PROGRAMME SPECIFICATION	

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	MSc
4	**Programme Title**	Environmental Consultancy
5	**Programme Code**	5208F/5208P
6	**Programme Accreditation**	
7	**QAA Subject Benchmark(s)**	Engineering
8	**FHEQ Level**	7
9	**Last updated**	September 2021

10 Programme Aims

1. The primary purpose of this programme is to provide Science graduates, specifically biology, chemistry, and Earth and environmental science graduates with the advanced conceptual understanding, detailed factual knowledge, business skills and specialist technical skills appropriate for them to follow successful careers as technically aware scientists in the environmental industry. The training given also forms an excellent introduction to environmental geochemistry for those students wishing to follow a research oriented career path.

2. Specifically, the course aims to provide an advanced understanding of:

a) The low temperature geochemistry of waters, soils and sediments.
b) The fundamental role played by micro-organisms in catalysing low temperature geochemical reactions.
c) The origins, toxicity and ultimate fates of pollutants.
d) Modern techniques for the analysis of environmental materials.

3. To provide a programme that meets the accreditation requirements for the Geological Society (http://www.geolsoc.org.uk) for advanced professional and scientific training in a specific area of the geosciences necessary for Chartered Geologist and Chartered Scientist candidates.

4. To provide a programme that meets the accreditation requirements of The Geological Society

5. To provide a programme designed to meets the standards set by the Engineering Council's Accreditation of Higher Education Programmes (AHEP3, May 2014).
http://www.engc.org.uk/engcdocuments/internet/Website/Accreditation%20of%20Higher%20Education%20Programmes%20third%20edition%20(1).pdf

6. To provide a programme that develops the skills, attributes and values defined in the University's Graduate Skills Framework.
http://www.ncl.ac.uk/quilt/modules/gsf.htm

11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes.

Knowledge and Understanding

On completing the programme students should have gained and be able to demonstrate:

A1 An advanced knowledge and understanding of the low temperature geochemistry of waters, soils and sediments

A2 A knowledge and understanding of the physiology and diversity of micro-organisms, and their roles in the environment.

A3 A knowledge and understanding of the origin, toxicity and fate of key organic and inorganic pollutants

A4 A knowledge and understanding of modern approaches to pollution and pollution control

A5 A knowledge of the principles, applications and limitations of modern environmental analytical techniques, and an advanced understanding of some of these techniques

A6 A knowledge and understanding of key pieces of environmental legislation

A7 An understanding of Geographic Information systems and their use in data analysis and presentation

Teaching and Learning Methods

Teaching

Specialist technical knowledge and understanding (A1-A7) are primarily imparted via lecture classes, often supported by web-based reference materials. Knowledge and understanding are further promoted, where appropriate, by case studies (A3), computer-modelling workshops (A1, A5), field trips (A1, A5, A6) and site visits (A3, A5).Throughout the taught component of the course, students are encouraged and expected to engage in independent reading, and are supported in this by the provision of individual module reading lists.

Assessment Strategy

Knowledge and understanding (A1-A7) are assessed by a combination of unseen written examinations and coursework. Both employ a range of approaches in order to accurately assess student abilities. Written papers include essay, calculation, and multi-part questions whilst assessed coursework comprises geochemical calculations, essays, technical reports, and group projects and presentations. Some, or all, of A1-A7 (depending on topic) are also examined by means of a dissertation and presentation and possibly (at the discretion of an External Examiner) by *viva voce* examination.

Intellectual Skills

On completing the programme students should be able to:

B1 Critically assess the quality of data generated by analytical geochemical techniques

B2 Present and summarise data, and to critically appraise its significance, using appropriate statistical techniques

B3 Critically assess the value and limitations of existing information on a given subject

B4 Formulate or recognise key hypotheses, to test hypotheses using logical and consistent quantitative or qualitative arguments, and to identify key data which allow such tests to be made

B5 Critically assess the value and limitations of new data in relation existing information on a given subject, to draw logical conclusions, and to identify appropriate avenues for further study

B6 Solve relevant logical and numerical problems

Teaching and Learning Methods

Intellectual skills B1-B6 are developed during lectures, field trips and mini-projects: B1-B6 Modelling workshops, exercises on field trips and attendance at School research seminars enable skills B3-B6 to be developed further. All such skills are exercised significantly during the course of the dissertation project, the completion of which is supported by a series of dissertation-related workshops.

Assessment Strategy

Intellectual skills (B1-B6) are assessed by means of coursework (calculations, essays, laboratory and technical reports, and group projects and presentations), and unseen written examinations. Some, or all, of B1-B6 (depending on topic) are also examined by means of a dissertation and presentation and possibly (at the discretion of an External Examiner) by *viva voce* examination.

