

MSc Environmental Pollution (full-time)
For students entering in 2017/8

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| Awarding Institution: | University of Reading |
| Teaching Institution: | University of Reading |
| Relevant QAA subject Benchmarking group(s): | n/a |
| Programme length: | 12 months |
| Date of specification: | 15/Aug/2017 |
| Programme Director: | Dr Elizabeth Shaw |
| Board of Studies: | The SAGES BoS for PGT Programmes |

Summary of programme aims

This MSc aims to provide a thorough understanding of the key principles of Environmental Science which are widely applicable to vocational specialisation in contaminated land, remediation, environmental assessment, protection and management.

Transferable skills

The following are provided: experience of Information technology, problem solving skills, research project skills, team working, presentation and writing skills, self-reflection and academic/ career learning needs analysis.

Programme content

| Module code | Module title | Credits | Level |
|-------------|---|---------|-------|
| GVMEPM | Environmental and pollution microbiology | 10 | 7 |
| GVMLASP | Laboratory analysis of soils and pollutants | 10 | 7 |
| GVMQAD | Quantitative analysis of environmental data | 10 | 7 |
| HEM01 | Research skills and careers learning | 10 | 7 |
| GVMPBE | Pollutant behaviour in the environment | 20 | 7 |
| GVMEVC | Environmental consultancy | 20 | 7 |
| GVMWENM | Waste and environmental management | 10 | 7 |
| GVMAP | Air pollution: effects and control | 10 | 7 |
| GVMFC | Field class | 10 | 7 |
| GVMRP | Research Project | 60 | 7 |

Part-time or modular arrangements

Part time participants may either follow all the modules taught in the Autumn term in their first year and all the modules taught in the Spring term in their second year or alternatively may follow half the modules from the Autumn and Spring terms in both their first and second years. The most appropriate arrangements for individual applications will be discussed with the Course Director. Part time students will be encouraged to consider running a long-term research project over the two years that they are registered on the course but may carry out their research project in either their first or second year, again as is appropriate to their circumstances.

Progression requirements

After the results of the taught modules, weak candidates, who in the opinion of the examiners and Board of Studies, will struggle to carry out a Research project to the required standard may be recommended to transfer to a Diploma in which the requirement for a pass is 50% in a total of 120 credits rather than the 180 required for the M.Sc. In this situation a research project would not be carried out but examinations could, if necessary be retaken in September. It is important to realise that failure in the research project will result in failure of the M.Sc. In summary, candidates may be told after the papers have been marked that either they

1. have passed, *or*

2. are marginal or have failed by a small amount (an overall result of 40 - 49% in the written papers + course work with a mark of < 40% in no more than 30 credits and a mark of < 50% in no more than 55 credits) so that, subject to an adequate mark for the dissertation, no resit is required *or*

3. have failed by a substantial margin (< 40% in more than 30 credits and a mark of < 50% in more than 55 credits), and that a resit in September will be required and that a transfer from the M.Sc. to the Diploma is advised.

Summary of Teaching and Assessment

Teaching is through a combination of lectures, seminars, practicals, computer-based self-taught exercises, site visits and talks by invited speakers.

Assessment is through a combination of exams, assessed practicals, essays, scientific reports and presentations. The University's taught postgraduate marks classification is as follows:

Mark Interpretation

70 - 100% Distinction

60 - 69% Merit

50 - 59% Good standard (Pass)

Failing categories:

40 - 49% Work below threshold standard

0 - 39% Unsatisfactory work

For Masters Degrees

To pass the MSc students must gain an average mark of 50 or more overall including a mark of 50 or more for the dissertation. In addition the total credit value of all modules marked below 40 must not exceed 30 credits and for all modules marked below 50 must not exceed 55 credits.

Students who gain an average mark of 70 or more overall including a mark of 60 or more for the dissertation and have no mark below 40 will be eligible for a Distinction. Those gaining an average mark of 60 or more overall including a mark of 50 or more for the dissertation and have no mark below 40 will be eligible for a Merit.

For PG Diplomas

To pass the Postgraduate Diploma students must gain an average mark of 50 or more. In addition the total credit value of all modules marked below 40 must not exceed 30 credits and for all modules marked below 50 must not exceed 55 credits.

Students who gain an average mark of 70 or more and have no mark below 40 will be eligible for the award of a Distinction. Those gaining an average mark of 60 or more and have no mark below 40 will be eligible for a Merit.

For PG Certificate

To pass the Postgraduate Certificate students must gain an average mark of 50 or more. In addition the total credit value of all modules marked below 40 must not exceed 10 credits.

Normally candidates registered for a diploma will complete the taught courses offered in the Autumn and Spring terms and candidates registered for a certificate will complete either the taught courses offered in the Autumn or the Spring term.

