First Year Module and Stream Choice Information

Now that you have made the grades for your offer at Nottingham you need to decide which stream (combination of subjects) you want to study. Your choices are somewhat restricted by the subjects you studied to A level/Higher Level and the grades that you obtained. The table below outlines the different combinations which are available and the requirements for them (please note if Maths is in the stream it is required at an A/HL6 or above)

STREAM	BIOLOGY	CHEMISTRY	MATHS OR FURTHER MATHS	PHYSICS	OTHER SCIENCE(S)
ARCHAEOLOGY, BIOLOGY, CHEMISTRY	■	■			
ARCHAEOLOGY, BIOLOGY, EARTH SCIENCE	■				■
ARCHAEOLOGY, EARTH SCIENCE, CHEMISTRY		■			■
BIOLOGY-ARCHAEOLOGY-ECOSYSTEM & ENVIRONMENT	■				■
BIOLOGY, CHEMISTRY, MATHS	■	■	■		
BIOLOGY, PHYSICS, MATHS	■		■	■	
CANCER SCIENCE-BIOLOGY-PSYCHOLOGY	■				■
CANCER SCIENCE-BIOLOGY-CHEMISTRY	■	■			
CHEMISTRY-ARCHAEOLOGY-ECOSYSTEM & ENVIRONMENT		■			■
CHEMISTRY, EARTH SCIENCE, MATHS		■	■		
CHEMISTRY, PHYSICS, MATHS		■	■	■	
ECOSYSTEM & ENVIRONMENT, BIOLOGY, CHEMISTRY	■	■			
ECOSYSTEM & ENVIRONMENT, EARTH SCIENCE, ARCHAEOLOGY					2
ECOSYSTEM & ENVIRONMENT, EARTH SCIENCE, CHEMISTRY		■			■
EARTH SCIENCE, BIOLOGY, CHEMISTRY	■	■			
EARTH SCIENCE, BIOLOGY, MATHS	■		■		
EARTH SCIENCE, ECOSYSTEM & ENVIRONMENT, BIOLOGY	■				■
MATHS, PSYCHOLOGY, CHEMISTRY		■	■		
PHYSICS, EARTH SCIENCE, MATHS			■	■	
PHYSICS, PSYCHOLOGY, MATHS			■	■	
PSYCHOLOGY, BIOLOGY, CHEMISTRY	■	■			
PSYCHOLOGY, BIOLOGY, MATHS	■		■		

- Other Science includes Biology, Chemistry, Environmental Studies/Science, Geography, Geology, Maths, Physics or Psychology

Some of you may be certain about 2 subjects but less certain about the third subject (particularly if it is not a subject you have experience of studying). To help you to narrow this down please see the subject overviews on the next page to get a better idea of what you will be studying.

It is possible to change your stream once you arrive. This type of change can be made up the end of the second week - students are advised to attend lectures for multiple subjects if they are trying to decide between them to make sure they don't miss anything.

Subject Overviews

Archaeology – Archaeology is the study of the past based on material remains. On Natural Sciences you focus on techniques (for gathering and analysing remains), materials (glass and ceramics) and bioarchaeology (bones and fossils). Options in Y2,3 and 4 allow you to tailor what you study to your interests.

Biology – Biology is a vast subject so we have had to narrow it down to specific areas for Natural Sciences. Students choose a specialism to follow from the first year either molecular biology and genetics or evolutionary biology and ecology. Alongside compulsory elements students choose options from Y2 in immunobiology, neuroscience, animal behaviour, genetics or developmental biology.

Cancer Science – This is an interdisciplinary strand which brings together different areas of study around cancer. This includes the genetic and molecular side of how cancers are caused and spread through the body, the statistical elements of who gets cancer and what causes some people to be more susceptible and the treatment side of how cancer is treated and what the future of treatment may hold. Requires Biology to be taken alongside it in year 1.

Chemistry – In your first year you study all three branches of Chemistry; Inorganic, Organic and Physical including labs. From Y2 you focus on two branches (in some cases this may be dictated by the other subject you are studying). Optional modules are available in the third year in specialist areas of chemistry within each of the branches. Laboratory work is through a standalone module in years 2 and 3 and takes up a large proportion of your time.

Ecosystem & Environment – This is a blended subject which incorporates modules from Environmental Science and Geography. You start with a broad base covering systems which underpin global processes and environmental change and then use options to explore the areas that most interest you. The key areas of study in this subject are ecosystem management, biogeography, environmental change and modelling Some modules involve field courses for which there may be additional costs.

Earth Science – This is a blended subject which incorporates modules from Environmental Science and Geography. You start with a broad base of geology, geomorphology and the changing planet alongside options. In later years explore what you are interested in such as geochemistry and the cycling of chemicals on the planet, soil science, management of freshwater sources, pollution and remediation. Some modules involve field courses for which there may be additional costs.

Maths – The first year provides the foundation for different areas of study in later years including programming in Python. In Y2 students choose between specialisms of modelling, computation and applied statistics or mathematical physics (compulsory with Physics). The choice in Y2 impacts what modules are available in Y3 and 4.