Practical Skills

On completing the programme students should be able to:

C1 Demonstrate an understanding of the principles, applications and limitations of modern environmental analytical techniques, and an advanced understanding of some of these techniques
C2 Demonstrate the ability to present and summarise analytical data, and to critically appraise its significance, using appropriate statistical techniques
C3 Plan, execute and present a research project
C4 Deal with complex issues both systematically and creatively
C5 Demonstrate decision making in complex and unpredictable situations
C6 Make sound judgments in the absence of complete data
C7 Demonstrate self-direction and originality in tackling and solving problems
C8 Act autonomously in planning and implementing tasks
C9 Apply engineering techniques taking account of environmental, industrial and commercial constraints
C10 Produce GIS maps using state of the art modelling software

Teaching and Learning Methods

Outcomes C1- C10 are acquired principally through laboratory work and experience of the project. Acquisition of C4 is initially through lectures, developed through hands-on exercises and assignments. Further individual learning may also form a significant part of the project. C5 is introduced through lectures and developed through case studies. It will frequently form a central part of the project. Lectures and tutorials provide initial experience of C1 – C10, but the project forms the principal vehicle for their acquisition.

Assessment Strategy

Subject specific and practical skills (C1-C10) are assessed by means of coursework reports and by unseen written examination. Some, or all, of C1-C10 (depending on topic) are also examined by means of a dissertation and presentation and possibly (at the discretion of an External Examiner) by *viva voce* examination.

Transferable/Key Skills

On completing the programme students should be able to:
D1 Effectively communicate with specialist and non specialist audiences
D2 Retrieve information from literature/databases and manipulate and present data in a variety of ways
D3 Efficiently use general IT skills
D4 To plan, organise and prioritise work activities in order to meet deadlines

D5 Exercise initiative and personal responsibility
D6 To solve problems
D7 Work effectively as a part of a team

Teaching and Learning Methods

Key skills D1–D4 developed through formal teaching on research methods. Management of workload in order to meet deadlines (D4) is also promoted by means of a strict coursework timetable, whilst team working skills (D7) are developed by group exercises. These also provide opportunities for students to improve their problem solving abilities (D6), and to extend their communication, library, IT, and time management skills (D1–D4). The summer dissertation project provides students with further opportunities to develop all of these skills (D1–D7). Students are encouraged to acquire key skills D1–D4 through reflection on the material provided.

Assessment Strategy

Key skills (D1-D4) are assessed via 6 written examinations, 13 coursework exercises, the production of a research brief), and 3 short presentations. Communication (D1), library (D2) and IT (D3) skills, and the ability to meet deadlines (D4) work independently (D5) and solve problems (D6) are indirectly assessed by other coursework items (geochemical calculations, essays, laboratory and technical reports, and group projects and presentations), and all key skills (D1-D6) are examined by means of a dissertation and presentation, and possibly (at the discretion of an External Examiner) by *viva voce* examination.

12 Programme Curriculum, Structure and Features

Basic structure of the programme

This is a one-year full-time modular programme. It consists of two parts: a 120-credit *taught component*, which runs from late September until the end of May or early June, and an 60-credit *research project*, for which a dissertation is submitted in mid-August. Successful completion of the taught component is required in order for a student to progress to the dissertation project.

The taught component of the course consists of 12 compulsory modules, eleven 10-credit modules and one 20-credit module. Each 10-credit module equates to 100 hours of learning time.

The 12 week research project which can be written in the form of a consultancy report, commencing in mid-May, enables students to apply the subject specific skills and understanding (intended learning outcomes A1-A7), the intellectual skills (intended learning outcomes B1-B6), the practical skills (intended learning outcomes C1-C10) and the transferable/key skills (intended learning outcomes D1-D6) gained during the taught component, to a geochemical research problem. Dissertations often involve a significant laboratory component, but may take the form of desk or literature studies, or modelling work.

Key features of the programme (including what makes the programme distinctive)

An innovative feature is that the technical modules are taught in short (generally one to two-week) blocks. These occupy students, largely full-time, until the module has been completed and students then progress to the next module. This structure enhances student learning by allowing later units to build on the concepts, knowledge and skills gained during those taught earlier. The programme has a distinctive business and applied component, specifically The Environment Business and Contaminated Land taught modules. The students are offered a choice of consultancy project or a standard academic project. During the project, students are usually based in the School, working alongside PhD students and post-doctoral research associates in one of our established research groups, but the dissertation might entail working elsewhere, in collaboration with another industrial or academic partner. We encourage and support students who wish to publish the results of their dissertations, and several past M.Sc.

students have been successful in this area.

Programme regulations (link to on-line version)

Degree of Master of Science in Environmental Consultancy (5208F/P) programme regulations
5208FP Regulations 2021-22

13 Support for Student Learning

Generic information regarding University provision is available at the following link.

https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf

14 Methods for evaluating and improving the quality and standards of teaching and learning

Generic information regarding University provision is available at the following link.
https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf

Accreditation reports

Additional mechanisms

15 Regulation of assessment

Generic information regarding University provision is available at the following link.
https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf

In addition, information relating to the programme is provided in:

The University Prospectus: http://www.ncl.ac.uk/undergraduate/degrees/#subject
Degree Programme and University Regulations: http://www.ncl.ac.uk/regulations/docs/

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided.