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| Name | CREDITS | LEARNIG OUTCOMES | SKILLS |
| Technological Infrastructures for GIS (PGGE11234) | 20 | Understand the value of distributed geographical information and services Understand the technological underpinnings of distributed GIS, the value of networked information and the organisation wide deployment of a system Predict future developments and understand the implications of standardisation efforts Understand the fundamental principles underlying Object Oriented software design Employ formal methods to produce effective software designs as solutions to specific tasks. | This course will provide the students with a range of highly marketable skills and introduce them to technologies sought after by employers. These technical skills relate closely to the employment opportunities identified by our Industrial External Examiner, professional bodies and graduate feedback. The students also gain skills in logical thinking, project work, organisation and report writing. |
| Active Remote Sensing: Radar and Lidar (PGGE11235) | 20 | Understand the key principles of active remote sensing systems within the context of altimetry, scatterometry and imaging radar Comprehend some of the more complex topics such as polarimetry and interferometry Process and handle differnt forms of LiDAR data (waveform, discrete)Place the value of active remote sensing systems into the wider context of Earth observation and remote sensing handle different forms of active data and interpret the information contained within such data | This course will provide the students with a range of highly marketable skills and intriduce them to technologies sought after by employers. These technical skills relate closely to the employment opportunities identified by our Industrial External Examiner, professional bodies and graduate feedback. The students also gain skills in logical thinking, project work, organisation and report writing. |
| Advanced Spatial Database Methods (PGGE11083) | 10 | understand the benefits of formal database management and its implications and be able to predict future developments and understand the implications of standardisation efforts understand how database methods can be used to store spatial and attribute data in the context of geographical information systems, be able to critically review the different technologies and commercially available models, assessing their merits and shortcomings and to understand the issue of performance in the context of database management understand the concepts of data modelling and be able to deconstruct real world problems into appropriate models using appropriate tools use Structured Query Language (SQL) for the manipulation of objects within a relational database management system use and understand the Oracle relational database management system, Oracle Spatial as a means of storing and manipulating spatial data alongside attributes, and be able to contrast Oracle with different systems | Not entered |
| Atmospheric Quality and Global Change (PGGE11007) | 20 | have Increased understanding of current concerns regarding atmospheric quality and global change. have an understanding of sources and sinks of greenhouse gases, the global carbon cycle, renewable energy, biological responses to global change, acid rain and urban transport and air pollution. have an appreciation of renewable energy and mitigation options for reducing impacts of anthropogenic release of pollutants into the atmosphere. have a knowledge of past and present climate change and atmospheric quality in order to fully understand the impacts of human activities. develop an understanding of and skills in relevant measurement, monitoring and modelling techniques for atmospheric quality. | Not entered |
| Business Geographics (PGGE11210) | 10 | Understand typical UK private sector Company structures, ownership and governance characteristics and be able to set up a new business (Limited Company) or partnership (LLP) understanding rules and reporting responsibilities. Consider different models of shareholder ownership and professional responsibilities within business (and analogies within government/third sector) through group work and to consider how and why ethics and professionalism are important whether as an internal or external GIS Expert or Consultant. Understand the value of different types of geographic information in various settings and consider ways to exploit its use and to be able to project plan a number of scenarios involving open source, public sector and other types of geographic information Encompass future possibilities for use/analysis of geographic information as it gets bigger, potentially more open and certainly more pervasive develop communication, management and interactive skills (including argument!) making use of alternate organisational structures, pricing models or service delivery. | Not entered |
| Communicable Disease Control and Environmental Health (PUHR11008) | 10 | &·understand the significance of communicable disease as a public health issue both in the UK and internationally&·describe the epidemiology of important communicable diseases in the UK and internationally&·describe the principles of surveillance, investigation, control and prevention of communicable disease in the UK and internationally&·outline the different methods available for the control of communicable diseases &·apply the principles of investigating an outbreak of communicable disease&·outline the principles underlying vaccination and immunisation and the methods for monitoring and evaluating immunisation programmes. | Not entered |
