G Kesby			

GG3227 Colonial and Postcolonial Geographies

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2016/7			
Availability restrictions:	Offered on a two-year cycle			
Planned timetable:	To be arranged.			
This module traces the historical geography of modern colonialism from its sixteenth-century beginnings in Spain's discovery and conquest of the New World, through to the break-up of European colonial empires after World War II, and up to what has been called 'the colonial present' and the 'new imperialism' (revolving around the USA and the 'war on terror'). Emphasis will be placed on how colonialism, past and present, operates as a logic of displacement and dispossession, and as both a conceptual space (imaginative geography) and physical space (material geography) of encounter and conflict and resistance involving a wide array of projects of colonisation and resistance.				
Programme module type:	Optional for all degrees involving Geography or Sustainable Development			
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012, or in SD2001 and SD2002			
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 1-hour lecture, 1 x 1-hour seminar (x 11 weeks) + 2 x 1-hour feedback/revision sessions			
	Scheduled learning: 24 hours		**Guided independent study:** 176 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%			
	As used by St Andrews: 2-hour Written Examination = 60%, Coursework = 40%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr D W Clayton			
Lecturer(s)/Tutor(s):	Dr D W Clayton			

GG3232 Housing, Community and Social-Spatial Justice

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	Offered on a two-year cycle			
Planned timetable:	To be arranged.			
This interdisciplinary module brings a Housing Studies perspective to the study of Urban Social Geography. Social geography is a sub-discipline that is interested in social relations and social difference. It has an analytical focus on the forms of power that lead to social and spatial inequality. Through engaging with contemporary policy and political debates about poverty and place, urban marginality and social-spatial (in)justice, this module emphasises the way in which geographical knowledge can be usefully applied to contemporary urban social 'problems'. In doing so, it also highlights how communities themselves have been active in leading place-based solutions to build better places.				
Programme module type:	Optional for all degrees involving Geography or Sustainable Development			
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012, or in SD2001 and SD2002			
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 1-hour lecture, 1 x 1-hour seminar (x 11 weeks) + 2 x 1-hour revision sessions			
	Scheduled learning: 22 hours		**Guided independent study:** 178 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%			
	As used by St Andrews: 2-hour Written Examination = 60%, Coursework = 40%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr K McKee			
Lecturer(s)/Tutor(s):	Dr K McKee			

GG3234 Migration and Transnationalism

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2016/7			
Availability restrictions:	Offered on a two-year cycle			
Planned timetable:	To be arranged.			

This module is designed to advance students' appreciation of the chief academic arguments associated with migration and transnationalism. Geographical analysis of the changing role of labour migration in the world economy offers a distinctive perspective on this spatially, socially and economically selective process. Other new mobilities, such as the very significant increase in international student mobility, illustrate the complex ways in which globalisation interfaces with the efforts of individuals, families and communities to add to their social and cultural capital. Although dominantly concerned with international mobility, other scales of analysis will also be considered (e.g. the body). Finally, the course briefly covers issues associated with immigration, refugee and asylum policies.

Programme module type:	Optional for all degrees involving Geography or Sustainable Development	
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012, or in SD2001 and SD2002	
Learning and teaching methods and delivery:	**Weekly contact**: 1 hour lecture and 1 hour seminar (x 10 weeks) + 2 x 1-hour essay feedback and exam revision sessions.	
	Scheduled learning: 22 hours	**Guided independent study:** 178 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%	
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%	
Re-Assessment pattern:	2-hour Written Examination = 100%	
Module Co-ordinator:	Dr D McCollum	
Lecturer(s)/Tutor(s):	Dr D McCollum	

GG3237 Political and Cultural Geographies of the Border

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	Offered on a two-year cycle			
Planned timetable:	12.00 noon - 2.00 pm Tue			

This module focuses on a critical analysis and empirical reflection on the border and its functions, to better appreciate borders' paradoxical cultural and political roles. It will provide a framework for understanding contemporary bordering practices, their role in processes of identity-building and the constitution of belonging and difference within the fields of political and cultural geography. It will provide an introduction to the multi-disciplinary arenas of border studies, critical geopolitics, and biopolitics. An understanding of the over-arching power of discourse will be central to this course; the examples used will provide students with a deeper appreciation of how discourses work in the transmission of knowledge and the legitimisation of action. This module will challenge students to think about the complex functions of the border and their deeply political nature.

Programme module type:	Optional for all degrees involving Geography or Sustainable Development	
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012, or in SD2001 and SD2002	
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 1-hour lecture (x 11 weeks) 1 x 1-hour seminar (x 11 weeks) 2 hours feedback and additional exam prep sessions	
	Scheduled learning: 24 hours	**Guided independent study:** 176 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 40%, Practical Examinations = 0%, Coursework = 60%	
	As used by St Andrews: 1-hour Written Examination = 40%, Coursework = 60%	
Re-Assessment pattern:	2-hour Written Examination = 100%	
Module Co-ordinator:	Dr S Leahy	
Lecturer(s)/Tutor(s):	Dr S Leahy	

GG3262 Climate and Weather Systems

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2016/7			
Availability restrictions:	Availability TBC - Offered on a two-year cycle			
Planned timetable:	To be arranged.			

Weather affects every aspect of life, and is a fundamental control on many environmental systems. This module explores the workings of the atmosphere at a wide range of scales, from the formation of clouds and raindrops, through thunderstorms and cyclones, up to large-scale circulation of the atmosphere. Beginning from first principles, key physical processes are introduced and used to develop a deep understanding of the earth's weather and climate. The module concludes with a critical examination of the climate change debate.

