School of Geography & Geosciences

Earth & Environmental Sciences (ES) modules

ES1001 Planet Earth				
SCOTCAT Credits:	20	SCQF Level 7	**Semester:**	1
Academic year:	2015/6 & 2016/7			
Planned timetable:	Lectures: 12.00 noon - 1.00 pm Mon - Fri; practical: 2.00 pm - 4.00 pm or 4.00 pm - 6.00 pm Thu and Fri			
This module provides a foundation into the study of Earth and environmental sciences. The key elements of the planet will be introduced. The bulk structure of the solid Earth (and the other planets of our solar system), and the dynamic hydrosphere and atmosphere will be covered from planetary to atomistic scales. Practical and transferable skills will be developed in tutorials and laboratory exercises which include the identification of minerals and rocks both in hand specimen and using microscopes. Fieldwork will be introduced as two half-day excursions. University-level study skills associated with this module include working in groups, oral and written presentations, advanced use of the University's internet and library facilities for data acquisition, and critically assessing scientific data and reports.				
Programme module type:	Compulsory for BSc Geology, Environmental Earth Science, joint degrees with Biology and Chemistry, and MGeol Earth Sciences			
Anti-requisite(s):	GG1011			
Required for:	ES2001			
Learning and teaching methods and delivery:	**Weekly contact**: 5 lectures, tutorials and skills sessions, and 1 x 2-hour practical (x 11 weeks); 7-hours fieldwork in total.			
	Scheduled learning: 84 hours		**Guided independent study:** 116 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 30%, Coursework = 20%			
	As used by St Andrews: 2-hour Written Examination = 50%, 2-hour Practical Examination = 30%, Coursework = 20%			
Re-Assessment:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr V Rinterknecht			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES1002 Earth Resources and Environment

SCOTCAT Credits:	20	SCQF Level 7	**Semester:**	2
Academic year:	2015/6 & 2016/7			
Planned timetable:	Lectures: 12.00 noon - 1.00 pm Mon - Fri; practical: 2.00 pm - 4.00 pm Thu and Fri			
This module builds on the understanding of planet Earth gained in ES1001, with an underlying theme of the Earth's resources and environment. The processes in action at different tectonic settings (volcanism, metamorphism etc) and the natural hazards induced by these processes leads into Earth resources (metals, hydrocarbons, and energy) and the applied nature of Earth Sciences in problem-solving resource and environmental issues. Key skills for Earth and environment scientists are developed and the module includes a 4-day residential field excursion to the northeast of Scotland around Easter.				
Programme module type:	Compulsory for BSc Geology, Environmental Earth Science, joint degrees with Biology and Chemistry, and MGeol Earth Sciences			
Pre-requisite(s):	Normally ES1001		**Anti-requisite(s):**	GG1012
Required for:	ES2001			
Learning and teaching methods and delivery:	**Weekly contact**: 5 lectures, tutorials and 1 x 2-hour practical (x 11 weeks), plus 40 hours of fieldwork over the semester.			
	Scheduled learning: 117 hours		**Guided independent study:** 83 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 25%, Coursework = 25%			
	As used by St Andrews: 2-hour Written Examination = 50%, 2-hour Practical Examination = 30%, Coursework = 20%			
Re-Assessment:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr V Rinterknecht			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES1801 Field Geology Summer School

SCOTCAT Credits:	24	SCQF Level 7	**Semester:**	2
Academic year:	2015/6 & 2016/7			
Availability restrictions:	Available only to non-graduating students.			
Planned timetable:	Mon - Thu, variable hours. Fri dedicated to personal study			
This module aims to introduce students to Earth Science in the context of Scottish Geology over a five–‐week course. Scotland is the ideal natural laboratory for this; it offers classic exposures of a variety of rock types relevant to key periods throughout the three billion-years of Earth History.The taught content of the module includes lectures, practical classes and fieldtrips.Assessment comprises of: exams (multiple choice/short answer questions, an illustrated essay), field notebook presentation, group oral presentations.				
Programme module type:	Summer module for non-graduating students only.			
Pre-requisite(s):	GPA of 3.0 or above (or equivalent)			
Learning and teaching methods and delivery:	**Weekly contact**: Fieldwork, lectures, practical classes full-time over 5 weeks.			
	Scheduled learning: 157 hours		**Guided independent study:** 83 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 40%, Practical Examinations = 0%, Coursework = 60%			
	As used by St Andrews: MCQ Test = 5%, 2-hour Mid-term Examination = 15%, 2-hour Final Examination = 20%, Coursework = 60%			
Re-Assessment:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr W McCarthy			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES2001 Dynamic Earth: The Earth System