| Data Mining and Exploration (INFR11007) | 10 | Describe the data mining/analysis process in overview, and demonstrate assessment of the challenges of a given data mining project. Describe methods used for exploratory data analysis, predictive modelling and performance evaluation. Critical evaluation of papers presented in the second part of the course. In the mini project, demonstrate the ability to conduct experimental investigations and draw valid conclusions from them. Demonstrate use of data mining packages/computational environments in the mini project phase. | Not entered |
| Ecosystem Service Values (PGGE11228) | 20 | Understand the role that ecosystems play in terms of underpinning critical services for human wellbeing Critically analyse the ecosystem services paradigm and the application of these ideas in ecological assessments, and in public life more broadly. Apply and critique nonmonetary and monetary assessments to various ecosystem services. Analyse the challenges to governing ecosystem services, from an ecological, social and economic perspective. Assess their work in a group context, and achieve effective collaboration with people from different backgrounds. | Not entered |
| Encountering Cities (PGT) (PGGE11185) | 20 | To provide students with a thorough knowledge of the city; To introduce students to a range of different ways of knowing the city To make students aware of how knowledge and understanding of the city is developed through different research methods and representation; To provide a critical understanding of key concepts including encounters, sociality, emotions, materiality; To develop students understanding of a number of substantive, current issues affecting everyday urban life using case studies from cities around the world; To provide students with a detailed understanding of: the social life of cities; the emotional life of cities; and urban materialities; To encourage students to critically identify and analyse complex problems facing the city and to demonstrate some originality in dealing with these problems. | Not entered |
| Environmental Impact Assessment (PGGE11009) | 20 | Gain an understanding of the role of SEA & EIA in decision making Gain an overview of the legislative framework for EIA, with a focus towards its application in Scotland Have knowledge of the EIA process and stages, and how it is applied to specific topic areas, such as landscape and visual impact assessment, ecology, soils and climate change, including its application Be skilled in review and appraisal of the EIA process and its outputs | Not entered |
| Epidemiology for Public Health (PUHR11016) | 10 | (\*) Define and describe the epidemiological principles underpinning public health practice(\*) Develop an understanding of assessing health programs(\*) Critically appraise a surveillance or screening program(\*) Design a surveillance or screening program for a population | Not entered |
| Exploring the Past with Data Science (PGHC11461) | 20 | demonstrate the ability to design an implement meaningful visualizations of archaeological and historical data; demonstrate the ability to understand and critically analyse current practices of information visualization; demonstrate the ability to apply Exploratory Data Analysis methods to identify patterns in archaeological and historical data; demonstrate critical understanding of the issues surrounding the identification, quantification and display of spatiotemporal social dynamics; demonstrate knowledge on the uses of visualization tools beyond archaeology. | On successful completion of the course, students should be able to: gather, integrate and critically assess relevant information extract key elements and meanings from complex data sets answer a research question by developing a reasoned argument based on quantitative analysis present their ideas and analyses in a coherent fashion |
| Forests and Environment (PGGE11025) | 20 | Demonstrate a deep understanding of forest ecological processes from the leaf to global scale; Demonstrate understanding of the interactions and feedbacks between forest ecosystems, climate change and extreme events Communicate on the current state of knowledge and uncertainties in interactions between humans and forests, and understand the policy challenges and potential solutions in this area Use techniques related to forest mensuration, and understand how more complex techniques used in forest management can be implemented Communicate forest science and policy issues to non scientific audiences, including project managers and the general public | Not entered |
| Geology for Earth Resources (PGGE11173) | 10 | Have a broad and integrated knowledge of the basics of geology associated with petroleum exploration, carbon storage or groundwater Understand the origin and physical properties of clastic and carbonate sedimentary rocks which form the majority of reservoirs and aquifers Understand and be familiar with the common sedimentary rock types and their description Apply their introductory experience of field geology | Not entered |