Admission requirements

Entrants to this programme are normally required to have obtained at least a 2:2 in an Environmental Science-based degree

Admissions Tutor: Dr Tom Sizmur

Support for students and their learning

University support for students and their learning falls into two categories. Learning support is provided by a wide array of services across the University, including: the University Library, In-sessional English Support Programme, the Study Advice and Mathematics Support teams and IT Services. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Personal Tutors, School Senior Tutors, the Students' Union, the Medical Practice and the Support Centres. If a student has a general enquiry and is unsure where to seek help, they should visit their Support Centre. There are five Support Centres across the University, including one based at the London Road Campus. The Support Centre will be able to advise on matters such as extenuating circumstances, module selection, suspensions, withdrawals, timetable queries and transferring programme. The Support Centre will also be able to signpost students to Carrington building where other University services related to disability, financial support, counselling and

wellbeing, accommodation and careers can be found. More information on what student services are available can be found here: <http://student.reading.ac.uk/essentials>.

Career prospects

On completion of this course graduates may expect to find employment in the 'Environmental Sector' Previous students on the course have found employment with consultancies, government research agencies, industry and within academia.

Opportunities for study abroad or for placements

During their research projects students may carry out field work abroad. Additionally during their projects students may be based abroad or within the UK at consultancies, governmental agencies, research institutes or industrial bodies provided that the Course Director is satisfied that suitable facilities and supervision are available to them.

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Programme Outcomes

Knowledge and Understanding

A. Knowledge and understanding of:

1. Processes by which water and dissolved solutes are transported in soils using physical principles
2. The important chemical properties of soils, including the reasons for and consequences of the electrically charged surfaces of most soil constituents
3. A general understanding of the pathways of soil contamination
4. The most important groups of inorganic and organic pollutants and chemical properties and processes which govern their environmental fate
5. The major groups of microorganisms in soils and their role in the cycling of C, N (and associated trace gases) and P their use in bioremediation
6. Classical and bespoke statistical methods that may be applied to environmental data
7. Key areas of environmental regulation in the UK and internationally in relation to contaminated land management, waste disposal and air pollution
8. Techniques and processes involved in site investigation and risk assessment
9. Strategies and objectives of remediation
10. Sources, processing and disposal of waste materials
11. The behaviour of pollutants in soil, losses into water and current method of management to reduce the associated environmental hazards
12. The nature and effects of human-induced air pollution

Teaching/learning methods and strategies

Lectures, laboratory practicals, seminars, group discussions, videos, presentations by industrial practitioners, data handling exercises, computer based exercises.

Assessment

Practical reports, examination, essays, computer and laboratory-based practicals.

Skills and other attributes

B. Intellectual skills - able to:

Teaching/learning methods and strategies

1. Predict water and solute transport in soils using physical principles
2. Recognise and explain the important chemical properties of soils
3. Understand controls on mobility and availability of pollutants in soils
4. Outline the importance of microorganisms in soil systems and their impact on the wider environment
5. Discuss key areas of environmental regulation in the UK and internationally in relation to contaminated land management, waste disposal and air pollution
6. Compare and advocate remediation strategies
7. Illustrate sources of and disposal routes for industrial and domestic waste
8. Synthesise current controversies about air pollutants and evaluate the appropriate control measures to be applied
9. Apply knowledge of the major sources of data relating to air pollution to predict ecological and health impacts.
10. Plan and carry out a research project.

C. Practical skills - able to:

1. Use computer packages to analyse and explain laboratory and field data
2. Carry out chemical analysis of soils
3. Calculate toxic and acceptable concentrations of pollutants in soils
4. Isolate and characterise microorganisms in soils and measure their activity
5. Analyse environmental data using classical and spatial statistical methods
6. Carry out risk assessments and site investigations
7. Describe soils in the field
8. Plan and carry out a research project

D. Transferable skills - able to:

1. Produce Word documents containing tables, numbered and bulleted lists, a variety of fonts, graphics and pictures
2. Manage data and perform basic arithmetic and statistical procedures within Excel
3. Produce charts and graphs in a variety of formats using Excel
4. Produce slides for a presentation within the PowerPoint package that include text, bullet points, drawings, use of pre-set animations for the appearance of text
5. Give clear presentations on a scientific topic
6. Produce clearly written scientific reports
7. Work in teams
8. Develop interpersonal communication and career skills in a diverse group
9. Plan and carry out research projects including managing time

Lectures, laboratory and computer based practicals

Assessment

Exams, essays, presentations, computer practicals, written reports, project thesis and presentation. These skills link directly to specific modules and are assessed both during courses (see module descriptions for details) and in examinations.

Teaching/learning methods and strategies

Laboratory practicals, seminars, lectures, independent research project

Assessment

Laboratory reports, reports in the style of those given to clients, exams, field reports, project thesis and presentation. These skills are assessed primarily with reference to specific modules (see module descriptions for details) though (1) is also assessed more generally throughout the course.

Teaching/learning methods and strategies

Lectures, self-taught computer packages, seminars, individual research projects, team-based presentations and research projects

Assessment

Ability to produce specimen Word documents, Excel charts and PowerPoint presentations, course work written and submitted in the style of scientific reports to a client, peer-assessed contribution to team-based practicals, write an effective CV and cover letter and interview for a mock job, project thesis and presentation. This assessment is carried out directly (see module description dealing with research skills and career learning) and indirectly throughout the course and forms a component of assessed course work.

Please note - This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance process or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.