Physics – The first year of Physics study provides the foundation for either a theoretical or an experimental route through physics in later years (dictated by the other subject you are studying with physics). Students on the theoretical route have options in Y2 which allow them to explore other areas such as nanoscience and astronomy. Students on the experimental route will begin labs in Y2 and complete an experimental project in Y3. Requires Maths to be taken alongside it in year 1.

Psychology – In the first year of Psychology you choose which one of two specialisms you wish to follow: biological/neuroscience or social/developmental route, and then continue with that in later years. You can explore your interests with optional modules in Y3.

Specialism/Module Choice

In addition to choosing streams some of you will also need to choose specialisms or options, these choices are detailed below. You will find information on all modules (compulsory and optional) in the Module Overview section.

Specialism and optional module choices are made using a form during the first week at University, there will be an event explaining both what choices you need to make and how to do this. The will be an option for students to go along to teaching before they decide on which modules they want to take of if they want to or change stream up to the end of the second week.

Biology

Students choose either a Molecular Biology & Genetics or an Evolutionary Biology & Ecology Specialism in Y1.

	MOLECULAR BIOLOGY & GENETICS	**EVOLUTIONARY BIOLOGY & ECOLOGY**
Y1	GENES, MOLECULES AND CELLS (40)	LIFE ON EARTH (20) EVOLUTION, ECOLOGY AND BEHAVIOUR (20)
Y2	THE GENOME & HUMAN DISEASE (20) BACTERIAL GENES AND DEVELOPMENT (10) MICROBIAL BIOTECHNOLOGY (10) **20 CREDITS OF OPTIONS FROM:** *INFECTION AND IMMUNITY (20)* *EVOLUTIONARY BIOLOGY OF ANIMALS (10) & DEVELOPMENTAL BIOLOGY (10)* *NEUROBIOLOGY OF DISEASE (20)*	ECOLOGY (20) THE GREEN PLANET (20) **20 CREDITS OF OPTIONS FROM:** *BUILDING BRAINS (20)* *EVOLUTIONARY BIOLOGY OF ANIMALS (10)* *REPRODUCTIVE PHYSIOLOGY(10)* *INSECT BIOLOGY (10)* *ANIMAL BEHAVIOUR & PHYSIOLOGY (20)*
Y3	AGING, SEX & DNA REPAIR (20) MOLECULAR BIOLOGY LAB SKILLS (10) **20 CREDITS OF OPTIONS FROM:** *MOLECULAR AND CELLULAR NEUROSCIENCE (10)* *MOLECULAR PARASITOLOGY (10)* *PATHOGENS, VACCINES & THERAPEUTICS (10)* *TOPICS IN DEVELOPMENT & GENETICS (10)* *CANCER BIOLOGY (10)* THE DYNAMIC CELL (10)	EVOLUTIONARY ECOLOGY (10) CONSERVATION (20) **20 CREDITS OF OPTIONS FROM:** *CONSERVATION GENETICS (10)* *EVOLUTION & BEHAVIOUR (20)* *MOLECULAR EVOLUTION (10)* AQUATIC BIOLOGY (10) *SCIENCE & SOCIETY (10)*

Earth Science

The core module Earth, Atmosphere and Oceans provides the understanding required for follow on modules in Y2: Soils, Environment Geochemistry & Urban Environment and Y3: Environmental Polutants Pollution Field Course and Sustainable Soil Management.

Optional modules help provide foundations for specific themesof study in later years. The first year modules are mainly recommendations of good fit as opposed to prerequisites (except for Intro to GIS which is prerequisite for Spatial Decision Making) so your choices now won't prevent you taking modules in different themes in second year.

Students pick 10c of options from 20 possible credits.

Y1	PHYSICAL LANDSCAPES OF BRITAIN (10)	INTRO TO GIS (10)
Y2	RIVERS IN THE LANDSCAPE (20) EARTH OBSERVATION (20)	SPATIAL DECISION MAKING (20) COMPUTER MODELLING: INTRODUCTION (20)
Y3	FRESHWATER MANAGEMENT (20) PALEOBIOLOGY (10)	ADVANCES IN REMOTE SENSING (20) MODELLING: APPLICATIONS (20) ENVIRONMENTAL MODELLING (20)

Ecosystem & Environment

Optional modules define the themes you might study in later years. The first year modules are recommendations of good fit as opposed to prerequisites so your choices now won't prevent you taking modules in different themes in the second year. There are also modules in later years which are more skills based and don't fit into one of these themes: in Y2 Computer Modelling and Ecological Surveying; and in Y3 Modelling Applications and Environmental Modelling.

Students pick 20c of options from 60 possible credits.

Y1	PRINCIPLES OF ECOLOGY (20)	BUILDING A HABITABLE PLANET (20)	PHYSICAL LANDSCAPES OF BRITAIN (10) & ON EARTH AND LIFE (10)
Y2	FOREST ECOLOGY & MANAGEMENT (20) ECOSYSTEM PROCESSES (20) INSECT BIOLOGY (10)	CLIMATE CHANGE SCIENCE (10) THE CHANGING ENVIRONMENT (20) THE URBAN ENVIRONMENT (10)	PATTERNS OF LIFE (20) ECOSYSTEM PROCESSES (20) INSECT BIOLOGY (10)
Y3	TROPICAL ECOLOGY AND CONSERVATION (10) ARCTIC ECOLOGY FIELD COURSE (10) ENVIRONMENTAL BIOTECHNOLOGY (10)	GLOBAL CLIMATE CHANGE (20) PALEOBIOLOGY (10) UNEARTHING THE PAST (20) CLIMATE CHANGE MITIGATION (10) ARCTIC ECOLOGY FIELD COURSE (10)	TROPICAL ECOLOGY AND CONSERVATION (10) TROPICAL ENVIRONMENTS IN THE ANTHROPOCENE (20) ARCTIC ECOLOGY FIELD COURSE (10)

Psychology

All students take Cognitive Psychology in Y1 and Y2 and students choose whether to study Social and Developmental or Biological/Neuroscience Psychology alongside this with their choice of specialism in Y1.