SCOTCAT Credits:	30	SCQF Level 8	**Semester:**	1
Academic year:	2015/6 & 2016/7			
Planned timetable:	Lectures: 10.00 am - 11.00 am Mon - Fri; practical: 2.00 pm - 5.00 pm Tue			
This module reflects an up-to-date approach to understanding of the behaviour of the solid Earth and its interaction with the atmosphere and biosphere and beyond. It will provide detailed training in some of the processes acting at or near the Earth's surface (for example the dynamics of erosional processes). The evolution of the planet as a whole (including the evolution of life) from magma oceans in the early Earth to the present day will be covered in detail. Practical and theoretical training in geophysical methods for probing the near surface of the Earth will be provided.				
Programme module type:	Compulsory for BSc Geology, Environmental Earth Science, joint degrees with Biology and Chemistry, and MGeol Earth Sciences			
Pre-requisite(s):	ES1001 and ES1002 or equivalent			
Required for:	ES2002, ES2003			
Learning and teaching methods and delivery:	**Weekly contact**: 5 lectures and 1 x 3-hour laboratory per week, and occasional tutorials; 16 hours fieldwork			
	Scheduled learning: 112 hours		**Guided independent study:** 188 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 30%, Coursework = 20%			
	As used by St Andrews: 2-hour Written Examination = 50%, 3-hour Practical Examination = 30%, Coursework = 20%			
Re-Assessment:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr V Rinterknecht			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES2002 Dynamic Earth: Magma, Minerals and Metamorphism

SCOTCAT Credits:	30	SCQF Level 8	**Semester:**	2
Academic year:	2015/6 & 2016/7			
Planned timetable:	Lectures: 10.00 am - 11.00 am Mon,Wed, Fri; practical: 2.00 pm - 5.00 pm Tue or 3.00 pm - 6.00 pm Mon			
This module focuses on the geology and geochemistry of the solid Earth and high temperature processes in the Earth's interior. The mineral building blocks of the Earth will be covered in detail, as well as volcanic and metamorphic processes and geodynamics. A key component of this course is the residential field course to central Spain around the time of the Easter vacation, where independent field mapping will be introduced. Undergraduates on the BSc Geology degree must take ES2002, and are strongly encouraged also to take ES2003.				
Programme module type:	Compulsory for BSc Geology and joint degrees with Biology and Chemistry, and MGeol Earth Sciences. Optional for Environmental Earth Science degree.			
Pre-requisite(s):	Normally ES2001		**Anti-requisite(s):**	GS2012
Learning and teaching methods and delivery:	**Weekly contact**: 3 lectures and 1 x 3-hour laboratory per week and occasional tutorials; 54 hours fieldwork.			
	Scheduled learning: 116 hours		**Guided independent study:** 184 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 20%, Coursework = 30%			
	As used by St Andrews: 2-hour Written Examination = 50%, 2-hour Practical Examination = 20%, Coursework = 30%			
Re-Assessment:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr V Rinterknecht			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES2003 Dynamic Earth: Earth Surface Processes

SCOTCAT Credits:	30	SCQF Level 8	**Semester:**	2
Academic year:	2015/6 & 2016/7			
Planned timetable:	Lectures: 10.00 am - 11.00 am Tue, Thu, 2.00 pm - 3.00 pm Mon; practical: 3.00 pm - 5.00 pm Mon or 3.00 pm - 5.00 pm Tue			
This module focuses on the low temperature processes that occur in the outer envelopes of the Earth, including land-atmosphere interactions, glacial processes, tectonic geomorphology, geomicrobiology and oceanography. Relationships between physical, chemical and biological processes occurring along Earth's surface, and their impact on climate, will be explored using case studies. A key component of this course will be fieldwork to sites of environmental interest developing field skills in water/sediment sampling and analysis, and unravelling contaminant flow-patterns.				
Programme module type:	Compulsory for BSc Environmental Earth Science and MGeol Earth Sciences. Optional for BSc Geology.			
Pre-requisite(s):	ES2001			
Learning and teaching methods and delivery:	**Weekly contact**: 3 lectures and 1 x 3-hour laboratory per week and occasional tutorials; 36 hours fieldwork.			
	Scheduled learning: 98 hours		**Guided independent study:** 202 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:	2-hour Written Examination = 80%, Coursework = 20%, No Re-Assessment if Coursework mark is <4			
Module Co-ordinator:	Dr V Rinterknecht			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

