

CLASS/MODULE DESCRIPTOR 2018/19



CL954 Contaminated Land

Registrar: Dr C Switzer	Taught To (Programme): MSc Civil Engineering with Geoenvironmental Engineering and Project Management (C); Hydrogeology (C); Civil Engineering (including other specialist streams) (O); Environmental Engineering (O); Environmental Entrepreneurship (O); Sustainability and Environmental Studies (O)	
Other Lecturers Involved:	Credit Weighting: 10 credits	Semester: 1
Assumed Pre-requisites: some scientific or engineering background	Compulsory/ optional/ elective class	Academic Level: 5

Class Format and Delivery (hours):

Lecture	Tutorial	Laboratory	Coursework	Project	Private Study	Total
20			10	30	40	100

Class Aim(s)

This course aims to provide insights into the remediation of contaminated land, including the regulatory framework; exposure assessment; sampling & analysis; and the various remedial processes for contaminated land.

Learning Outcomes

On completion of the course the student is expected to be able to

LO1 demonstrate a working knowledge of the regulatory framework in place in the UK for contaminated land management and remediation, including relevant legislation, policies and regulations.

LO2 identify possible human health and environmental risks associated with contaminated land management

LO3 evaluate critically the range of technologies that may be suitable for various types of contamination present

LO4 make informed decisions about technologies for contaminated land remediation based upon technical solutions, risk assessment & management, planning and financial constraints

Syllabus

The course will teach the following:

- Introduction to Land Regeneration – definitions, processes and relevant legislation.
- Exposure assessment and its limitations.
- Overview of contaminant mass transfer processes and influences on remediation design & operation.
- Types of pollutants and contaminants (hydrocarbons, chlorinated solvents, metals). Hazards and risks. Site assessment, treatment selection and the related management implications.
- Links between Site Investigation, Risk Assessment and Remediation.
- Risk-informed decision-making.
- Land redevelopment: Residential, industrial/commercial and gardens/parks, risk assessment (source-pathways-receptor).
- Planning advice and legislation in Scotland, the UK and the EU.
- International differences in land regeneration.
- Contaminated land management case studies.

Assessment Criteria

For each of the Course Learning Outcomes the following criteria will be used to make judgements on student learning:

LO1 demonstrate a working knowledge of the regulatory framework in place in the UK for contaminated land management and remediation, including relevant legislation, policies and regulations.

C1 identify the major parties involved in remediation decisions

C2 determine the main mechanisms for triggering remediation decisions

C3 place UK framework into an international context

LO2 identify possible human health and environmental risks associated with contaminated land management

C1 understand the types of contamination that may be present at a site and their possible impacts

C2 identify the potential source-pathway-receptor linkages at a site

C3 use conceptual site models to show the potential linkages

LO3 evaluate critically the range of technologies that may be suitable for various types of contamination present

C1 determine possible technology choices based on site-specific parameters

C2 identify strengths and weaknesses of technology choices

C3 connect strengths and weaknesses to site conditions

LO4 make informed decisions about technologies for contaminated land remediation based upon technical solutions, risk assessment & management, planning and financial constraints

C1 identify all stakeholder groups that may be affected by site contamination and/or the remediation effort

C2 connect information learning objectives L01 – L03 and stakeholder needs to remediation decisions

C3 evaluate critically costing information provided in the literature

The standards set for each criterion per Learning Outcome to achieve a pass grade are indicated on the assessment sheet for all assessments.

Principles of Assessment and Feedback (<https://www.strath.ac.uk/staff/policies/academic/>)

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PRINCIPLE 1. ASSESSMENT AND FEEDBACK PRACTICES PROMOTE EFFECTIVE STUDENT LEARNING

Assessment and feedback structure and timing is designed to support students' learning. Assessments are distributed through the semester to engage students throughout the course and provide sufficient time to reflect upon feedback.

PRINCIPLE 2. ASSESSMENT AND FEEDBACK PRACTICES ARE APPROPRIATE, FAIR, AND TRANSPARENT

Assessment criteria are published to students and staff in assignment instructions. Answers to students' questions about assignment instructions are published to all students when necessary.

PRINCIPLE 3. ASSESSMENT AND FEEDBACK PRACTICES ARE CLEARLY COMMUNICATED TO STUDENTS AND STAFF

Course descriptor is published to all staff and students at the start of term.

PRINCIPLE 4. ASSESSMENT AND FEEDBACK PRACTICES ARE CONTINUOUSLY REVIEWED

Assessment and feedback practices are reviewed in midterm and end of term surveys.

Please

Recommended Reading

Recommended textbook and resources

Nathanail, C.P. and R.P. Bardos (2004) Reclamation of Contaminated Land, London: Wiley Blackwell, 250pp.
USEPA Hazardous Waste Clean-up Information <http://www.clu-in.org>

Wider References

van Liedekerke, M., G. Prokop, S. Rabl-Berger, M. Kibblewhite, G. Louwagie (2014) Progress in the Management of Contaminated Sites in Europe, Joint Research Centre Institute for Environment and Sustainability, European Commission doi:10.2788/4658

Environment Agency www.environment-agency.gov.uk/

SEPA www.sepa.org.uk/

PLEASE NOTE:

Students need to 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 August diet. This re-examination will consist of exam or coursework depending on the elements requiring re-examination.

Resit Arrangements

Resit examination will be in the August diet. Resit coursework will be by arrangement with submission prior to the August examination diet.

Approved

Programme Director Signature:
Date of Last Modifications:

(Updated 9th August 2018)