	SOCIAL AND DEVELOPMENTAL	**BIOLOGICAL/NEUROSCIENCE**
Y1	SOCIAL PSYCHOLOGY (10) DEVELOPMENTAL PSYCHOLOGY (10)	BIOLOGICAL PSYCOLOGY (20)
Y2	SOCIAL AND DEVELOPMENTAL PSYCHOLOGY (20) CONCEPTUAL & HISTORICAL ISSUES (10) PERSONALITY & INDIVIDUAL DIFFERENCE (10)	NEUROSCIENCE AND BEHAVIOUR (20) RESEARCH METHODS AND ANALYSIS (20)
Y3	UNDERSTANDING DEVELOPMENTAL DISORDERS (10) **40 CREDITS OF OPTIONS FROM:** *EDUCATIONAL PSYCHOLOGY (10)* *FORENSIC & MENTAL HEALTH (10)* *CLINICAL PSYCHOLOGY (10)* *APPLYING SOCIAL PSYCHOLOGY TO SOCIETAL ISSUES (10)* *COGNITIVE DEVELOPMENT & AUTISM (10)* *SOCIAL NEUROSCIENCE RESEARCH* *CURRENT ISSUES IN PSYCHOLOGY (10)*	THE VISUAL BRAIN (10) NEUROPSYCHOLOGY AND APPLIED NEUROIMAGING (10) NEUROPSYCHOLOGY OF ACTION (10) **20 CREDITS OF OPTIONS FROM:** *CURRENT ISSUES IN PSYCHOLOGY (10)* *COGNITIVE DEVELOPMENT & AUTISM (10)* *SOCIAL NEUROSCIENCE RESEARCH (20)* *MECHANISMS OF LEARNING & PSYCHOPATHOLOGY (20)*

Module Overviews

Archaeology

Module Title	Autumn	Spring
Understanding the Past I	20	
Understanding the Past II		20

UNDERSTANDING THE PAST I (CLAR1021)

Semester Taught: Autumn **Credits:** 20

Style of Teaching: Lectures, Labs and Workshops

Module Convenor: Anna Bloxam

Assessment (s): 100% Coursework (4,000-word Portfolio)

Overview: Archaeologists are interested in all aspects of the human past, from ancient landscapes and changing environments, buried settlements and standing monuments and structures, to material objects and evidence for diet, trade, ritual and social life. This module provides a basic introduction to the discipline of archaeology, the process by which the material remains of the past are discovered, analysed and used to provide evidence for human societies from prehistory to the present day. Through this it will form a foundation for future student learning thoughout the single and joint-honours degree programmes. It introduces the historical development of the subject, followed by an overview of current practice in the areas of archaeological prospection and survey, excavation and post-excavation analysis, relative and absolute dating, the study of archaeological artefacts, and frameworks of social interpretation. Focusing on methods of analysing remains of past societies, it will also introduce some of the basic principles of archaeological science, including the analysis of plant and faunal remains and the scientific analysis of materials such as metals, ceramics and glass, using both classroom and laboratory based sessions allowing students to gain hands-on experience with different types of materials.

UNDERSTANDING THE PAST II (CLAR1020)

Semester Taught: Spring **Credits:** 20

Style of Teaching: Lectures, Fieldwork and Practical Workshops

Module Convenor: Anna Bloxam

Assessment (s): 100% Coursework (30% 1,500-word Essay; 70% 3.000-word Portfolio)

Overview: This module builds on the autumn semester module, Understanding the Past I, as an introduction to the core aims and methodologies of Archaeology as a discipline in providing a basic introduction to the process by which the material remains of the past are discovered, analysed and used to provide evidence for human societies from prehistory to the present day. Through lectures, classroom activities and practical fieldwork, students will be introduced to the study of landscape and the built environment, looking at how the archaeological record is both created and investigated. Students will be taken into the field to gain practical experience of core archaeological methods in field survey and buildings archaeology. By the end of the module, we aim to ensure that students will have developed a good understanding of the concepts used in archaeology, the questions asked and methods applied in investigating the evidence.

Biology

Molecular Biology and Genetics Specialism

Module Title	Autumn	Spring
Genes, Molecules and Cells	40	

GENES, MOLECULES AND CELLS (LIFE1029)

Semester Taught: Full Year **Credits:** 40

Style of Teaching: Lectures and Lab Practicals

Module Convenor: Dr Alan Huett, Dr Claire Friel & Dr Tim Simpson

Assessment (s): 40% Coursework (class tests based on practical work); 60% Exam (end of Spring semester)

Overview: This module is designed to provide students with an understanding of the cell biology, biochemistry and molecular genetics of living organisms. Topics covered will include the structure and function of cells and organelles, structure of proteins and enzymes, structure of DNA, transcription, translation, mutations, basic recombinant DNA technology, organisation and control of genes in a diversity of organisms, metabolism of macromolecules, structure of cell membranes, transport processes, cell signalling and cell division. This module underpins more advanced biochemical and genetic modules in subsequent years. Practical sessions will illustrate the key principles covered in lectures as well as introduce some of the most important prokaryotic and eukaryotic model organisms used in genetic analysis.

Evolutionary Biology and Ecology Specialism

Module Title	Autumn	Spring
Life on Earth	20	
Evolution, Ecology and Behaviour	20	

LIFE ON EARTH (LIFE1030)

Semester Taught: Full Year **Credits:** 20

Style of Teaching: Lectures and Lab Practicals

Module Convenor: Dr Martin Gering

Assessment (s): 50% Coursework (class tests based on practical work); 50% Exam (end of Spring semester)

Overview: This module introduces students to the vast range of living (and many extinct) species to be found on Earth. The conditions for life will be discussed and whether these conditions may be found in other parts of the solar system. The various domains of life will be explored with due attention to the archea and eubacteria and then detailed views of the eukaryotes. Issues of how they arose and how the process of endysymbiosis added much more complexity will be examined. Questions about the processes that drove the evolution of complexity and multicellularity, the development of mitosis, meiosis and the production of asymmetrical gametes will be considered. Within the context of the most recent phylogenetic trees the distribution of phyla will be examined in detail with the most complex groups, fungi, animals and plants being targeted for special consideration. The animal kingdom will be examined in detail looking at the relationships of many of the phyla and how this complexity arose. The course will emphasise our current understanding of biodiversity and how a simple morphological-based taxonomy has been shaken up by current molecular techniques. The module concentrates on the unity and diversity of life set in an evolutionary context and how the genotype gives rise to both phenotype and behaviour.

EVOLUTION, ECOLOGY AND BEHAVIOUR (LIFE1031)

Semester Taught: Full Year **Credits:** 20

Style of Teaching: Lectures, Practicals and Workshops

Module Convenor: Dr Kate Durrant

Assessment (s): 40% Coursework (based on practical work over year); 60% Exam (end of Spring semester)

Overview: This module provides an introduction to the fundamentals of evolution, ecology and behaviour. Evolutionary processes are explored from a variety of approaches, from the fossil record, through adaptation, speciation and the study of phylogenetics and how it shapes the tree of life, right up to the cutting edge of genomic evolution. Modern ecology has never been a more important subject than now, a result of our major environmental problems. In this module ecological topics are explored by examining ecosystem processes, competition, predation, pathogens, parasites and disease, life histories, resources, niches, demographic processes, and sustainability. Understanding animal behaviour in response to their ecosystem begins with asking rigorous questions about foraging, signalling, sexual selection, parental care, altruism and also allows us to understand human behaviour in an evolutionary context.

Cancer Science

Module Title	Autumn	Spring
Hallmarks of Cancer	20	
Causes and Consequences of Cancer		20

HALLMARKS OF CANCER (ONCG1001)

Semester Taught: Autumn **Credits:** 20

Style of Teaching: Lectures, Practicals and Workshops

Module Convenor: Dr Sarah Storr

Assessment (s): 30% In-Class Tests (based on practical work), 70% Exam

Overview: To understand the hallmarks of cancer and their importance in tumourigenesis and cancer progression.

This module considers:

- The hallmarks of cancer and their importance
- Control of the cell cycle and cell cycle misregulation in cancer
- Oncogenes and tumour suppressor genes
- Genome instability and mutation
- The misregulation of cellular energetics in cancer
- The importance of the immune system in cancer

CAUSES AND CONSEQUENCES OF CANCER (ONCG1002)

Semester Taught: Spring **Credits:** 20

Style of Teaching: Lectures, Practicals and Workshops

Module Convenor: Paloma Ordonez Moran

Assessment (s): 30% Coursework (10% Project; 20% 1,000-word Essay), 70% Exam

Overview: To understand the causes of cancer including the underlying mechanisms that result in tumour formation and the epidemiology of cancer as well as the consequences of cancer for the patient relating to cancer treatment, living with cancer, and end of life care.

This module considers:

- The incidence and prevalence of cancer
- Epidemiology and the causes of cancer
- Cancer diagnosis (biochemistry, molecular biology, and histopathology)
- Cancer treatment (surgery, radiotherapy, and chemotherapy)
- Care for cancer patients (palliative care and recovery)

Chemistry

Module Title	Autumn	Spring
Fundamental Chemistry Theory and Practical	40	

FUNDAMENTAL CHEMISTRY: THEORY AND PRACTICAL (CHEM1020)

Semester Taught: Full Year **Credits:** 40

Style of Teaching: Lectures, Lab Practicals, Workshops and Tutorials

Module Convenor: Dr Anna Bertram & Charlotte Clark

Assessment (s): 35% Coursework (30% Practical Reports; 5% PeerWise Assessment); 65% Exams (x2)

Overview:

Inorganic: Atomic structure; Quantum numbers; Electronic configuration; Building the periodic table using theory; Periodicity; Chemical bonding; Lewis structures; Molecular shape and symmetry; Intermolecular interactions; Ligands and how they coordinate to metal centres; Bonding in transition metal complexes; Crystal field and molecular orbital theory; Geometries of complexes and isomerism; UV/vis spectroscopic and magnetic properties of octahedral, tetrahedral and square planar complexes; Reaction kinetics and thermodynamics; Trends in the properties of d-block element complexes.

Organic: Bonding, Structure and reactivity of organic molecules; Shapes and electronic properties of organic molecules; Classification of reactions and reaction components; Reaction mechanisms, 'Curly arrows', Nucleophilic substitution, Elimination reactions; Core carbonyl chemistry: Reactions and mechanisms; Chemistry of carboxylic acid derivatives: reactions and mechanisms; Functional group interconversions including redox chemistry; Synthesis using functional group interconversions and carbonyl chemistry.

Physical: Quantum theory; Bonding; Molecular orbitals; Vibrational and NMR spectroscopy; Intermolecular forces; Thermodynamics; Reaction kinetics; Electrochemistry.

Formative feedback is given on the theory in this module at the associated workshops and tutorials. Summative feedback is provided after the exam by the module staff.

Practical: This module introduces the essential qualitative and quantitative laboratory skills which are required in Inorganic, Organic and Physical chemistry. As well as performing experiments and collecting and using appropriate data, students will be required to produce written reports of their experimental work. Each laboratory component is a non-compensatable module element. In order to pass the module students must attain a mark of at least 40% in each laboratory component (i.e. inorganic laboratory practical, organic laboratory practical, physical laboratory practical).

Earth Science

Module Title	Autumn	Spring
Earth, Atmosphere and Climate		30
Optional Modules 20 credits (one module) from the following:		
Introduction to GIS	10	
Physical Landscapes of Britain	10	

EARTH, ATMOSPHERE & OCEANS (BIOS1072)

Semester Taught: Spring **Credits:** 30

Style of Teaching: Lectures, Practicals and Fieldwork

Module Convenor: Dr Barry Lomax & Dr Susannah Lydon

Assessment (s): 60% Coursework (portfolio of skills-based work ~ 2,000 words), 40% Exam

Overview: Explore the fundamental processes that drive Earth's system, on land, in the ocean and in the atmosphere. You will study geology, geography, oceanography, and meteorology, developing a range of practical and transferable skills. By the end of this module, you will have an understanding of:

- The rocks beneath our feet, how they are formed, and the different ways in which we study and interpret them.
- Geologic Time Scale and common Geological Hazards
- Weather formation, atmospheric and ocean chemistry, large scale ocean circulation patterns, and Earth's resulting climatic zones.

THERE MAY BE COSTS ASSOCIATED WITH THE FIELD WORK FOR THIS MODULE

PHYSICAL LANDSCAPES OF BRITAIN (GEOL1001)

Semester Taught: Autumn **Credits:** 10

Style of Teaching: Lectures and Practicals

Module Convenor: Dr Matt Jones

Assessment (s): 50% Coursework (group project), 50% Exam

Overview: This module provides an understanding of the history and origins of the Earth and its life and landforms through consideration of the following topics using the British Isles as a case study:

- Tectonic History of Britain
- Environmental changes over geological time and associated rock types
- Geomorphology of typical British landscapes.

INTRODUCTION TO GEOGRAPHIC INFORMATION SCIENCES (GEOG1010) *Prerequisite for: Spatial Decision Making*

Semester Taught: Spring **Credits:** 10

Style of Teaching: Lectures and Computing Practicals

Module Convenor: Dr Gary Priestnall

Assessment (s): 100% Coursework (Digital Map with Report)

Overview: The module provides students with the theoretical background and practical training to undertake basic spatial analysis within a contemporary Geographic Information System (GIS). It is built upon a structured set of paired theory lectures and practical sessions, supported by detailed theory topics delivered via Moodle, which contain linkages to associated textbook resources. It aims to ensure competency in the use of a contemporary GIS software package whilst developing transferable ICT skills. It also encourages students to develop the analytical skills necessary for the creation of workflows that utilise the built-in analytical functionality of a GIS to solve a spatial problem.

Specific topics covered are: What is GIS?, Cartographic principles behind GIS, Spatial data models and database management systems, Fundamental spatial analysis, Presenting the results of GIS analysis

Ecosystem and Environment

Module Title	Autumn	Spring
Planet Earth: Exploring the Physical Environment	20	
Optional Modules 20 credits from the following:		
Building a Habitable Planet	20	
Principles of Ecology	20	
Physical Landscapes of Britain	10	
On Earth and Life		10

PLANET EARTH: EXPLORING THE PHYSICAL ENVIRONMENT (GEOL1002)

Semester Taught: Full Year **Credits:** 20

Style of Teaching: Lectures

Module Convenor: Benjamin Chandler

Assessment (s): 100% Exams (x2)

Overview: This module focuses on dynamic aspects of the Earth and its environment, integrating knowledge of key physical processes and human-Earth system interactions. Key topics considered in this module may include a selection of the following: the atmosphere, the hydrosphere, the biosphere, the geosphere, the cryosphere, environmental change, and/or earth observation.

BUILDING A HABITABLE PLANET (BIOS1004)

Semester Taught: Autumn **Credit:** 20

Style of Teaching: Lectures

Module Convenor: Dr Liz Bailey

Assessment (s): 100% Exam (x2)

Overview: The unifying theme of this module is biogeochemical cycling - the production, distribution and cycling of materials on the Earth and their availability to, and use by, biological organisms. The introduction covers the history of the universe, from the big bang to the evolution of the Earth's surface environment, via formation of galaxies, stars, elements and the solar system. Then we describe the major global systems and their circulations as they are today - solids (plate tectonics, formation and erosion of crustal rocks), liquids (oceans, temperature and salinity gradients) and gases (atmosphere, weather and climate). In the final section we examine the major materials - including carbon, nitrogen, sulphur, oxygen and metals - and their budgets and cycles; and the interactions between biological and physical/chemical processes on a global scale.

PRINCIPLES OF ECOLOGY (BIOS1016)

Semester Taught: Autumn **Credits:** 20

Style of Teaching: Lectures and Practicals

Module Convenor: Dr Helen West

Assessment (s): 50% Coursework & 50% Exam

Overview: The module covers: evolutionary aspects of ecology. Organisms and their environment: physical, chemical and biotic factors limiting species distribution; capture and utilization of resources by organisms; the niche concept; life cycles and dispersal. Population Ecology: intraspecific and interspecific competition; predation; parasitism and mutualism. Community Ecology: diversity and stability of communities; patterns of species richness; the concept of a climax community; energy flow and nutrient cycling. The module explores definitions of biodiversity and explores the value of biodiversity through different ethical frameworks. The loss of species and habitats is discussed with particular reference to semi natural and managed habitats such as woodland, hedgerows, meadows, and farmland.

PHYSICAL LANDSCAPES OF BRITAIN (GEOL1001)

Semester Taught: Autumn Credits: 10

Style of Teaching: Lectures and Practicals

Module Convenor: Dr Matt Jones

Assessment (s): 50% Coursework (group project), 50% Exam

Overview: This module provides an understanding of the history and origins of the Earth and its life and landforms through consideration of the following topics using the British Isles as a case study:

- Tectonic History of Britain
- Environmental changes over geological time and associated rock types
- Geomorphology of typical British landscapes.

ON EARTH AND LIFE (GEOG1014)

Semester Taught: Spring Credits: 10

Style of Teaching: Lectures

Module Convenor: Dr Richard Field

Assessment (s): 100% Exam (1hr)

Overview: On Earth and Life is a ten-credit module that explores the deep historical co-evolution of Earth and Life and emphasizes uniqueness of place and historical contingency. The module complements (but does not require) Physical Landscapes of Britain in exploring geological, plate tectonic and palaeoenvironmental ideas and research, but at the global scale. It emphasizes the role of life in creating past and present planetary environments, and conversely the role of environment and environmental change in the evolution and geography of life.

- How to do science when it focuses on the deep past
- The nature of geological evidence
- Early life on the young Earth
- Carbon cycling
- The Great Oxygenation Event
- Snowball Earth
- What molybdenum tells us
- Skeletons in the rocks
- Black Earth
- Warm-blooded vs cold-blooded
- The Great Dying
- Outliving *Tyrannosaures rex*
- The geography of evolution
- Evolutionary hotspots
- Maori mystery
- Human origins

Mathematics

Module Title	Autumn	Spring
Calculus and Linear Algebra	40	

CALCULUS AND LINEAR ALGEBRA (MTHS1001)

Semester Taught: Full Year **Credits:** 40

Style of Teaching: Lectures, Workshops, Computing Workshops and Tutorials

Module Convenor: Dr Matteo Icardi

Assessment (s): 25% Coursework (mix of problem-based and computing courseworks); 75% Exams (x2)

Overview: The course consolidates core GCE mathematical topics in the differential and integral calculus of a function of single variable and used to solve some classes of differential equations. Basic theory is extended to more advanced topics in the calculus of several variables. In addition, the basic concepts of complex numbers, vector and matrix algebra are established and extended to provide an introduction to vector spaces. Students are introduced to different types of proof, such as direct proof, proof by contradiction and proof by induction, as well as theorems and tests for determining the limits of sequences and series. An emphasis in the course is to develop general skills and confidence in applying the methods of calculus and developing techniques and ideas that are widely applicable and used in subsequent modules. Students will be use a computer package to plot graphs and implement basic algorithms.

Major topics include:

- Differential and integral calculus of a single variable;
- Differential equations;
- Differential calculus of several variables;
- Multiple integrals;
- Complex numbers;
- Matrix algebra;
- Vector algebra and vector spaces;
- Logic and proof;
- Limits of sequences;
- Limits of series;
- Use of a computer package.

Physics

Module Title	Autumn	Spring
From Newton to Einstein	40	

FROM NEWTON TO EINSTEIN (PHYS1001)

Semester Taught: Full Year **Credits:** 40

Style of Teaching: Lectures and Tutorials

Module Convenor: Dr R Hill

Assessment (s): 20% Continuous Assessment (Portfolio of task sheets), 80% Exams (x2)

Overview: This module is based on the textbook "Physics for Scientists and Engineers" by Knight. The module aims to introduce core topics in physics which will underpin all subsequent physics modules. The module begins by discussing classical mechanics in the language of vectors and the key notion of harmonic motion which is extended to cover wave phenomena. The first semester ends with an introduction to Einstein's special theory of relativity. The second semester introduces the basic ideas of electromagnetism and electrical circuits and quantum physics.

Outline Syllabus:

- Vectors and Coordinate systems
- Kinematics and Motion in 1D and 2D
- Newton's Laws
- Conservation Laws
- Rotation of a Rigid Body
- Micro-macro connection
- Oscillations
- Travelling Waves
- Superposition of Waves
- Relativity
- Galilean Relativity
- Relativity of Time
- Relativistic Energy and Momentum
- Electric charges and forces
- The electric and magnetic fields
- Gauss’s law
- The electric potential
- Fields and potentials
- Current, resistance and the fundamentals of circuits
- Electromagnetic induction
- Electromagnetic fields and waves
- The Foundations of Modern Physics
- Quantisation
- Wave functions and uncertainty
- One-dimensional quantum mechanics

Psychology

Biological/Neuroscience Specialism

Module Title	Autumn	Spring
Cognitive Psychology	20	
Biological Psychology	20	

COGNITIVE PSYCHOLOGY (PSGY1002)

Semester Taught: Autumn **Credits:** 20

Style of Teaching: Lectures and Workshops

Module Convenor: Dr Neil Roach

Assessment (s): 25% Essay, 75% Exam

Overview: Cognitive psychology is the study of mental processes: the ways in which we gain information from the world, how that information is represented and transformed as knowledge, how it is sorted and how it is used to direct our attention and behaviour. This is our ability to perceive, comprehend, attend, store and retrieve information gained from the world. This module will introduce the methods used to investigate cognitive processes, together with summaries of principal findings in the domains of attention, perception, language, memory and thinking.

BIOLOGICAL PSYCHOLOGY (PSGY1003)

Semester Taught: Spring **Credits:** 20

Style of Teaching: Lectures and Workshops (details on Moodle)

Module Convenor: Luke Holden

Assessment (s): 25% Article (700 word); 75% Exam

Overview: Biological psychology encompasses physiological, anatomical and genetic processes as a way of understanding psychology. This module provides core knowledge about basic biological facts (anatomy, physiology, neuropsychology, genetics and evolution) before covering their involvement in both typical psychological processes and in psychological disorders (e.g., amnesia, visual agnosia, narcolepsy, obesity, Balint's syndrome, and schizophrenia).

Social and Developmental Specialism

Module Title	Autumn	Spring
Cognitive Psychology	20	
Developmental Psychology	10	
Social Psychology		10

COGNITIVE PSYCHOLOGY (PSGY1002)

Semester Taught: Autumn **Credits:** 20

Style of Teaching: Lectures and Workshops

Module Convenor: Dr Neil Roach

Assessment (s): 25% Essay, 75% Exam

Overview: Cognitive psychology is the study of mental processes: the ways in which we gain information from the world, how that information is represented and transformed as knowledge, how it is sorted and how it is used to direct our attention and behaviour. This is our ability to perceive, comprehend, attend, store and retrieve information gained from the world. This module will introduce the methods used to investigate cognitive processes, together with summaries of principal findings in the domains of attention, perception, language, memory and thinking.

DEVELOPMENTAL PSYCHOLOGY (PSGY1006)

Semester Taught: Autumn **Credits:** 10

Style of Teaching: Lectures and Workshops (details on moodle)

Module Convenor: Angeliki Makri & Dr Lauren Marsh

Assessment (s): 25% Essay; 75% Exam

Overview: This module introduces students to the fascinating world of the developing child. Lectures consider different theoretical, applied and experimental approaches to cognitive, linguistic and social developmental from early to late childhood. Topics include the development of thinking, perception, drawing, understanding the mind, intelligence, attachment, language, and moral development.

SOCIAL PSYCHOLOGY (PSGY1007)