ES2004 Practical and Field Skills for Earth Sciences (Direct Entrants)

SCOTCAT Credits:	30	SCQF Level 8	**Semester:**	Whole Year
Academic year:	2015/6 & 2016/7			
Availability restrictions:	Available only to students who have been accepted for direct 2nd year entry to an Earth Science degree programme.			
Planned timetable:	Lectures: 12.00 noon - 1.00 pm Mon - Fri; practical 2.00 pm - 4.00 pm Thu or Fri			
This module is only available to students who have been accepted for direct 2nd year entry to an Earth Science degree programme. It provides basic practical and fieldwork skills that are not taught at secondary school and which characterise University-taught, accredited Earth Science programmes. Students will take part in level 1 practical and field-based exercises, and then apply these skills to the level 2 teaching programme. The students will also attend those aspects of the lecture programme that are not covered in A-level or Higher Geology curricula. The learning in this module will supplement and complement the ES2001, 2002 & 2003 teaching.				
Programme module type:	Compulsory for Direct entrants to Second Year Geology			
Pre-requisite(s):	Direct Second Year acceptance to BSc Geology, BSc Environmental Earth Science or MGeol Earth Science Degrees		**Anti-requisite(s):**	ES1001, ES1002
Co-requisite(s):	Normally ES2001, ES2002 and ES2003			
Learning and teaching methods and delivery:	**Weekly contact**: Weekly lectures, practical classes, and fieldwork. Generally 5 hours per week lecture/lab time plus associated field classes.			
	Scheduled learning: 190 hours		**Guided independent study:** 110 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 0%, Practical Examinations = 50%, Coursework = 50%			
	As used by St Andrews: Coursework = 100% (made up of Group Work and 2 Field Excursions = 50%, Practical Examinations = 50%)			
Re-Assessment:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr V Rinterknecht			
Lecturer(s)/Tutor(s):	Earth and Environmental Sciences staff			

Geography (GG) modules

GG1001 Welcome to the Anthropocene: Society, Population, Environment				
SCOTCAT Credits:	20	SCQF Level 7	**Semester:**	1
Academic year:	2015/6 & 2016/7			
Planned timetable:	Lectures: 11.00 am Tue, Wed, Thu and tutorials: 11.00 am Mon and Fri			
As the global population speeds past 7 billion, mounting evidence about resource depletion and climate change, and global economic inequality and social injustice suggests current human development is unsustainable and that we are now living in the "Anthropocene" – an era in which human activity has, for the first time, become the dominant driver of environmental processes, and is causing unprecedented global change. The module shows how Geography, a discipline that draws on knowledge that spans the social and natural sciences and the humanities, is uniquely placed to understand our changing world. Its combination of lectures and tutorials are relevant to students across the University.				
Programme module type:	Compulsory for all Single Honours, Joint Honours and 'with' Degrees in Geography Compulsory for Sustainable Development			
Required for:	GG1002 and GG2011, SD1000 and SD2001			
Learning and teaching methods and delivery:	**Weekly contact**: 3 lectures (x 11 weeks) + 6 x 1-hour skills/feedback sessions, 4 x 1-hour tutorials, and 1 x 8-hour field class during the semester.			
	Scheduled learning: 51 hours		**Guided independent study:** 149 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:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr M B Sothern			
Lecturer(s)/Tutor(s):	Team taught			

GG1002 A World in Crisis?

SCOTCAT Credits:	20	SCQF Level 7	**Semester:**	2
Academic year:	2015/6 & 2016/7			
Planned timetable:	Lectures: 11.00 am Tue, Wed, Thu and tutorials: 11.00 am Mon and Fri			
Contemporary global problems such as pollution, biodiversity loss and population growth are critical issues for the planet's future and demonstrate the interdependence of social and environmental systems. This module unpacks the complexity of these challenges by analyzing different manifestations of 'a world in crisis' as questions of geography – shaped by geographic processes operating at a range of scales (from the global to the local). The module thus explores how Geography works as a 'world discipline' that is equipped to examine global problems from a range of human, environmental and physical geography perspectives. Teaching comprises a mix of lecture learning and project work on selected global problems.				
Programme module type:	Compulsory for all Single Honours, Joint Honours and 'with' Degrees in Geography			
Pre-requisite(s):	GG1001			
Required for:	GG2011			
Learning and teaching methods and delivery:	**Weekly contact**: 3 lectures (x 11 weeks) + 6 x 1-hour skills/feedback sessions, 3 x 2-hour practical classes, 5 x 1-hour tutorials, and 1 x 4-hour field class during the semester.			
	Scheduled learning: 57 hours		**Guided independent study:** 143 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:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr M B Sothern			
Lecturer(s)/Tutor(s):	Team taught			

GG2011 Geographical Processes and Change

SCOTCAT Credits:	30	SCQF Level 8	**Semester:**	1
Academic year:	2015/6 & 2016/7			
Planned timetable:	Lectures: 9.00 am Mon - Fri, other classes :2.00 pm - 4.00 pm or 4.00 pm - 6.00 pm Mon			
This module examines some fundamental processes in human and physical geography. The physical geography component of the module considers the operation of a range of atmospheric, hydrological and geomorphological processes. Topics include hydrometeorological processes, weathering, slope processes, glacial processes, periglacial processes and biogeographical processes. The human geography component of the module explores the extraordinary character of the modern world from a range of geographical perspectives. Topics include the economic, historical, political and social geography of capitalism, imperialism, urbanisation and globalisation.				
Programme module type:	Compulsory for all Single Honours, Joint Honours and 'with' Degrees in Geography			
Pre-requisite(s):	GG1001 and /or GG1002 (2015/6) GG1001 and GG1002 (2016/7)	**Required for:**	GG2012	
Learning and teaching methods and delivery:	**Weekly contact**: 4 lectures (x 11 weeks) + 4 x 1-hour skills/feedback sessions, 2 x 2-hour seminars, 3 x 1-hour tutorials, 2 x 2-hour practical classes and 1 x 8-hour field class during the semester.			
	Scheduled learning: 67 hours	**Guided independent study:** 233 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%, Practical Examination = 15%, Coursework = 45%			
Re-Assessment:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr U Demsar			
Lecturer(s)/Tutor(s):	Team taught			

GG2012 Processes, Perspectives and Ideas in Geography

SCOTCAT Credits:	30	SCQF Level 8	**Semester:**	2
Academic year:	2015/6 & 2016/7			
Planned timetable:	Lectures: 9.00 am Mon - Fri, other classes: 2.00 pm - 4.00 pm Mon or 4.00 pm - 6.00 pm Mon			
This module investigates ways in which geographical ideas and approaches can be used to understand the contours and complexities of the contemporary world. Using physical, human, environmental and statistical approaches, it investigates the interdependencies between human and physical environments at various scales. It also situates these ideas and approaches within wider frameworks of geographic thought.				
Programme module type:	Compulsory for all Single Honours, Joint Honours and 'with' Degrees in Geography			
Pre-requisite(s):	GG2011			
Learning and teaching methods and delivery:	**Weekly contact**: 3-4 lectures (x10 weeks) + 4 x 1-hour skills/feedback sessions, 1 x 2-hour practical, 2 x 1-hour seminars during the semester.			
	Scheduled learning: 42 hours	**Guided independent study:** 258 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:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr U Demsar			
Lecturer(s)/Tutor(s):	Team taught			

