Module Descriptor Form

Civil and Environmental Engineering

CL805 - Environmental Geochemistry

Module Code	CL805	**Module Title**	Environmental Geochemistry				
Module Registrar	Renshaw, Dr Joanna C						
Other Staff Involved							
Credit Weighting	10	**Semester**	2	**Elective**	No	**Academic Level**	5
Pre-requisites							
Required for							

Module Format and Delivery (hours):

Lectures	Tutorials	Assignments	Labs	Private Study	Total
0	0	0	0	0	0

Educational Aim

This module aims to:

The aim of this module is to provide students with knwoledge and understanding of the chemistry of natural waters, their interactions with geological environment and the key processes and parameters controlling water chemistry

Syllabus

This module will teach the following:

The module will teach the following:
Relevant chemical fundamentals
General Chemical Terms and Analysis Methods
Chemical thermodynamic & kinetic controls on water chemistry
Main mineral types and structure
Weathering
Carbonate and Silicate Geochemical reactions
Redox Chemical reactions
Surface Chemistry, congruent and incongruent reactions

CL805 - Environmental Geochemistry

Learning Outcomes

On Completion of the module, the student is expected to be able to:

LO: 1	Understand the key processes and parameters controlling the chemistry of natural waters
LO: 2	Understand the mechanisms of water - mineral interactions
LO: 3	Understand the principles and methods of assessing the geochemical environment of site

(UK SPEC suggests no more than 4 learning outcomes per module. Statements must be broad and be syllabus free and link in with the intended learning outcomes on the programme specifications.)

Assessment of Learning Outcomes - Criteria

Learning Outcome: **1**

	Criteria
1	Ability to explain the role of key processes and parameters in controlling the chemistry of natural waters
2	Ability to undertake a range of calculations that predict the sources of dissolved chemical constituents in natural waters.

Learning Outcome: **2**

	Criteria
1	Ability to explain the different mechanisms and effect of water - mineral interactions in the environment
2	Ability to undertake calculations related to precipitation reactions and saturation indices

Learning Outcome: **3**

	Criteria
1	Ability to evaluate different sampling strategies for a site.
2	Ability to identify and explain sample processing requirements for different chemicals of interest.
3	Ability to recognise and explain quality control protocols required for sampling and processing

Assessment Method(s) Including Percentage Breakdown and Duration of Exams

To Pass the module, students need to gain a summative mark of: 50%

Description	**Semester**	**Start Week**	**Duration**	**Weight**	**Submission Week**	**Linked Criteria**
Calculations	2	1		10%	4	
Contaminated Land Report	2	3		40%	9	
5 short online multiple choice tests. Open Book: Lecture notes; student's notes from personal study	2		1.00	10%	11	
Online exam. Open Book: Lecture notes; student's notes from personal study	3		3.00	40%	E	

Principles of Assessment Feedback

Principles of assessment are incorporated in the following ways:
The assessments align clearly to the learning outcomes
Detail on the assessment methods, timetable and marking criteria are available to all class participants at the start of the course
SHort online tests throughout the module provide students with feedback on their understanding of course material.
Assessment is provided against clearly defined criteria

Additional Information

none

Resit Procedure

Students must gain a summative mark of 50% to pass the module. Students who fail the module at the first attempt will be re-examined during the resit diet in July/August. This re-examination will depeend on the failed component of the course.
Any coursework failed must be resubmitted.
For exam failure, a resit exam will be undertaken

Recommended Reading

Hiscock - Hydrogeology: Principles and Practice
Ibanez et al - Environmental Chemistry
Mazor - Chemical and Isotopic Groundwater Hydrology
Ryan - Environmental and Low Temperature Geochemistry
Bauer & Velde - Geochemistry at the Earth's Surface
Okrusch & Frimmel - Mineralogy
Earle - Physical Geology

Specific chapters recommended for each topic

CL805 - Environmental Geochemistry

Module Timetable

Week	Semester 1	Semester 2
0		
1		
2		
3		
4		Submission 10%
5		
6		
7		
8		
9		Submission 40%
10		
11		Test 10%
E		

Date of Last Modification

06-11-2025