Programme module type:	Optional for all degrees involving Geography or Sustainable Development, or - by arrangement - Environmental Geoscience	
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012	
Learning and teaching methods and delivery:	**Weekly contact**: 2 hours lectures and 2 hours seminars (x 5 weeks) + 2 x 1-hour essay feedback and exam revision sessions	
	Scheduled learning: 22 hours	**Guided independent study:** 178 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%	
	As used by St Andrews: Written Examination = 60%, Coursework = 40%	
Re-Assessment pattern:	2-hour Written Examination = 100%	
Module Co-ordinator:	Prof D I Benn	
Lecturer(s)/Tutor(s):	Prof D I Benn	

GG3263 Glaciers and Glaciation

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2016/7			
Availability restrictions:	Availability TBC - Offered on a two-year cycle			
Planned timetable:	To be arranged.			
In recent years, concern has risen about the impact of climate change on glaciers and ice sheets, and the implications for sea level rise, natural hazards and water resources. This course critically evaluates these issues, and explores the fundamental glaciological processes required to understand them. The first part of the course focuses on how glaciers function and interact with climate, and covers glacier mass balance (snowfall and ice melt), hydrology, processes of glacier motion and ice dynamics. The second part then applies these principles to important issues, such as glacier lake outburst floods, water resources in glacier-fed river basins, the future of the Antarctic and Greenland Ice Sheets, and sea level change.				
Programme module type:	Optional for all degrees involving Geography or Sustainable Development, or - by arrangement - Environmental Geoscience			
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012			
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 1-hour lecture, 1 x 1-hour seminar (x 11 weeks) + 1 x 1-hour revision session + 1 residential (two-day – 16 hours) field course during the semester.			
	Scheduled learning: 37 hours		**Guided independent study:** 163 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%			
	As used by St Andrews: 2-hour Written Examination = 60%, Coursework = 40%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Prof D I Benn			
Lecturer(s)/Tutor(s):	Prof D I Benn			

GG3264 Oceans and Climate

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2016/7			
Availability restrictions:	Availability - TBC - Offered on a two-year cycle			
Planned timetable:	To be arranged.			
The oceans play a key role in the global climate system. The aim of this module is to foster an understanding of: (1) changes in ocean circulation and climate, the possible mechanisms for such changes and the wider implications in terms of past, present and future global and regional climates; and (2) to provide an introduction to some of the research methods employed to determine oceanographic changes.				
Programme module type:	Optional for all degrees involving Geography or Sustainable Development, or - by arrangement - Environmental Geoscience			
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012			
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 1-hour lecture, 1 x 1-hour seminar (x 11 weeks) + 1 x 1-hour revision session during the semester.			
	Scheduled learning: 23 hours		**Guided independent study:** 177 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%			
	As used by St Andrews: Written Examination = 60%, Coursework = 40%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Prof W E N Austin			
Lecturer(s)/Tutor(s):	Prof W E N Austin			

GG3271 Coastal Processes

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	Availability - TBC - Offered on a two-year cycle.			
Planned timetable:	2.00 pm - 4.00 pm Thu			

The majority of the world's population live in close proximity to the coastal zone. Coastal processes are highly dynamic and sensitive to external drivers, including long-term climate change and anthropogenic activities. Understanding these systems is important for developing appropriate coastal management strategies. Coasts (and coastal processes) therefore represent an excellent opportunity to study the interactions between humans and their physical environment.

The module aims to enhance students' understanding of environment-shaping processes and to offer advanced field-based training in the coastal environment. Including practical classes and an obligatory, reasonably priced, weekend field excursion, it encourages students to think about the ways in which process knowledge can inform coastal management.

Programme module type:	Optional for all degrees involving Geography, or Sustainable Development and - by arrangement - Environmental Geoscience	
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012 and/or SD2001 and SD2002	
Anti-requisite(s):	GG3067	
Learning and teaching methods and delivery:	**Weekly contact**: Weekly lectures.	
	Scheduled learning: 30 hours	**Guided independent study:** 170 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%	
	As used by St Andrews: 2-hour Written Examination = 60%, Coursework = 40%	
Re-Assessment pattern:	2-hour Written Examination = 100%	
Module Co-ordinator:	Prof W E N Austin	
Lecturer(s)/Tutor(s):	Prof W E N Austin	

GG3272 Biogeography

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	Offered on a two-year cycle			
Planned timetable:	11.00 am – 2:00 pm Thu			

Biogeography is the study of the geographical distribution of organisms, and it is at the heart of our understanding of Earth system function. Controlled by numerous interacting physical and biological factors operating on a wide range of temporal and spatial scales, biogeography is critical to understanding past, present and future trajectories of ecosystem change. In this module we will study some of the many active and fascinating debates in the field of biogeography including the application of fundamental biogeographical principles to current conservation policy. Teaching is through a combination of lectures, seminars and workshops, plus one half-day field excursion.

Programme module type:	Optional for all degrees involving Geography or Sustainable Development, or - by arrangement - Environmental Geoscience	
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012 and/or SD2001 and SD2002	
Learning and teaching methods and delivery:	**Weekly contact**: 1-hour lecture, (X 11 weeks), 1-hour seminar (x 6 weeks) 2-hour workshops(x 4 weeks) 6-hour fieldwork (x 1 week)	
	Scheduled learning: 31 hours	**Guided independent study:** 169 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 40%, Practical Examinations = 0%, Coursework = 60%	
	As used by St Andrews: 2-hour Written Examination = 40%, Coursework = 60%	
Re-Assessment pattern:	Students will have to resit the failed component(s) in order to obtain a capped mark of 7 for the module as a whole, completing one or more of the following: - A 1500 word report, following the format of Assessment 1, using a different, secondary dataset (30%) - A 1500 word guide to the biogeography of a selected region (i.e. a different region to the first attempt; 30%) - A two-hour written exam (40%).	
Module Co-ordinator:	Dr I Lawson	
Lecturer(s)/Tutor(s):	Dr I Lawson, Dr K Roucoux	

GG3273 Scrutinising Segregation: Geographies of Diversity and Inequality

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2016/7			
Planned timetable:	To be arranged			

Is Britain residentially segregated? How do we know this? What social and population processes shape segregation? Along what lines (race, religion, class) is segregation considered? Why does segregation matter? How has the question of the patterning of where people live become connected to international relations and national security?

