

**University of Plymouth**

Faculty of Science and Engineering

School of Geography, Earth and Environmental Science

**Programme Specification**

**Master of Science (MSc)  
in  
Environmental Geochemistry  
5790**

September 2021

1. **MSc Environmental Geochemistry**

**Final award title:** MSc Environmental Geochemistry

**Level 7 Intermediate award title(s):**

Completion of 60 credits: Postgraduate Certificate

**Level 7 Intermediate award title(s):**

Completion of 120 credits: Postgraduate Diploma

**UCAS code** N/A

**HECOS code** 101045

2. **Awarding Institution:** University of Plymouth

**Teaching institution(s):** University of Plymouth

3. **Accrediting body(ies)**

N/A

4. **Distinctive Features of the Programme and the Student Experience**

The University's [Education and Student Experience Strategy](#) has an overarching aim: "To deliver outstanding education that makes a difference, improving local, national and global communities" This programme meets that aim by educating students who will, upon graduation, contribute to our understanding of how environmental contaminants impact upon our Environment. The distinctive feature of the MSc Environmental Geochemistry programme, and the reasons why students should study this subject area at Plymouth, are:

- **Professional experience.** Course content uses industry provided standards and case-studies and offers a substantial work placement in the environmental, engineering or chemical industry sector as part of the course.

- **Experiential learning:** A focus on learning in laboratory and field environments, training in the correct use of field and laboratory analytical equipment with professional chemists and communication of the results to ISO17025 standard.
- **Contemporary knowledge and skills.** Provides students with an advanced knowledge of environmental geoscience with the opportunity to specialise in the analysis and interpretation of geochemical information in order to help solve contemporary environmental problems focussed around real-life case studies. Understanding of and application to the [UN Sustainable Development Goals](#), principally, Clean Water and Sanitation and Responsible Consumption and Production. Provides students with the knowledge to critically evaluate and manipulate geochemical data sets and effectively communicate trends and uncertainty in the data.
- **Authentic assessment:** students will demonstrate key skills via assessments that reflect the types of projects and tasks expected from them in a professional working environment. Examples include generation and interpretation of laboratory data, appropriate analytical method selection, risk assessments, GIS presentation of data, contaminant transport modelling and the writing of professional reports.
- **Self-directed learning, project management and research.** Students will undertake a self-directed research project on an agreed topic of their choice with supervision from members of staff who are experts in their field of study and who regularly collaborate with external stakeholders.
- **Interdisciplinary learning.** Students will draw from advanced teaching and learning in the fields of geology, chemistry and environmental science by experienced teaching and research staff that are specialists in their respective field. Crucially learning the ability to communicate between and draw knowledge across disciplines in preparation for a multidisciplinary working environment.
- **Academically challenging:** suitable preparation for students preparing to undertake a PhD in a related area (chemistry, geology, environmental science) that may not currently hold the appropriate undergraduate skills.

## 5. Relevant QAA Subject Benchmark Group(s)

There is no specific Masters-level Environmental Geochemistry benchmark group. We have therefore employed the most appropriate benchmark group to the programme, namely

- MSc Chemistry  
[https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-chemistry-14-masters.pdf?sfvrsn=f290f681\\_18](https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/sbs-chemistry-14-masters.pdf?sfvrsn=f290f681_18)
- Earth Sciences, Environmental Sciences and Environmental Studies

[https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-earth-sciences-environmental-sciences-and-environmental-studies.pdf?sfvrsn=ff2c881\\_4](https://www.qaa.ac.uk/docs/qaa/subject-benchmark-statements/subject-benchmark-statement-earth-sciences-environmental-sciences-and-environmental-studies.pdf?sfvrsn=ff2c881_4)

- the QAA 'Masters' Degree Characteristics'  
[https://www.qaa.ac.uk/docs/qaa/quality-code/master's-degree-characteristics-statement.pdf?sfvrsn=6ca2f981\\_10](https://www.qaa.ac.uk/docs/qaa/quality-code/master's-degree-characteristics-statement.pdf?sfvrsn=6ca2f981_10)