| Introduction to Environmental Modelling (PGGE11197) | 10 | understand the role and nature of modelling environmental systems understand the basic principles of model building using both empirical and mechanistic modelling approaches have a clearer understanding of the challenges and decisions associated with model implementation and validation of model outputs have an awareness of the strengths and limitations of different types of model | General data analysis and Information Technology Organisation skills to plan, execute and report on scientific investigations To participate in individual and team activities towards the completion of a set of objectives Critical thinking necessary for the evaluation of information |
| Introduction to Three Dimensional Climate Modelling (ENVI11002) | 10 | Have a theoretical understanding of the principals underlying three dimensional climate models Have a theoretical understanding of how climate models work Have a practical understanding of how to run a climate model Have a practical understanding of how to analyse climate model output | Not entered |
| Land Use/Environmental Interactions (PGGE11010) | 20 | Have knowledge on identification of opportunities for management and Have an understanding of nitrogen transformations, mineralisation, Use methods of organic waste management for water pollution control Evaluate groundwater quality under various management | Not entered |
| Marine Systems and Policies (PGGE11186) | 20 | Understand coastal marine ecosystem processes with regard to the interdynamics of different scales and human dimensions and drivers of environmental change. Be familiar with a array of conservation pathways and scenarios for recovery, e.g. habitat conservation and restoration. Be familiar with examples of key national and international marine conservation policies. Conduct reviews of key literature and policies, developing the capacity to conduct policy analysis and solutions for different settings and scales, resulting in a formal policy paper. Be able to develop and demonstrate leadership and participation in group discussions, and team based oral presentations. | Capacity to conduct context based policy analysis to develop solutions for different settings and scales; Writing brief critiques and reviews of key literature and policies. Leadership and participation in group discussions on complex topics, scientific literature and examples; Team based oral presentations and participation in an Abstracts Symposia. Researching, constructing and delivering individual white paper, policy brief. |
| Object Orientated Software Engineering: Spatial Algorithms (PGGE11106) | 10 | identify how different spatial data models can be implemented in object oriented designs. have an understanding the principles of algorithm development and of generic concepts employed in algorithm design and be familiar with a range of algorithms used to manipulate and analyse spatial data.be able to develop Python classes suited to the representation and analysis of spatial data.be able to undertake spatial data Input/Output in standard formats and to interface Python with other proprietary software.be able to complete programming and software documentation within specified parameters and to a professional standard. | Not entered |
| Participation in Policy and Planning (PGGE11016) | 20 | Have in depth theoretical and applied knowledge of participation in environmental decision making. Develop applied understanding and practical experience of ways in which information and communication can be used to achieve more effective participation in environmental planning and policy processes. Analyse critically the role of beliefs, interests, power, lobbying and political initiatives in participatory processes related to the environment. Gain practical experience of working with stakeholders on a real life participation problem through a group exercise. Develop transferable skills, including: facilitation, communication, interviewing, qualitative data analysis, reflective practice, mediation, leadership, negotiation and professional practice. | Facilitation; communication; interviewing; qualitative data analysis; reflective practice; mediation; leadership; negotiation and professional practice. |
| Passive Earth Observation: New Platforms, Sensors, and Analytical Methods (PGGE11241) | 20 | Have an advanced understanding of passive EO approaches and the advantages and disadvantages of each Have an advanced understanding of the range of EO platforms (from ground to space based) and passive sampling approaches now available and be able to review these critically Have knowledge and practical skills in a range of advanced analytical EO techniques and understand the advantages and disadvantages of each of these. Locate, read and summarise relevant literature, from both traditional and electronic media, to extend your understanding of the topic. Develop reasoned arguments, firmly grounded in the available literature. Take responsibility for their own learning through reading and the preparation of assignments, and reflect upon your learning experience. Plan and write assignments, within the specified parameters and to a professional standard | Knowledge of a wide range of theoretical ideas and practical techniques in passive EO. Ability to consider and evaluate the advantages and disadvantages of EO platform types and the constraints these place on data acquisition, quality and fitness for purpose. Planning skills for data acquisition and sampling strategies and understand how these influence the utility of data acquired for different purposes. Understanding of high, medium and course spectral and spatial resolution EO data and how it can be quality assessed and analysed. Ability to write detailed and professional technical and use critical thinking |
