MSc Engineering Geology

Programme Specification

Primary Purpose
Course management and quality assurance.

Secondary Purpose
Detailed information for students, staff and employers. Current students should refer to the related Course Handbook for further detail.

Disclaimer
The University of Portsmouth has checked the information given in this Programme Specification. We will endeavour to deliver the course in keeping with this Programme Specification; however, changes may sometimes be required arising from annual monitoring, student feedback, review and update of units and courses. Where this activity leads to significant changes to units and courses, there will be prior consultation of students and others, wherever possible, and the University will take all reasonable steps to minimize disruption to students. It is also possible that the University may not be able to offer a unit or course for reasons outside of its control, for example; the absence of a member of staff or low student registration numbers. Where this is the case, the University will endeavour to inform applicants and students as soon as possible. Where appropriate, the University will facilitate the transfer of affected students to another suitable course.

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Course Details

1. Named Awards
MSc Engineering Geology

2. Course Code (and UCAS Code if applicable)
C2082F/P

3. Awarding Body
University of Portsmouth

4. Teaching Institution
University of Portsmouth

5. Accrediting Body
Geological Society of London

6. QAA Benchmark Groups
No QAA benchmarking statements are available for Earth Science postgraduate taught programmes; however, reference has been made to the QAA Benchmark for Earth Sciences, Environmental Sciences and Environmental Studies.

7. Document Control Information
July 2018

8. Effective Session
2018/2019

9. Author
Dr Malcolm Whitworth

10. Faculty
Faculty of Science

11. Department
School of Earth and Environmental Sciences

Curriculum

12. Educational Aims
The course aims to equip students to with skills to operate as applied geoscience professionals and more generally to:
- Provide a challenging, stimulating and self-rewarding study environment
- Provide an advanced education experience that develops intellectual and practical experience
- Develop a range of key skills by means of opportunities provided in the study units
• Accommodate student needs in relation to maximising their career potential by enabling them to develop key knowledge, understanding and skills in their chosen specialist area
• Provide students with opportunity to develop key professional and research skills.

More specifically, the aim of the course is to:
• Develop the intellectual and practical skills of the student in the collection, analysis, interpretation and understanding of geological data and information with specific reference to geotechnical and engineering design aspects of the applied geoscience environment.

13. Reference Points
• University of Portsmouth Curriculum Framework Document (2014)
• The scholarship and research expertise of academic members of staff
• QAA Code of Practice for the Assurance of Academic Quality and Standards in Higher Education Framework for Higher Education Qualifications (FHEQ)
• QAA Masters Degree Characterisation Document
• University of Portsmouth Education Strategy (2009)

14. General Learning Outcomes

Level 7
Master's degrees/Postgraduate Certificates/Postgraduate Diplomas are awarded to students who have demonstrated:
• a systematic understanding of knowledge, and a critical awareness of current problems and/or new insights, much of which is at, or informed by, the forefront of their academic discipline, field of study or area of professional practice
• a comprehensive understanding of techniques applicable to their own research or advanced scholarship
• originality in the application of knowledge, together with a practical understanding of how established techniques of research and enquiry are used to create and interpret knowledge in the discipline
• conceptual understanding that enables the student:
  • to evaluate critically current research and advanced scholarship in the discipline
  • to evaluate methodologies and develop critiques of them and, where appropriate, to propose new hypotheses

Typically, holders of the qualification will be able to:
• deal with complex issues both systematically and creatively, make sound judgements in the absence of complete data, and communicate their conclusions clearly to specialist and non-specialist audiences
• demonstrate self-direction and originality in tackling and solving problems, and act autonomously in planning and implementing tasks at a professional or equivalent level
• continue to advance their knowledge and understanding, and to develop new skills to a high level

And holders will have:
• the qualities and transferable skills necessary for employment requiring:
  • the exercise of initiative and personal responsibility
  • decision-making in complex and unpredictable situations
• the independent learning ability required for continuing professional development
15. Learning Outcomes

A. Knowledge and Understanding of:

A.1 The importance of geology in an engineering context
A.2 The role of an engineering geologist in the geotechnical community
A.3 The fundamental behaviour of rock and engineering soil and the relevant laboratory test procedures used in their determination
A.4 The importance of an integrated ground investigation and its component parts
A.5 Geomorphological landforms, their mapping and significance in site appraisal
A.6 Different landslide types and the principal mechanisms involved in their initiation and movement
A.7 The uses and limitations of geophysical surveying techniques
A.8 The concept of hazard and risk and its interpretation in a geological context

B. Cognitive (Intellectual or Thinking) Skills, able to:

B.1 Synthesize information and data from a variety of sources
B.2 Analyse, critically evaluate and interpret the results from laboratory test procedures
B.3 Demonstrate the skills necessary to plan, conduct and report a major project
B.4 Apply advanced geological and geotechnical principles to the solution of a complex problem
B.5 Formulate and test hypotheses
B.6 Integrate theory and practice

C. Practical (Professional or Subject) Skills, able to:

C.1 Describe and record geomaterials in the field and laboratory to current European or international standards
C.2 Analyse laboratory and field test data and determine its strength and validity
C.3 Design and implement a ground investigation strategy
C.4 Prepare technical reports and give technical presentations
C.5 Utilise appropriate engineering geological mapping techniques to display field data effectively and appropriately
C.6 Carry out basic geotechnical design to the relevant British, European or international standards
C.7 Use scientific literature effectively
C.8 Use geotechnical and geological computational tools and packages

D. Transferable (Graduate and Employability) Skills, able to:

D.1 Communicate effectively in writing, verbally and in appropriate forms of presentation
D.2 Be competent in the use of information technology
D.3 Demonstrate numerical and problem solving skills appropriate to an engineering geologist
D.4 Assess problem domains and formulate problem-solving strategies
D.5 Work as a member of a team
D.6 Work independently
D.7 Demonstrate project planning and time / task management skills
D.8 Learn effectively for the purpose of continuing professional development and in a wider context throughout their career

16. Learning and Teaching Strategies and Methods

Acquisition of knowledge is principally achieved through lectures and practical workshops (A1 – A8). Student-centred learning is used where appropriate resource material is available (A4). Laboratory practicals form an integral part of many units and provide the student with important hands on learning experience (A3, A4 & A8). Residential fieldwork is used to reinforce and contextualise the formal lecture programme (A1, A5, A7 & A6). E-learning environments are used to provide additional learning resources.
Cognitive skills are developed through practical project work, seminar work and coursework assignments (B1–B6). Open-ended practical and research project work is designed to permit the student to demonstrate achievement of all the learning outcomes in this category (B1 – B6).

Practical and professional skills (C1 - C8) are promoted through the taught lecture programme and practical work including fieldwork and group class activities. Residential fieldwork allows the student to fully develop their field skills (C1 & C2). Laboratory practical classes enhance the learning experience and introduce a wide variety of testing and analysis techniques (C1, C2, C7, & C8). Group workshops and practical sessions develop skills in the development of numerical and computational modelling strategies for geotechnical design and analysis (C3, C7-C8).

Transferable skills are developed through the teaching and learning programme. Coursework assignments are designed to enable the student to develop a wide range of key skills (D1-D4, D6-D8), group and individual presentations (D1, D2 & D5), laboratory and technical reports (D1- D8), and group tutorial discussions and exercises (D1 & D4 - D8).

17. Assessment Strategy

Testing of the knowledge base is through a combination of unseen written examinations (A1 & A2), assessed coursework (A1 – A8) in the form of technical reports (A1, A3, A4, & A7), research articles (A7 & A8) and field-based practical work (A5, A6, & A7) and oral and poster presentations (A1 – A3).

Cognitive skills (B1 – B6) are assessed by coursework and unseen examinations. Technical reports provide students with the opportunity to demonstrate their ability to analyse and evaluate a problem using real; world data. In-class tests and examinations allow students to demonstrate their grasp of numerical solutions to geological problems and geotechnical design. The research project allows a student to demonstrate thinking skills, synthesis, critical evaluation, research and presentation skills to the highest level.

Practical skills are assessed through coursework assessments in the form of laboratory and field exercises (C1, C2 & C8), technical report writing (C3 - C5 & C7), oral and poster presentations (C3 & C5), field based reports (C6) and research articles (C7). The research project allows the student to demonstrate practical skills (C1 – C8) to the highest standard.

Transferable skills are key components in coursework assignments where problem definition and solving (D2, D3 & D4), written and verbal communication (D1) and group work (D5) are prioritised. Assessments include oral and poster presentations (D1, D2, D5 & D6), technical reports (D1 – D4, D7 & D8) and research articles (D1 – D4, D6, & D7) The research project offers the opportunity for the student to demonstrate key skills (D1 - D8) to the highest standard.

The assessments involve the preparation of technical reports, field reports and maps, research style articles and oral and poster presentations. These have been selected to enhance the employability skills of the students using reporting mechanisms that are standard in the work place, presentation skills through the presentation of complex geological problems or conceptual models in written or oral forms to a technical audience. Formal examinations and in-class tests are used to test the learning in the numerate aspects, geotechnical components and design elements of the course.

18. Course Structure, Progression and Award Requirements

See Unit Web Search¹ for full details on the course structure and units

This MSc course consists of 180 credits of study, comprising of four taught units (each 30 credits) and a research project (60 credits). Each 30 credit taught represents 300 hours of study time that includes 90 hours of timetabled campus based activities. Awards include the MSc award (180 credits), Postgraduate Diploma (120 credits) and Postgraduate Certificate (60 credits).

¹ www.port.ac.uk/unitwebsearch
The full time course is taught over two days per week and is one year in duration. The course is also available as a part time study mode, where the course is taught on one day per week over two years.

19. Employability Statement

All the Applied Geoscience MSc courses are vocational and are designed to equip graduates with the necessary knowledge, skills and competencies to enter the applied geosciences industry. This course enhances employability through the development of the following skills:

- **Health and safety** is integrated into the curriculum through the induction week programme, dissertation briefings and through the research project design, whereby students are required to produce risk assessments for lab and field activities.

- **Communications skills** are developed through group workshops, tutorials, use of poster presentations combined with short oral summaries and through attendance at the annual postgraduate conference at which each student must give an oral presentation summarising the findings of their research project.

- **Numeracy and IT skills** are embedded into the curriculum through the use of professional software (such as GIS, remote sensing, rock and soil mechanics, slope instability applications); through the solution of numerical problems and geotechnical design, use of computer applications to analyse geotechnical problems. The research project provides an opportunity to develop and demonstrate these skills to the highest level.

- **Reading and writing skills** are inherent within the course, whereby students are required to undertake directed reading and prepare written technical reports, research articles and using assessments relevant to professional and research practice. The research report provides an opportunity to develop these skills to an advanced level.

- **Team work and leadership skills** are developed through group field activities, laboratory sessions and group workshops during which students devise and discuss strategies and methodologies that can be used to solve specific problems.

- **Work related learning** is enhanced through site visits and field courses that introduce students to professional work place and provide students with an opportunity to meet professionals working in their field of interest. Students can therefore gain insights and learning into the world of work (both industrial and research environments), reflect on their graduate and employability skills and discuss these with professionals in a work environment. Course provides students with work relevant learning through exposure to simulated industry environments and procedures, such as technical reports writing using real world data to industrial standards; and oral and poster presentation in an office and conference environment. All these opportunities prepare students for entry into the employment.

- **Placement opportunities** are available through the Placement and Project unit, whereby students can develop advanced work related skills through a period of work experience with a partner company.

- **External speakers** are invited to speak at evening lectures or as part of specific units. This provides a technical overview from an industrial viewpoint, real world case studies and provides students with opportunities to gain insights into the work environment and the workings of organisations such as commercial companies, governmental agencies and local authorities.

- **Field course activities** reinforce the work related learning by providing training in industry standard geological data collection, rock and soil descriptions and field mapping techniques. The opportunity to enhance cultural awareness, language skills and international perspectives is also developed through the overseas field courses.

- **Research skills** are also inherent in the course and developed in a number of units, principally the Research Skills and Project unit. Students receive training in information retrieval, research design, research proposals, referencing and citation, report writing and oral presentations in a conference environment.

- **Problem-solving skills** are developed through the analysis of real world data in workshops and assessments and through the advanced analysis inherent in the final research project.
• Thinking and reflective skills are developed through the tutorial program, whereby students are encouraged to reflect and discuss real world and research issues related to their studies.

• The research project provides opportunity to develop advanced skills in independent research, study and time management, problem solving, numeracy, IT, written and oral communication, technical writing and referencing.

• School has close links with industrial partners through an Alumni network of previous undergraduate and postgraduate students who provide guest lecturers, access to data, research projects and employment opportunities.

• Curriculum Vitae and job hunting skills are developed as part of the tutorial programme and form part of the project unit.

**Course Management**

**20. Support for Student Learning**

• The Course is managed by a Course Leader

• Extensive induction programme introduces the student to the University and their course

• Each student has a personal tutor, responsible for pastoral support and guidance and tutorials are timetabled through the SEES Tutorial Programme: Level 7 unit

• Extensive induction programme including health and safety overview, postgraduate skills and introduction to geology course

• Research project support including briefings, seminars and tutorials to develop skills required for independent research project - dissertation handbook provided to all students

• University support services include careers, financial advice, housing, counselling etc.

• A dedicated Student Services Centre

• Excellent library facilities

• Dedicated analytical facilities

• Dedicated Postgraduate Workroom with computers, colour and laser printing, access to advanced analytical facilities including a newly refurbished geotechnics laboratory, rock mechanics testing laboratories, analytical facilities including ICPMS, XRF, XRD and Scanning Electron Microscope (SEM)

• Course makes significant use of e-learning ([http://moodle.port.ac.uk](http://moodle.port.ac.uk)) to support student learning

• The University of Portsmouth has consistently been awarded an excellent rating for student support and guidance in a number of Quality Assurance Agency inspections

• Student course and unit handbooks provide information about the course structure and University regulations etc.

• Written feedback is provided for all assessments

• Personal Development Planning (PDP) for all awards

**21. Admissions Criteria**

**A. Academic Admissions Criteria**

The normal entry requirement is a good honours degree (2.2 or higher) or equivalent qualification in Earth Science, Geology, Applied Geology, Civil Engineering or a related discipline. In exceptional cases, graduates may be admitted to the course with lower qualifications or relevant industrial experience.

English Language Requirements for EU and international students at Masters level are IELTS 6.5 with no component score below 6.0. (for further information refer to [http://www.port.ac.uk/international](http://www.port.ac.uk/international) or [www.port.ac.uk/postgraduate](http://www.port.ac.uk/postgraduate) for further information).
B. Disability

The University makes no distinction in its admissions policy with regard to disability and will endeavour to make all reasonable adjustments in order to make it possible for students to study at Portsmouth on a course of their choice.

However, due to the fieldwork requirements, students with certain mobility disabilities may be unable to achieve some the programme learning outcomes. Compulsory field courses form part of this course that may prove inaccessible to persons with certain sensory or physical impairments.

The University will make every effort to minimise their incidence and impact through making all possible adjustments and will address the formulation of such adjustments on a case-by-case basis where practicable and reasonable.

Applicants who believe that such adjustments may be necessary should draw this to the attention of the University on application so that an interview can be arranged to consider their particular needs and how best to accommodate them.

22. Evaluation and Enhancement of Standards and Quality in Learning and Teaching

A. Mechanisms for Review and Evaluation

- Head of Department’s Annual Standards and Quality Evaluative Review to Pro Vice-Chancellor (Academic) and Faculty Executive
- Unit and Course Level student feedback considered at Board of Studies
- Unit Assessment Board consideration of student performance for each programme
- Annual Standards and Quality Reports to Board of Studies, including consideration of Subject and Award External Examiner Reports
- Student Representatives and Student/Staff Consultative Committees
- Annual Staff Appraisal
- Peer Teaching Observation
- Faculty Learning and Teaching Committee
- University Framework for the Maintenance and Enhancement of Academic Standards and Quality

B. Responsibilities for Monitoring and Evaluation

- Unit Co-ordinators for unit content and delivery
- Course Leader for day-to-day running of course
- Board of Studies with overall responsibilities for operation and content of course
- Head of Department
- Associate Dean (Academic)
- Associate Dean (Students)
- Quality Assurance Committee
- Unit, Award and Progression Board of Examiners

C. Mechanisms for Gaining Student Feedback

- Student Representation on Board of Studies
- Student Staff Consultative Committees
- Unit and Course level student feedback questionnaires
- Regular online discussion forums for students to provide mid-session feedback
D. Staff Development Priorities

- Academic staff undertake activities related to research, scholarship, teaching and learning and student support and guidance
- Annual staff appraisals match development to needs
- Managers undertake a variety of management development programmes
- New academic staff required to undertake appropriate University of Portsmouth learning and teaching programmes
- All academic staff encouraged to seek Higher Education Academy membership
- Academic staff new to teaching required to undertake Initial Professional Development Programme (iPROF)
- Support Staff are encouraged to attend short courses in areas such as minute taking, and specific IT packages
- Staff attendance at relevant academic conferences and professional meetings and seminars

23. Assessment Regulations

The current University of Portsmouth academic regulations will apply to this programme (see Assessment and Regulations\(^2\)).

24. Role of Externals

Subject External Examiners who will:
- Oversee unit assessment and usually attend Unit Assessment Boards
- Review unit assessment strategy
- Sample assessment artefacts
- Present report to Unit Assessment Boards

Award External Examiners (usually also a Subject External Examiner) who will:
- Oversee and attend Award/Progression Boards
- Scrutinise and endorse the outcomes of assessment
- Ensure that the standard of the award is maintained at a level comparable with that of similar awards elsewhere in the United Kingdom

25. Indicators of Standards and Quality

A. Professional Accreditation/Recognition


B. Periodic Programme Review (or equivalent)

Periodic Programme Review – March 2016 confirming the course was fit for purpose.

C. Quality Assurance Agency

QAA Higher Education Review, March 2015, judgements about standards and quality meet UK expectations (for full report see Higher Education Review of the University of Portsmouth, March 2015\(^3\)).

D. Others

None.

\(^2\) www.port.ac.uk/departments/services/academicregistry/qualitymanagementdivision/assessmentandregulations/

\(^3\) www.qaa.ac.uk/en/ReviewsAndReports/Documents/University%20of%20Portsmouth/University-of-Portsmouth-HER-15.pdf
26. Further Information

Further information may be found in:

- Student Handbook
- University of Portsmouth Curriculum Framework Document
- University of Portsmouth Prospectus
- University of Portsmouth\(^4\) and School of Earth and Environmental Sciences\(^5\) websites
- Postgraduate induction presentation
- Individual field course handbooks

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\(^4\) www.port.ac.uk/

\(^5\) www.port.ac.uk/school-of-earth-and-environmental-sciences/