## 6. Programme Structure

Semester 1	<b>GEES526</b> Analysis of Chemicals of Environmental Concern (20 credits)	<b>GEES515</b> Professional Practice in the Environmental Sector (20 credits)	<b>CHM5004</b> Quality Assurance and Accreditation (20 credits)
Semester 2	<b>GEES527</b> Migration of Pollutants in the Environment (20 credits)	<b>ENVS5002</b> Investigation and Assessment of Contaminated Environments (20 credits)	
	* <sup>2</sup> <b>GEES518</b> Professional Experience in Environmental Management (20 credits) : this can be extended in to the summer semester where necessary		
<b>GEES520</b> MSc Dissertation			

<sup>2</sup>Semester 2 is 15 weeks long and includes the Easter vacation. The taught element of each of the modules shown (GEES527 + ENVS5002) is completed by the start of the Easter vacation, allowing the work placement element (GEES518) to occur, without interruption, in at least part of the vacation and the second part of the semester.

## 7. Programme Aims

The aim of the MSc Environmental Geochemistry programme is to offer an employability-centred and practically-focused curriculum in environmental geochemistry to meet the current needs of the environmental industry and post-

graduate training. In particular, the programme aims to provide students with training in:

- 1) Conceptual understanding of contaminant behaviour and transport through surface and sub-surface environments, inclusive of ground and surface water modelling.
- 2) Generating and interpreting geochemical data sets, including the quantification of uncertainty and the critical evaluation of risk.
- 3) Working to industry best-practice methodology in environmental and geochemical investigations and with practical analytical training to certified ISO standards.
- 4) Planning and ownership of all stages of environmental investigations through project design, fieldwork, data interpretation, reporting of results, uncertainty and risk.

## **8. Programme Intended Learning Outcomes**

### **8.1. Knowledge and understanding**

On successful completion graduates should have developed:

- 1) A conceptual understanding of contaminant behaviour and transport through surface environments (chemistry, soils, sediments, water).
- 2) A conceptual understanding of contaminant behaviour and transport through sub-surface environments (chemistry, geology, contaminant hydrogeology).
- 3) A comprehensive understanding of the theoretical underpinnings behind quantitative & qualitative research and environmental assessment methods, and the ability to apply this understanding to case studies.

### **8.2. Cognitive and intellectual skills**

On successful completion graduates should have developed:

- 1) The ability to undertake analysis of complex, incomplete, or contradictory findings or theories in environmental geochemistry, and to effectively communicate the outcome of such analyses.
- 2) The ability to synthesize theory and research in environmental geochemistry in a manner that may be innovative, utilising knowledge or processes from the forefront of environmental science.
- 3) The ability to critically evaluate research from a methodological and theoretical perspective.
- 4) The ability to apply theory and research methods to solve problems, including the ability to generate novel hypotheses based on previous research and theory.

### **8.3. Key and transferable skills**

On successful completion graduates should have developed the ability to:

- 1) Work effectively as part of a team.
- 2) Use a full range of learning resources, including internet and library.
- 3) Reflect on progress and identify areas for improvement.
- 4) Identify problems and develop strategies for solving them, using the range of available resources.
- 5) Competently undertake research, monitoring and assessment tasks with minimum guidance.
- 6) Be an independent and self-critical learner, managing own requirements for continued professional development.
- 7) Engage confidently in academic and professional communication with others, including specialist and non-specialist audiences.

### **8.4. Employment related skills**

On successful completion graduates should have developed:

- 1) The ability to, through project management, design and conduct original research and monitoring programmes relevant to environmental consultancy.
- 2) The awareness of issues involved in research with human participants, including research design, issues of validity and reliability, and ethical considerations.
- 3) The ability to use reflection to explore knowledge, skills and attitudes which inform and facilitate independent research and practice in environmental consultancy.