Through consideration of these questions we will think critically about diversity and inequality, and how these salient social themes have been thought about academically and politically. We will examine the evidence on segregation and how this has been appropriated and misappropriated, and we will discover what Geographers can contribute, conceptually and methodologically, to these debates.

Programme module type:	Optional for all degrees involving Geography or Sustainable Development	
Pre-requisite(s):	(GG2011 and GG2012) OR (SD2001 and SD2002)	
Learning and teaching methods and delivery:	**Weekly contact:** 1 x 1-hour seminar (x 11 weeks), 1 x 1-hour lecture (x 11 weeks)	
	Scheduled learning: 22 hours	**Guided independent study:** 176 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%	
	As used by St Andrews: 2-hour Written Examination = 60%, Coursework = 40%	
Re-Assessment pattern:	2-hour Written Examination = 100%	
Module Co-ordinator:	Dr N Finney	
Lecturer(s)/Tutor(s):	Dr N Finney	

GG3301 Special Topic for Joint or Major Honours in Geography (Junior Honours)				
SCOTCAT Credits:	10	SCQF Level 9	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Entry to a Joint or Major Honours programme in Geography.			
Planned timetable:	To be arranged.			
This module is designed to allow Joint or Major Honours students in their Junior Honours year to engage with the subject matter of a selected 20-credit optional module in Geography (GG3221 - GG3289) yet balance the workload across the four semesters of their Honours programme. Students complete the contact hours of their chosen module but undertake a separate assessment.				
Programme module type:	Optional for Joint Honours Geography and all 'Geography with' degrees			
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012			
Learning and teaching methods and delivery:	**Weekly contact**: Students undertake the lecture/seminar contact hours associated with any 3000-level GG, SG or SD coded option module, but do a separate assessment (4000-word essay). Weekly contact hours vary (with the option module taken), but the average scheduled learning across the range of modules available is 23 hours.			
	Scheduled learning: 23 hours		**Guided independent study:** 77 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	Coursework Essay = 100%			
Module Co-ordinator:	Dr U Demsar			
Lecturer(s)/Tutor(s):	Various			

GG3302 Special Topic for Honours in Geography (Senior Honours)

SCOTCAT Credits:	10	SCQF Level 9	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Entry to a Joint or Major Honours programme in Geography			
Planned timetable:	To be arranged.			
This module is designed to allow Honours students in their Senior Honours year to engage with the subject matter of a selected 20-credit optional module in Geography (GG3221 - GG3289) yet balance the workload across the four semesters of their Honours programme. Students complete the contact hours of their chosen module but undertake a separate assessment.				
Programme module type:	Optional for Joint Honours Geography, all 'Geography with' degrees and Single Honours students also taking ID4001 or ID4002.			
Pre-requisite(s):	Passes at Grade 11 or better in GG2011 and GG2012			
Required for:	Single Honours Geography students also taking ID4001 or ID4002			
Learning and teaching methods and delivery:	**Weekly contact**: Students undetake the lecture/seminar contact hours associated with any 3000-level GG, SG or SD coded option module, but do a separate assessment (4000-word essay). Weekly contact hours vary (with the option module taken), but the average scheduled learning across the range of modules available is 23 hours.			
	Scheduled learning: 23 hours		**Guided independent study:** 77 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	Coursework Essay = 100%			
Module Co-ordinator:	Dr U Demsar			
Lecturer(s)/Tutor(s):	Various			

GG4201 Advanced Debates in Geography

SCOTCAT Credits:	10	SCQF Level 10	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Core - available every year.			
Planned timetable:	11.00 am - 1.00 pm Tue			
This module extends and provides a summation of work undertaken in the geography Honours programme, providing students with an opportunity to reflect on the scope and diversity of geography as a discipline and to think holistically about their own learning. The module is structured around a set of readings and seminars that encourage student to study and debate important contemporary issues and debates within geography (e.g. climate change, globalisation, the nature of social inequality, the interface between nature and culture). It is examined with a single three-hour examination comprised of a mixture of seen and unseen exam questions. These address the nature of geography as a discipline and the way in which geographical reasoning has or might be applied to significant contemporary issues.				
Programme module type:	Compulsory core for Single Honours Geography Optional for all 'Geography with' degrees			
Pre-requisite(s):	1 of SG3201 - SG3204			
Learning and teaching methods and delivery:	**Weekly contact**: 6 x 2-hour seminars during the semester.			
	Scheduled learning: 12 hours		**Guided independent study:** 88 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 100%, Practical Examinations = 0%, Coursework = 0%			
	As used by St Andrews: 2-hour Written Examination = 100%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr S Leahy			
Lecturer(s)/Tutor(s):	Team taught			