Semester Taught: Spring **Credits:** 10

Style of Teaching: Lectures and Workshops

Module Convenor: Dr Stephanie McDonald

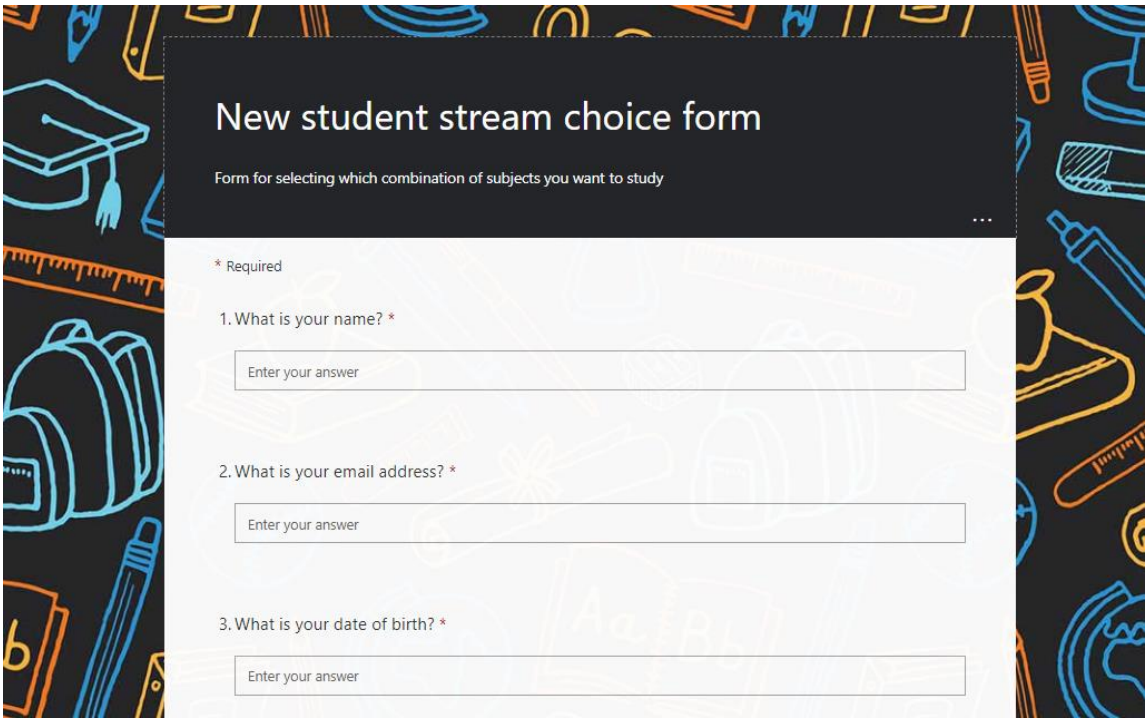
Assessment (s): 100% Exam

Overview: This module introduces students to the core topics in social psychology. Social psychology is concerned with trying to understand the social behaviour of individuals in terms of both internal characteristics of the person (e.g. cognitive mental processes) and external influences (the social environment). Lectures will cover topics on how we define the self, attitudes, attribution, obedience, aggression, pro-social behaviour and formation of friendships.

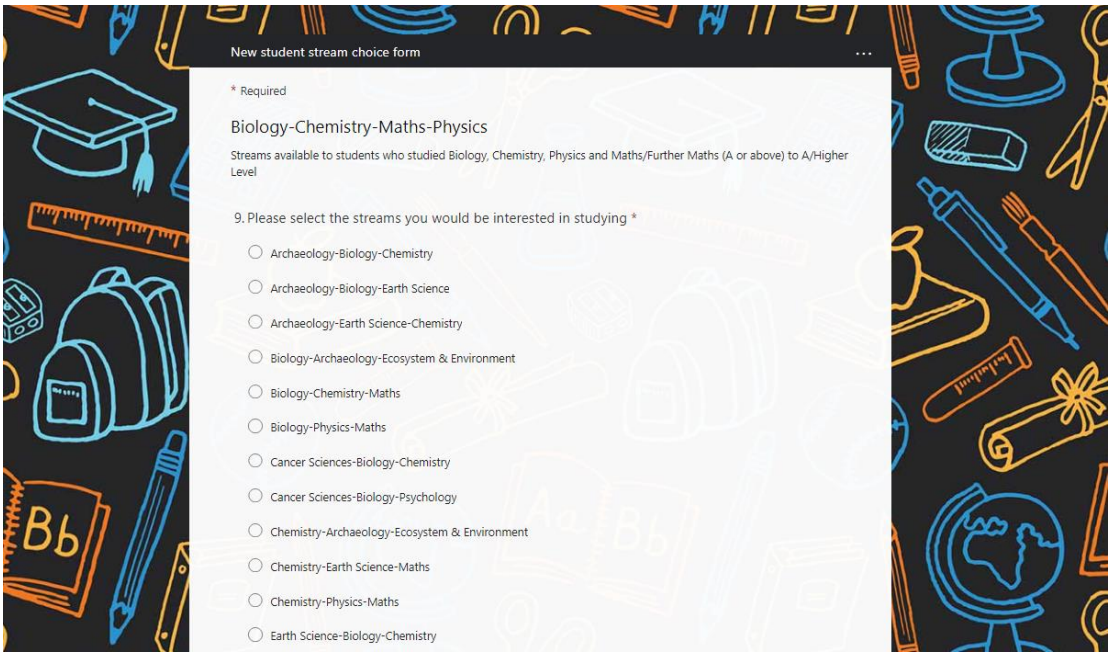
Online Incoming Students Stream Choice Form

There is an online form to select your choice of stream, there is a link on the welcome pages and in the Welcome Email you have received or it can be found online at: https://forms.office.com/r/8zAwDZki4j.

On the first page it will ask you for details to match up to your record and also about any dietary or access requirements you might have so we can accommodate these during welcome week. It then asks you to select which of the required subjects you have studied at A or Higher Level.



Depending on this answer it takes you through to a second page with a list of streams specific to your individual entry requirements for you to select your preferred stream.



Please submit your responses by **5pm on Wednesday the 6th of September 2023**.

If you know you want to make any changes to the stream you have chosen after this point then please email kate.tape@nottingham.ac.uk as this might impact who your Personal Tutor or Peer Mentors are.

If you have any problems with the form please email kate.tape@nottingham.ac.uk.