Sustainable Development (SD) modules

SD1000 What is Sustainable Development?				
SCOTCAT Credits:	20	SCQF Level 8	**Semester:**	2
Academic year:	2015/6 & 2016/7			
Planned timetable:	9.00 am Mon - Fri			
'Sustainable Development' is a term that is very widely used internationally, nationally and locally by academics, policy-makers, businesses and NGOs, but what does it really mean? This module is designed to provide an introductory overview to underpinning ideas, such as social justice, human well-being, inter-generational equity and environmental stewardship, which are embedded within notions of sustainable development as key areas of debate in defining and interpreting the concept. The module also provides an account of how sustainable development has emerged as such a powerful idea, and examines different disciplinary perspectives on what issues sustainable development should be trying to address, as well as exploring the value of an interdisciplinary approach in studying and facilitating sustainable development.				
Programme module type:	Compulsory for Sustainable Development			
Pre-requisite(s):	GG1001			
Learning and teaching methods and delivery:	**Weekly contact**: 2-hour lectures (x 11 weeks) 1-hour tutorials (x 6 weeks), 1 x 8-hour fieldwork in total			
	Scheduled learning: 36 hours		**Guided independent study:** 164 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:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr A Brown			
Lecturer(s)/Tutor(s):	Team taught			

SD2001 Sustainable Development: Frameworks for Implementation

SCOTCAT Credits:	30	SCQF Level 8	**Semester:**	1
Academic year:	2015/6 & 2016/7			
Planned timetable:	1.00 pm Mon, Tue, Fri (lectures), 9.00 am and 10.00 am Wed, 10 am Thu (seminars/tutorials)			
Having considered in Level 1 why the concept of sustainable development (SD) is important and key concerns and areas of debate in understanding meanings of SD, Level 2 of the programme progresses to introduce aspects of how SD might be encouraged and facilitated. This module considers broad conceptual approaches to implementing SD. It includes more traditional frameworks based on governance and regulation ('command and control') as well as examining the role and importance of other approaches, including environmental economics and the use of market-based mechanisms, technological innovation, self-regulation, changing individual lifestyles, education and community-based enablement, and the principles of conservation science. The module also addresses the extent to which these different approaches are independent or can be used together to bring about change for SD.				
Programme module type:	Compulsory for Sustainable Development			
Pre-requisite(s):	GG1001 and SD1000			
Learning and teaching methods and delivery:	**Weekly contact**: 3 lectures (x 11 weeks), 4 x 1-hour seminars, 5 x 1-hour tutorials, 2 x 1-hour debriefing sessions, 2 x 6-hour fieldtrips during the semester.			
	Scheduled learning: 56 hours		**Guided independent study:** 244 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 30%, Practical Examinations = 20%, Coursework = 50%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr T A Stojanovic			
Lecturer(s)/Tutor(s):	Team taught			

SD2002 Sustainable Development: Tools for Action

SCOTCAT Credits:	30	SCQF Level 8	**Semester:**	2
Academic year:	2015/6 & 2016/7			
Planned timetable:	1.00 pm Mon, Tue, Thu, Fri (lectures), 10.00 am and 11.00 am Tue & Wed, 9.00 am & 10.00 am Thu (seminars/tutorials), 10.00 am Wed & Thu (labs)			
It is not often clear how ideas from sustainable development catalysed real-world change. The SD2002 module builds upon core themes from SD2001 and looks at 'how' different agents, such as governments, corporations, and individuals enact change. Fundamental to this module is the development of methodologies used to gather evidence and study the problems faced in SD. The module will challenge students to develop critical analysis skills; both qualitative and quantitative. A highlighting feature of the SD2002 module is a field-trip to the Links at St Andrews, to learn about sustainability initiatives in the golf industry.				
Programme module type:	Compulsory for Sustainable Development			
Pre-requisite(s):	SD2001			
Learning and teaching methods and delivery:	**Weekly contact**: 38 lectures (3 lectures x 11 weeks plus 5 extra lectures); 1-hour seminar (x 8 weeks); 1-hour tutorial (x 4 weeks); 2-hours practicals (x 3 weeks); and 1 x 4-hours fieldtrip			
	Scheduled learning: 56 hours		**Guided independent study:** 244 hours	
Assessment pattern:	**As defined by QAA:** Written Examinations = 50%, Practical Examinations = 20%, Coursework = 30%			
	As used by St Andrews: 2-hour Written Examination = 50%, Coursework = 50%			
Re-Assessment:	2-hour Written Examination = 100%			
Module Co-ordinator:	Dr J Long			
Lecturer(s)/Tutor(s):	Team taught			