GG4297 Joint Honours Research Dissertation in Geography

SCOTCAT Credits:	30	SCQF Level 10	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Core - available every year.			
Planned timetable:	To be arranged.			
The research dissertation is the fundamental piece of independent work upon which the Geography degree is based. It provides students with the opportunity to design and undertake an independent, original piece of empirical research under the supervision of a member of staff. The dissertation is a substantial, independent piece of research that represents the culmination of both substantive and core training in Geography. (Guidelines for printing and binding dissertations can be found at: http://www.st-andrews.ac.uk/printanddesign/dissertation/).				
Programme module type:	Compulsory for Joint Honours Geography			
Pre-requisite(s):	GG3202, SG3202		**Anti-requisite(s):**	GG4298
Learning and teaching methods and delivery:	**Weekly contact**: Up to 8 hours of guided study per student over the semester (one-to-one supervision, by arrangement with supervisor)			
	Scheduled learning: 8 hours		**Guided independent study:** 292 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Dissertation = 100%			
Re-Assessment pattern:	Oral Examination = 100%			
Module Co-ordinator:	Dr S Leahy			
Lecturer(s)/Tutor(s):	Team taught			

GG4298 Research Dissertation in Geography

SCOTCAT Credits:	50	SCQF Level 10	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Core - available every year.			
Planned timetable:	To be arranged.			
The research dissertation is the fundamental piece of independent research work upon which the Geography degree is based. It provides students with the opportunity to design and undertake an independent, original piece of empirical research under the supervision of a member of staff. The dissertation is a substantial, independent piece of research that represents the culmination of substantive and core training in Geography. An important component of the dissertation is the annual Senior Honours Research Conference at which all students present their work to members of the school and to Junior Honours students as an oral presentation.(Guidelines for printing and binding dissertations can be found at: http://www.st-andrews.ac.uk/printanddesign/dissertation/)				
Programme module type:	Compulsory core for Single Honours Geography, all 'Geography with' degrees			
Pre-requisite(s):	SG3201 or SG3203		**Anti-requisite(s):**	GG4297
Learning and teaching methods and delivery:	**Weekly contact**: Up to 8 hours of guided study per student over the semester (one-to-one supervision, by arrangement with supervisor), plus a 1 day (8-hour) conference			
	Scheduled learning: 16 hours		**Guided independent study:** 490 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Dissertation and Conference presentation = 100%			
Re-Assessment pattern:	Oral Examination = 100%			
Module Co-ordinator:	Dr S Leahy			
Lecturer(s)/Tutor(s):	Team taught			

GG4301 Advanced Study for Joint or Major Honours in Geography

SCOTCAT Credits:	10	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Entry to a Joint or Major Honours programme in Geography			
Planned timetable:	To be arranged.			
This module is designed to allow Joint or Major Honours students in their Senior Honours year to engage with the subject matter of a selected 20-credit optional module in Geography (GG3221 - GG3289) yet balance the workload across the four semesters of their Honours programme. Students complete the contact hours of their chosen module but undertake a separate assessment, at 4000-level (an advanced essay).				
Programme module type:	Optional for all degrees involving Geography except Single Honours			
Pre-requisite(s):	Entry to a Joint or Major Honours programme in Geography, and normally a pass in one of SG3202 or SG3203			
Learning and teaching methods and delivery:	**Weekly contact**: Students undetake the lecture/seminar contact hours associated with any 3000-level GG, SG or SD coded option module, but do a separate assessment (4000-word essay). Weekly contact hours vary (with the option module taken), but the average scheduled learning across the range of modules available is 23 hours.			
	Scheduled learning: 23 hours		**Guided independent study:** 77 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	Coursework Essay = 100%			
Module Co-ordinator:	Dr U Demsar			
Lecturer(s)/Tutor(s):	Various			

Sustainable Development (SD) modules

SD3221 Frontiers in Sustainability Research: Do Good Lives Cost the Earth?				
SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2016/7			
Availability restrictions:	Offered on a two-year cycle.			
Planned timetable:	To be arranged.			
Material wealth has arguably created a 'culture of surplus' through which the pursuit of improved personal well-being has involved ever greater consumption of material goods, leaving in its wake a legacy of environmental problems (Ryan and Deci 2001). Yet across the world, people have often reported having long and happy lives ('happy life years'), whilst consuming different levels of resources (Seaford 2011). The security of these resources varies enormously too with potential implications for well-being, and much of this security is changing with increasing global connectivity and shifts from subsistence to monetary economies (Fazey et al., 2011). This module draws on evidence and literature from across several disciplines (for example, geography, psychology, sociology, politics) to explore the relationship between personal well-being and planetary well-being (via environmental behaviour). It will look at and critically assess models of personal well-being and environmental behaviour, notions of the 'good' life, and behaving 'well'. It will also explore debates around responsibility for personal well-being and environmental behaviour, and how that is manifest in processes of policy-making.				
Programme module type:	Optional for all degrees involving Sustainable Development or Geography			
Pre-requisite(s):	Passes at grade 11 or better in (SD2001 and SD2002) or (GG2011 and GG2012)			
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 2-hour lecture (x 11 weeks), 3 x 2-hour seminars and 1 x 2-hour tutorial during the semester			
	Scheduled learning: 30 hours		**Guided independent study:** 170 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 10%, Coursework = 30%			
	As used by St Andrews: Coursework = 40%, 2-hour Written Examination = 60%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr L A Reid			
Lecturer(s)/Tutor(s):	Dr L A Reid			

SD3222 Governance for Sustainability

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	Offered on a two-year cycle.			
Planned timetable:	9.00 - 11.00 am Mon, ocassional 9.00 am - 11.00 am Wed			

The Earth's environment has become a major focal point of international conflict and cooperation. Responding to the growing threats of climate change and energy insecurity, countries have signed over 700 international treaties designed to protect and manage the environment. Just as importantly, they have developed elaborate tools and systems for observing and modelling the behaviour of the global environment and translating this knowledge into policy advice. At the same time, global challenges demand action from local, national and transnational actors. This course provides a broad overview of developments and patterns in the practical, theoretical and political dimensions of multi-level governance as they have emerged over the past three decades. In so doing, a wide range of policy case studies are explored including energy, climate change, oceans and marine planning.

Programme module type:	Optional for all degrees involving Sustainable Development or Geography	
Pre-requisite(s):	Passes at grade 11 or better in (SD2001 and SD2002) or (GG2011 and GG2012)	
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 1-hour lecture plus 1 x 1-hour seminar (x 11 weeks) plus 2 x 3-hour seminars	
	Scheduled learning: 26 hours	**Guided independent study:** 174 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 10%, Coursework = 30%	
	As used by St Andrews: 2-hour Written Examination = 60%, Coursework = 40%	
Re-Assessment pattern:	2-hour Written Examination = 100%	
Module Co-ordinator:	Dr T A Stojanovic	
Lecturer(s)/Tutor(s):	Dr T A Stojanovic, D McCauley	

SD3224 Introduction to Environmental Economics

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8			
Planned timetable:	9.00 am - 11.00 am Wed			
This module introduces students to the contributions that environmental economics can make to helping us understand and manage a wide range of environmental problems. We also study the insights which economics provides on the relationship between economic growth and environmental quality, and the measurement of sustainability. No prior knowledge of economics is presumed, and a course textbook is available which is co-written by one of the course lecturers.				
Programme module type:	Optional for all degrees involving Sustainable Development or Geography			
Pre-requisite(s):	Passes at grade 11 or better in (SD2001 and SD2002) or (GG2011 and GG2012)			
Anti-requisite(s):	SD5023			
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 1-hour lecture (x 11 weeks), 1 x 1-hour seminar (x 11 weeks)			
	Scheduled learning: 22 hours		**Guided independent study:** 178 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 10%, Coursework = 40%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Prof N Hanley & Dr E McLaughlin			
Lecturer(s)/Tutor(s):	Prof N Hanley & Dr E McLaughlin			

SD3225 Transitioning to Sustainability: The Nature of Community in Multi-level Governance and Action for Sustainability

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	Offered on a two-year cycle.			
Planned timetable:	10.00 am - 12.00 noon Fri			
Sustainability will never be achieved only through state intervention. A shift towards management models includes an emphasis on community as an essential component of multi-level governance for sustainability. In this module we will explore how communities of place, interest, practice and value can contribute to the transition to sustainability. We will examine how community interacts with other sectors, explore learning, adaptation and resilience in communities and pursue the trend for alternative economies. We will draw on examples from the global north and south. In addition, we will critique the contested concept of community itself, acknowledging issues relating to heterogeneity, representation and relationality.				
Programme module type:	Optional for all degrees involving Sustainable Development or Geography			
Pre-requisite(s):	Passes at grade 11 or better in (SD2001 and SD2002) or (GG2011 and GG2012)			
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 1-hour lecture (x 11 weeks), 1 x 1-hour seminar (x 11 weeks) 5-hour practical session (x 1 week), 10-hour fieldwork (x 1 week)			
	Scheduled learning: 37 hours		**Guided independent study:** 163 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 0%, Coursework = 50%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr R White			
Lecturer(s)/Tutor(s):	Dr R White			

SD3237 Placing Sustainability: Knowledge & Wellbeing for the Anthropocene

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2017/8			
Availability restrictions:	Offered on a two-year cycle.			
Planned timetable:	To be arranged.			

This module engages with debates on the culturally shaped idea of sustainabilty and how it changes geographically across place. This will be discussed through a variety of ethnographic examples, especially indigenous peoples of Latin America. The module will bring together for the first time and discuss in critical and novel ways three distinct yet interrelated bodies of literature and debates, namely the scholarships on sustainability, well-being and ways of knowing. The critical engagement with scholarly and policy debates on knowledge, "alternative" knowledge, indigenous ways of knowing, and their relationship with 'well-being' will be core to the module, to challenge and disrupt mainstream sustainability scholarship.

Programme module type:	Optional for all degrees involving Sustainable Development or Geography	
Pre-requisite(s):	Passes at grade 11 or better in (SD2001 and SD2002) and/or GG2012 and/or SA2002	
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 1-hour lecture (x 5 weeks), 1 x 1-hour seminar (x 5weeks) 40-hour fieldwork (x 2 weeks)	
	Scheduled learning: 90 hours	**Guided independent study:** 110 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%	
	As used by St Andrews: Coursework = 100%	
Re-Assessment pattern:	2-hour Written Examination = 100%	
Module Co-ordinator:	Dr E Ferraro	
Lecturer(s)/Tutor(s):	Dr E Ferraro	

SD4299 Dissertation in Sustainable Development

SCOTCAT Credits:	60	SCQF Level 10	**Semester:**	Whole Year
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Core - Available only to students who intend an Honours Degree in Sustainable Development.			
Planned timetable:	To be arranged.			

This module is largely based upon independent study. Students select a research question in Sustainable Development, mount a research programme to investigate the topic, and write a dissertation on the work. The topic is selected during the second semester of the junior honours year; data can be collected during the following vacation with data analysis and the writing of the dissertation taking place over both semesters of Senior Honours. Each student is supervised by a member of the teaching staff from an appropriate disciplinary area who will ensure that the topic chosen is viable and advise students on data collection and analysis. Students attend an introductory session at the start of semester 2, followed by a series of 'workshop' sessions covering aspects of research design and process during the semester Individual tutorials are decided between the individual student and their supervisors.The dissertation will normally be based in the disciplinary area of the student's partner subject, but in recognition of the interdisciplinary nature of the field of study of sustainable development and of the SD Programme, the dissertation will itself be interdisciplinary to some extent. An important component of the dissertation is the annual Senior Honours Research Conference at which all students present their work to members of the school and to Junior Honours students as an oral presentation.

Programme module type:	Compulsory for Sustainable Development		
Pre-requisite(s):	One of SG3201 - SG3204	**Anti-requisite(s):**	SD4002
Learning and teaching methods and delivery:	**Weekly contact**: Up to 8 hours of guided study per student over the semester (one-to-one supervision, by arrangement with supervisor), plus a 1 day (8-hour) conference		
	Scheduled learning: 16 hours	**Guided independent study:** 584 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%		
	As used by St Andrews: Dissertation and Conference Paper = 100%		
Re-Assessment pattern:	Oral Examination = 100%		
Module Co-ordinator:	Dr S Leahy		
Lecturer(s)/Tutor(s):	Team taught		

Sustainable Geography (SG) modules

SG3201 Single Honours Research Design and Methodology Training (60)				
SCOTCAT Credits:	60	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Not available to General Degree Students.			
Planned timetable:	To be arranged.			
This module occupies a central place in our field-based research-orientated degree. It prepares students to undertake their independent research dissertation and develops transferable professional skills useful beyond graduation. Students learn about research design and the collection of original empirical data through engagement with a series of problem-based issues in geography and sustainable development. Themes covered include: training in quantitative, qualitative, and physical research methods; ethics of research; statistical techniques; cartography; and GIS (Geographical Information Systems). There is opportunity for streaming and choice amongst units covering these themes. Skills and techniques learned are applied during a residential field course where students will design and execute an original empirical research project with a staff mentor. The module concludes with students producing an independent research proposal for their Senior Honours dissertation projects.				
Programme module type:	Compulsory core for Single Honours Geography and one of SG3201 - SG3204 is compulsory for Sustainable Development			
Pre-requisite(s):	Passes at Grade 11 or better in (GG2011 and GG2012) or (SD2001 and SD2002)		**Anti-requisite(s):**	SG3202 - SG3204
Required for:	SG4221-8, One of SG3201 or SG3203-4 is required for GG4298. One of SG3201-4 is required for SD4299			
Learning and teaching methods and delivery:	**Weekly contact**: Varies according to the combination of elements (module units) chosen by the student. Average of 10 hours of classroom time (x 11 weeks), and a 1-week (40 hour) field class			
	Scheduled learning: 150 hours		**Guided independent study:** 450 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	No Re-Assessment available			
Module Co-ordinator:	Dr U Demsar			
Lecturer(s)/Tutor(s):	Team taught			

SG3202 Joint Honours Research Design and Methodology Training (30)

SCOTCAT Credits:	30	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Not available to General Degree Students.			
Planned timetable:	To be arranged.			

This module occupies a central place in our field-based research-orientated degrees. It prepares students to undertake their independent research dissertation and develops transferable professional skills useful beyond graduation. It is designed to prepare students for undertaking original, empirical research by introducing them to the general principles, methodologies, and methods used in the collection and generation of data. Students need to make an informed choice, with the help of their Advisor, to select from the units shared with the larger 60-credit SG3201. The module concludes with students producing an independent research proposal for their Senior Honours dissertation research.

Programme module type:	Compulsory core for Joint Honours Geography One of SG3202 or SG3203 is compulsory for Geography with Persian, Geography with Social Anthropology,Geography with Spanish One of SG3201 - SG3204 is compulsory for Sustainable Development		
Pre-requisite(s):	Passes at Grade 11 or better in (GG2011 and GG2012) or (SD2001 and SD2002)	**Anti-requisite(s):**	SG3201, SG3203 - SG3204
Required for:	SG4221 - SG4228, GG4297		
Learning and teaching methods and delivery:	**Weekly contact**: Varies according to the combination of elements (module units) chosen by the student. Average of 10 hours (x 7.5 weeks).		
	Scheduled learning: 75 hours	**Guided independent study:** 225 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%		
	As used by St Andrews: Coursework = 100%		
Re-Assessment pattern:	No Re-Assessment available		
Module Co-ordinator:	Dr U Demsar		
Lecturer(s)/Tutor(s):	Team taught		

SG3203 Research Design and Methodology Training (50)

SCOTCAT Credits:	50	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Not available to General Degree Students.			
Planned timetable:	To be arranged.			

This module occupies a central place in our field-based research-orientated degrees. It prepares students to undertake their independent research dissertation and develops transferable professional skills useful beyond graduation. It is designed to prepare students for undertaking original, empirical research by introducing them to the general principles, methodologies, and methods used in the collection and generation of data. Students need to make an informed choice, with the help of their Advisor, to select from the units shared with the larger 60-credit SG3201. The module concludes with students producing an independent research proposal for their Senior Honours dissertation research.

Programme module type:	One of SG3202 or SG3203 is compulsory for Geography with Persian, Geography with Social Anthropology,Geography with Spanish One of SG3201 - SG3204 is compulsory for Sustainable Development		
Pre-requisite(s):	Passes at grade 11 or better in GG2011 and GG2012 or SD2001 and SD2002	**Anti-requisite(s):**	SG3201- SG3204, SD3203
Required for:	SG4221 - SG4228, One of SG3201 or SG3203-4 is required for GG4298. One of SG3201-4 is required for SD4299		
Learning and teaching methods and delivery:	**Weekly contact**: aries according to the combination of elements (module units) chosen by the student. Average of 10 hours (x 8.5 weeks), and a 1-week (40 hour) field class.		
	Scheduled learning: 125 hours	**Guided independent study:** 375 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%		
	As used by St Andrews: Coursework = 100%		
Re-Assessment pattern:	No Re-Assessment available		
Module Co-ordinator:	Dr U Demsar		
Lecturer(s)/Tutor(s):	Team taught		