### **8.5. Practical skills**

On successful completion graduates should have developed:

- 1) The ability to operate in complex and unpredictable and/or specialised contexts.
- 2) The ability to exercise initiative and personal responsibility in professional laboratory and consultancy practice.
- 3) The ability to use their technical expertise to perform analyses with precision and have the ability to adapt their skills, or develop new skills and/or procedures, for new situations.

## **8. Admissions Criteria, including APCL, APEL and Disability Service arrangements**

The Programme Leader (who is also responsible for admissions) uses the criteria below to guide their admissions decisions. Wherever possible, established relationships or equivalencies to other international qualifications will be used in making decisions.

Students admitted to the MSc programme are expected to have a good Honours degree in a relevant discipline e.g., chemistry, environmental science, geosciences, geography, biological sciences. The Programme Leader is responsible for ensuring that applicants have, through prior learning (acquired by formal study and/or experience) in the critical subject areas, developed the requisite knowledge, understanding and skills required for successful participation in this programme. Candidate suitability is assessed through a combination of the written application, evidence of formal qualifications, personal references and candidate interviews (where appropriate).

In compliance with the University's policies of equality and diversity, and disability, all appropriately qualified applicants will be given equal consideration during the selection process. The University welcomes applications from people with disabilities and the support available is described [here](#).

### **Entry requirements (in summary):**

1. An honours degree (normally at upper second class or better) in a relevant discipline (e.g., BSc Chemistry, Geography, Environmental Science, Geological Sciences, Biological Sciences) OR overseas equivalent. If you apply with a recent lower second class degree along with relevant industry experience, this will also be considered. If you apply without recent formal qualifications, but with relevant industry experience you will also be considered.
2. A minimum grade C in English Language at GCSE level OR a minimum overall score of 6.5 in IELTS with no less than 5.5 in any component.

### **Accreditation of Prior Certificated Learning (APCL)**

Students can exceptionally apply for exemption from any modules through APEL or APCL prior to commencing their studies, following standard University procedures, as described in the current University regulations on [admissions](#). This decision will be made by the Programme Leader.

**9. Progression criteria for Final and Intermediate Awards**

Successful completion of the final and intermediate awards, including the award of the MSc with Merit and Distinction, is as set out in the University's current [academic regulations](#).

**10. Non-Standard Regulations**

None

**11. Transitional Arrangements**

None



## Appendices

### Programme Specification Mapping (PGT)

#### Programme Specification Mapping (PGT): module contribution to the meeting of Award Learning Outcomes

Tick those Award Learning Outcomes the module contributes to through its assessed learning outcomes.

Module	Credits	Core Elective	Award Learning Outcomes																					Compensation Y/N	Assessment element(s) and weightings [use KIS definition] E1 - exam E2 - clinical exam T1 - test C1 - coursework A1 - generic assessment P1 - practical
			8.1 Knowledge & understanding			8.2 Cognitive & intellectual skills				8.3 Key & transferable skills							8.4 Employment related skills			8.5 Practical skills					
			1	2	3	1	2	3	4	1	2	3	4	5	6	7	1	2	3	1	2	3			
GEES526	20	C	X	X	X	X	X	X	X		X		X	X	X	X				X		X	Y	C1 100%	
GEES515	20	C				X	X	X	X		X	X	X	X	X		X	X				Y	C1 100% A1 P/F		
CHM5004	20	C			X	X	X	X	X		X	X	X	X	X				X		X	Y	E1 50% C1 50%		
<b>Learning Outcomes 60 credits</b>			X	X	X	X	X	X	X		X	X	X	X	X		X	X	X	X	X				
GEES527	20	C	X	X	X	X	X	X	X	X	X		X	X	X	X				X		X	Y	C1 50% P1 50%	
GEES518	20	C									X	X	X	X	X			X	X	X	X	Y	C1 100%		
ENVS5002	20	C	X	X	X	X	X	X	X		X		X	X	X	X			X	X	X	X	Y	C1 100%	
<b>Learning Outcomes 120 credits</b>			X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X				
GEES520	60	C	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	N	C1 100%		
<b>Learning Outcomes 180 credits</b>			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
<b>Confirmed Award LOs</b>			X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				