| Political Ecology (GEGR11001) | 20 | critically understand the problems with mainstream environmentalism and sustainability; synthesise current conceptual debates and bring them into critical dialogue with real world examples;;understand how nature is produced in different settings and contexts; develop skills for independent critical engagement with the politics of nature. | Not entered |
| Principles and Practice of Remote Sensing (PGGE11233) | 20 | Demonstrate detailed, integrated knowledge of the application and history of remote sensing Discuss the nature of electromagnetic radiation and its interaction with the earth's surface and atmosphere Demonstrate a critical understanding of the differences between remote sensing systems and be aware of their characteristics and limitations Competently interpret, process and evaluate remotely sensed images and be able to use remote sensing to achieve self defined goals Apply knowledge of image processing principles strategically to new problems | Allow students to engage with a range of theoretical ideas and practical techniques in remote sensing Have an understanding of some of the recent forefront developments Enable students to interpret a variety of source material and be able to make professional standard judgements where data are limited or comes from a range of sources; Provide training in critical analysis and in written presentation so students are able to critically identify and analyse complex problems to a professional standard |
| Principles of Geographical Information Science (GEGR10039) | 20 | understand the components and a range of the methods which make up geographical information systems and the field of geographical information science display knowledge of the multifarious data sources commonly used in GIS, and critically understand the importance of data modelling in the storage of such data appreciate the functionality of the ArcGIS software, including basic expertise in anlysis, classification, query and integration of vector and raster data and its visualisation apply appropriate cartographic principles in the construction of maps (including an appreciation of map projections)develop an integrated practical project, drawing on appropriate source data, providing meaningful analysis, effective visualisation of output and drawing appropriate conclusions which demonstrate professional level insight | Not entered |
| Quantitative Methods and Reasoning in Archaeology (PGHC11462) | 20 | demonstrate the ability to test working hypotheses using statistics; demonstrate the ability to understand and critically analyse current applications of statistics in archaeology; demonstrate the ability to apply a wide range of methods to identify patterns in archaeological data; demonstrate critical understanding of the issues surrounding the investigation, interpretation and display of quantitative datasets and their links to social behavior; demonstrate independence of mind and initiative; intellectual integrity and maturity; an ability to evaluate the work of others, including peers. | On successful completion of the course, students should be able to: gather, integrate and critically assess relevant information extract key elements and meanings from complex data sets answer a research question by developing a reasoned argument based on quantitative analysis present their ideas and analyses in a coherent fashion |
| Soil Protection and Management (PGGE11183) | 20 | Have an understanding of soil formation, classification and global distribution. Determine interactions between soil and the environment Identify key factors driving reduction in soil quality and increased erosion potential. Evaluate land management practise to mitigate negative impacts on soil. | You will have the opportunity to develop and understanding of the pressures and issues relating to soil preservation, management and rehabilitation and to develop potential land management strategies to alleviate or remediate these issues. |