SG3204 Research Design and Methodology Training (40)

SCOTCAT Credits:	40	SCQF Level 9	**Semester:**	2
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Not available to General Degree Students.			
Planned timetable:	To be arranged.			
This module is a core research design and methods training module. It is organised around a series of problem-based learning units where introductory lectures lead onto the practical implementation of particular methods. The focus is on the collection and generation of data which then leads onto the rigorous analysis of data in Senior Honours. It includes a research-based residential fieldclass organised around the design and implementation of a specific research project. The module provides fundamental training for the independent Senior Honours dissertation project.				
Programme module type:	One of SG3201 - SG3204 is compulsory (Core) for Sustainable Development			
Pre-requisite(s):	Passes at grade 11 or better in GG2011 and GG2012 or SD2001 and SD2002		**Anti-requisite(s):**	SG3201, SG3202, SG3203, SD3204
Required for:	SG4221- SG4228, One of SG3201 or SG3203-4 is required for GG4298. One of SG3201-4 is required for SD4299			
Learning and teaching methods and delivery:	**Weekly contact**: Varies according to the combination of elements (module units) chosen by the student. Average of 10 hours (x 8 weeks) plus a fieldclass.			
	Scheduled learning: 104 hours		**Guided independent study:** 296 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	No Re-Assessment available			
Module Co-ordinator:	Dr U Demsar			
Lecturer(s)/Tutor(s):	Team taught			

SG3229 Environmental Management in Scotland

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2016/7			
Availability restrictions:	Offered on a two-year cycle.			
Planned timetable:	To be arranged.			
This module explores current environmental management issues in Scotland. It discusses the primary sectors of land & resource management (e.g. forestry, agriculture, wildlife management, freshwater resource management, conservation, renewable energy), and explores how these systems interact. The aim is to leave students with an informed conceptual and empirical framework for evaluating management proposals and their implications for environmental, economic and social change. A particular focus, employing topical case studies and a field visit, is the conflicts that arise as interest groups with contrasting philosophies & value systems compete to shape the future of Scotland's natural heritage within a devolved political framework and in the context of climate change.				
Programme module type:	Optional for all degrees involving Geography or Sustainable Development			
Pre-requisite(s):	Passes at grade 11 or better in (GG2011 and GG2012) or (SD2001 and SD2002)			
Learning and teaching methods and delivery:	**Weekly contact**: 1 x 2-hour lecture (x 10 weeks) + 2 x 1-hour feedback/revision sessions and a 1-day (8 hour) field excursion.			
	Scheduled learning: 30 hours		**Guided independent study:** 170 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 20%, Coursework = 20%			
	As used by St Andrews: 2-hour Written Examination = 60%, Practical Examination = 20%, Coursework = 20%			
Re-Assessment pattern:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr C R Warren			
Lecturer(s)/Tutor(s):	Dr C R Warran			

SG3272 Socio-ecological Systems

SCOTCAT Credits:	20	SCQF Level 9	**Semester:**	1
Academic year:	2016/7			
Availability restrictions:	Offered on a two-year cycle.			
Planned timetable:	To be arranged.			

This module examines how we can use records of the past to understand human-environment interactions over the timescales on which climate change plays out. It will present key concepts and theories for understanding the complex dynamics of socio-ecological systems, and illustrate how careful consideration of palaeoenvironmental, archaeological and historical data can be used to understand how past societies coped with climatic stresses and managed finite resources. We also consider how knowledge of the past can inform current and future thinking about social resilience and conservation management. The module uses case studies from the Old and New Worlds, including North Atlantic, Pacific Islands, and the African savanna.

Programme module type:	Optional for all degrees involving Geography or Sustainable Development	
Pre-requisite(s):	Passes at grade 11 or better in (GG2011 and GG2012) or (SD2001 and SD2002)	
Learning and teaching methods and delivery:	**Weekly contact**: 1-hour lecture (x 11 weeks), 1-hour seminar (x 11 weeks).	
	Scheduled learning: 20 hours	**Guided independent study:** 176hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 60%, Practical Examinations = 0%, Coursework = 40%	
	As used by St Andrews: 2-hour Written Examination = 60%, Coursework = 40%	
Re-Assessment pattern:	2-hour Written Examination = 100%	
Module Co-ordinator:	Dr A Davies	
Lecturer(s)/Tutor(s):	Dr A Davies and Dr R Streeter	

SG4221 Review Essay

SCOTCAT Credits:	20	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Core - available every year			
Planned timetable:	4.00 pm - 6.00 pm Thu			

This elective requires students, working independently, to identify and critically review a body of literature, giving an account of its substantive content, and critically assessing the evidence on which it is based. Students can either identify an intellectual field that lies outside those addressed in available 3000-level options modules, or build on a field covered in the programme, pursuing it at greater depth. In addition to supervisory sessions and module tutorials, students may also attend sessions in a relevant 3000-level option module running in the same semester.