| Space, Place and Time: the archaeology of built environments (PGHC11412) | 20 | Demonstrate in coursework and practical examination as required a detailed and critical command of the body of knowledge concerning theory and methodology of Buildings Archaeology and its application, particularly in academia, but also in commercial practice Demonstrate in coursework and practical examination as required an ability to analyse and reflect critically upon relevant scholarship concerning buildings archaeology; its primary source materials such as the archaeological remains of built structures and historical or cartographic documents; and conceptual discussions about architectural and archaeological theory based on key case studies  Demonstrate in coursework and practical examination as required an ability to understand and apply specialised research or professional skills, techniques and practices considered in the course including to autonomously produce a primary archaeological record of buildings, and to autonomously produce a primary archaeological record of buildings, and to understand, evaluate and utilise this primary evidence  Demonstrate the ability to develop and sustain original scholarly arguments in oral, written and drawn form in seminar discussion and presentations by independently formulating appropriate questions and utilising relevant evidence considered in the course  Demonstrate in seminar discussion, presentations, coursework and practical examination as required originality and independence of mind, creativity and initiative; intellectual integrity and maturity; an ability to evaluate the work of others, including peers; work and lead in a team; and a considerable degree of autonomy. | Not entered |
| Sustainable Energy Technologies 4 (MECE10011) | 10 | 1. understand the principles of operation of sustainable energy conversion by wind; wave; tidal; solar; bioenergy; hydropower; and other technologies;2. understand and be able to apply the principal aspects of engineering design underpinning these technologies including basic quantitative techniques;3. have a reasoned appreciation of the constraints on each technology, both imposed by physical fundamentals, and by current levels of technology and market;4. understand the fundamentals of grid integration of renewable energy and the problems and constraints associated with this;5. understand the fundamentals of economic analysis as applied to renewable energy technologies. | Not entered |
| Technologies for Sustainable Energy (PGEE10001) | 10 | 1. understand the principles of operation of sustainable energy conversion by wind; wave; tidal; solar; bioenergy; hydropower; and other technologies;2. understand and be able to apply the principal aspects of engineering design underpinning these technologies including basic quantitative techniques;3. have a reasoned appreciation of the constraints on each technology, both imposed by physical fundamentals, and by current levels of technology and market;4. understand the fundamentals of grid integration of renewable energy and the problems and constraints associated with this;5. understand the fundamentals of economic analysis as applied to renewable energy technologies. | Not entered |
| The Ecology of Ecosystem Services (PGGE11229) | 20 | Understand the fundamental principles of ecosystem ecology, including how ecosystem structure relates to function, and what drives the dynamics of ecosystems  Measure and model ecosystem structure and function, manage data, and analyse large ecological data sets  Understand what biodiversity is, and how it is related to ecosystem functioning, and illustrate this relationship through case studies.  Appreciate how ecosystems respond to, and feedback on, global change drivers including climate change, land use change, and biodiversity loss. | Ecological field work, data collection and management, data analysis using Excel, systems thinking and modelling. Summarising complex scientific issues for non-scientific audiences. Group work and presentations. |
| Understanding Environment and Development (PGGE11187) | 20 | Learn to appreciate the interrelated and political nature of environment and development issues  Learn to use key academic theory and debate with regards environment and development issues  Learn to critically reflect upon current practices and approaches in environment and development  Learn to build and convey sophisticated arguments drawing on complex evidence through writing and the spoken word | Not entered |
| Visual Analytics (PGGE11239) | 20 | Will have pragmatic comprehension of the principles of map design and how they can be applied in GIS contexts  Will understand the critical role interactive visualisation plays in exploratory geospatial data analysis  Will have a knowledge of spatial analysis techniques and the conditions under which they can be applied  Will have a capacity to source and manage large amounts of different sorts of spatial data  Will have developed their transferable skills through development of team based problem solving. | This course will provide the students with a range of highly marketable skills and introduce them to techniques and associated software that extends beyond traditional GIS. These analytical skills relate closely to the employment opportunities identified by our Industrial External Examiner and graduate feedback. The assessment are focused around problem based learning (Hung et al 2008) and team based learning, providing students with important transferable skills. Additionally they gain skills in exploratory thinking, project work, organisation and report writing. |
| Water Resource Management (PGGE11018) | 20 | Understand the theory and practice of water management at international, national and local scales, and its multiple connections with environmental issues  Understand hydrological, socioeconomic and environmental aspects of water management  Apply critical thinking to case studies related to water management and development in Northern and Southern countries | 1. Presentation skills2. Group working skills3. Interdisciplinary thinking |