Programme module type:	Optional elective for all degrees involving Geography or Sustainable Development	
Pre-requisite(s):	Passes in one of SG3201 - SG3204	
Learning and teaching methods and delivery:	**Weekly contact**: Introductory lecture and seminar (2 hours) followed by guided independent study (one-to-one supervision)	
	Scheduled learning: 2 hours	**Guided independent study:** 198 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%	
	As used by St Andrews: Coursework = 100%	
Re-Assessment pattern:	Review Essay = 100%	
Module Co-ordinator:	Dr S Leahy	
Lecturer(s)/Tutor(s):	Team taught	

SG4222 Advanced Qualitative Analysis

SCOTCAT Credits:	20	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	11.00 am - 1.00 pm Thu			
This module offers advanced training in methods of qualitative analysis that facilitate dissertation work and develop transferable skills for future careers. Learning is project/problem-based, and students gain practical experience of working with a range of qualitative data (e.g. archives, visual and textual documents and interview transcripts) using a range of analytical approaches (e.g. discourse analysis, deconstruction, grounded theory and computer-assisted qualitative analysis). Research data are drawn from a range of areas within geography and sustainable development. . Techniques, themes and materials will vary according to staff availability.				
Programme module type:	Optional elective for all degrees involving Geography or Sustainable Development			
Pre-requisite(s):	Passes in one of SG3201 - SG3204			
Learning and teaching methods and delivery:	**Weekly contact**: 2-hour lecture (x 4 weeks), 2-hour seminar (x2 weeks), 2-hour practical (x3 weeks)			
	Scheduled learning: 18 hours		**Guided independent study:** 182 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	Coursework project = 100%			
Module Co-ordinator:	Dr D Clayton			
Lecturer(s)/Tutor(s):	Team taught			

SG4223 Advanced Quantitative Analysis

SCOTCAT Credits:	20	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	2.00 pm - 4.00 pm Tue and Thu			
Students taking this module will learn some of the core research skills necessary to be a professional quantitative social science researcher and then to carry out a typical consulting project. It will allow them to explore a substantive policy issue, carry out their own quantitative research and then make recommendations based on these findings. They will be presented with a 'real world' scenario and be expected to take on the role of a researcher who is advising policy makers; in simulations of various policy forums, they will then learn how to defend their recommendations and advice. They will first be taught the relevant quantitative research skills and introduced to potentially useful research resources. They will then be expected to construct their own research strategy, carry out the necessary research and present this in various formats, working independently of the teaching staff.				
Programme module type:	Optional elective for all degrees involving Geography or Sustainable Development			
Pre-requisite(s):	Passes in one of SG3201 - SG3204			
Learning and teaching methods and delivery:	**Weekly contact**: 2-hour lectures, 2-hour seminars, 1-hour practical classes each week for 7 weeks, and occasional tutorials.			
	Scheduled learning: 38 hours		**Guided independent study:** 162 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 13%, Coursework = 87%			
	As used by St Andrews: Practical Examination = 13%, Coursework = 87%			
Re-Assessment pattern:	Coursework project = 100%			
Module Co-ordinator:	Dr A Marshall			
Lecturer(s)/Tutor(s):	Team taught			

SG4224 Advanced Topics in Physical Sciences

SCOTCAT Credits:	20	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Planned timetable:	11.00 am - 1.00 pm Tue and 9.00 am - 11.00 am Thu			
This module introduces students to a range of advanced and cutting edge topics in Physical Geography and other physical sciences relevant to geography and sustainable development. Three topics are offered each year that build on material explored in 3000-level Honours modules, and which expand and deepen students' practical skill set. Students choose two of the three topics. Each topic includes in-depth study of the primary literature, combined with advanced training in analytical, technical or methodological approaches, thus integrating "hands-on" applied learning with critical reading of the primary literature. The module complements and expands the learning acquired in SG3201-SG3204, and provides additional resources for the development of students' individual dissertation projects.				
Programme module type:	Optional elective for all degrees involving Geography or Sustainable Development			
Pre-requisite(s):	Passes in one of SG3201 - SG3204			
Learning and teaching methods and delivery:	**Weekly contact**: 2 hour lectures (x 9 weeks) and 1 x 1-day (4 hour) field class.			
	Scheduled learning: 22 hours		**Guided independent study:** 178 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%			
	As used by St Andrews: Coursework = 100%			
Re-Assessment pattern:	Coursework project = 100%			
Module Co-ordinator:	Dr I Lawson			
Lecturer(s)/Tutor(s):	Team taught			

SG4228 Advanced Topics in Geographic Information Science (GISci)

SCOTCAT Credits:	20	SCQF Level 10	**Semester:**	1
Academic year:	2016/7 & 2017/8			
Availability restrictions:	Available every year.			
Planned timetable:	10.00 am - 12.00 noon Mon and Fri, and 2.00 pm - 4.00 pm Mon and Fri			

The first part of the module explores advanced GIS and spatial analysis techniques for use with geographic datasets. Students will gain theoretical and applied knowledge in order to study and describe spatial patterns in geographic data. Theoretical understanding will be emphasised through lectures and readings. Labs/practicals will be designed to provide students with hands-on experience applying theory and techniques to datasets spanning human and environmental geography using applications including crime, forestry, health, environmental change, and housing. Focus will be placed on methods for analysing spatial point patterns, spatial autocorrelation, and spatial modelling.

In the second part, students will engage in a small research project of their choosing to showcase their new advanced GIS skills. The project will allow students to use GIS and spatial analysis techniques to address a chosen problem in either of the social, physical, or environmental sciences. Students with domain knowledge in human geography, physical geography, or sustainable development will be able to tailor GIS projects to their own applications.

Programme module type:	Optional elective for all degrees involving Geography or Sustainable Development	
Pre-requisite(s):	SG3201-4 Unit 2a OR Unit 3 AND SG3201-4 Unit 6	
Learning and teaching methods and delivery:	**Weekly contact**: 2 hours lectures (x 9 weeks), 2-hour practical classes (x 6 weeks), 2-hour IT Lab Help sessions (x 3 weeks)	
	Scheduled learning: 36 hours	**Guided independent study:** 164 hours
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 0%, Coursework = 100%	
	As used by St Andrews: Coursework project = 100%	
Module Co-ordinator:	Dr J Long	
Lecturer(s)/Tutor(s):	Dr J Long, Dr U Demsar	

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