University of Plymouth

Faculty of Science and Engineering

School of Geography, Earth and Environmental Sciences

Programme Specification

MSc Sustainable Geoscience - 5791

September 2017
1. **MSc Sustainable Geoscience**

   **Final award title**: MSc Sustainable Geoscience

   **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

   **JACS code** – F642

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

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

3. **Accrediting body(ies)**
   Accreditation will be sought from the Institute of Environmental Management and Assessment (IEMA) for 2017-18

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

   The distinctive features of the programme are:

   **Professionally relevant**: the programme incorporates ‘live’ professional expertise in the field of sustainable geoscience wherever appropriate, through site visits and other professional input from organisations that operate on regional, national, and international scales and markets such as Wolf Minerals, Sibelco, Imerys, Geoparks and geoscience-related World Heritage Sites. Students may elect to undertake a work placement, worldwide, in the Geoscience sector.

   **Focussed curriculum**: The programme is tightly specified to ensure that graduates are effectively prepared for employment in the field of sustainable geoscience; most modules are compulsory and choice is developed through the work placement and project.

   **Authentic Assessment**: the programme is assessed primarily by coursework, reflecting the outputs required in the industry.
Inter-disciplinarity and contemporary skills: the programme shows graduates of geoscience and related disciplines how contemporary debates in sustainability affect the geo-resources sector at a range of scales, including mining, quarrying, landscape and large-scale engineering sectors. Students will acquire industry-relevant skills such as manipulating LIDAR data.

Experiential learning: the programme benefits from learning through fieldwork in the local area including site visits to geoscience enterprises.

Individual research: Students carry out an independent research project in sustainable geoscience, under the supervision of a member of academic staff, in which they are able to investigate, in depth, a topic of interest and to apply the skills learnt through the taught programme.

Professional recognition: Accreditation for the programme is being sought from the Institute of Environmental Management and Assessment (IEMA). Accreditation means that successful graduates are eligible to become graduate members of IEMA and to use the suffix GradIEMA. The professional standards promoted by organisations such as IEMA permeate the programme.

Supportive institutional environment: The programme benefits from the activities of the Sustainable Earth Institute, which brings together researchers, businesses, community groups and individuals to develop cutting-edge research and innovative approaches that build resilience to global challenges, with a particular focus on geoscience.

5. Relevant QAA Subject Benchmark Group(s)
There is no relevant Subject Benchmark statement at MSc level. The programme builds on the Subject Benchmark statement for Earth Sciences, Environmental Sciences and Earth Studies and also reflects the characteristics described in the QAA Masters degree characteristic statement.

6. Programme Structure

Semester 1 is 15 weeks long and is interrupted by the Christmas vacation. In semester 1 students prepare for advanced independent research in the context of sustainable geoscience (GEOL5006), develop critical insights into contemporary professional practice, including environmental law and economics and the role of sustainability in modern business (GEES515), and a thorough examination of the scientific and societal understandings of environmental issues (GEES516).

Semester 2 is 15 weeks long and is interrupted by the Easter vacation. The two taught modules are typically completed by the start of the Easter vacation (depending on the exact date of Easter), allowing the work placement element...
(GEES518), or alternative investigation into Geodiversity and Geoheritage (GEOL5008) to occur before the dissertation commences. The work placement may include at least part of the Easter vacation.

<table>
<thead>
<tr>
<th>Semester 1</th>
<th>GEOL5006 (20 credits)</th>
<th>GEES515 (20 credits)</th>
<th>GEES516 (20 credits)</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sustainable Geoscience: Research and Communication</td>
<td>Professional Practice in the Environmental Sector</td>
<td>Science, Society and Environmental Governance</td>
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</tbody>
</table>

<table>
<thead>
<tr>
<th>Semester 2</th>
<th>GEES517 (20 credits)</th>
<th>GEOL5007 (20 credits)</th>
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</thead>
<tbody>
<tr>
<td></td>
<td>Environmental Assessment</td>
<td>Sustainable Minerals and Mining</td>
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<td></td>
<td>GEES518 Professional Experience in Environmental management (20 credits)</td>
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<tr>
<td>OR</td>
<td>GEOL5008 Geodiversity and Geoheritage (20 credits)</td>
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</table>

GEES520 MSc Dissertation

7. **Programme Aims**
The aims of the MSc Sustainable Geoscience are to:
- Explicitly integrate sustainability into geoscience education and training
- Develop in graduates of geoscience and related disciplines:
  - critical understanding of the societal shift to sustainable development and its implications for geo-resource business
  - critical awareness of the relationship between the principles of sustainability and practice in geo-resource business, such as the principles and impacts of environmental regulation and the economics of mitigation and remediation,
  - competence, at professional level, in skills relevant to embedding sustainability into geo-resource business, such as stakeholder engagement, impact assessment, communication and inter-disciplinary working
  - the ability to select and apply both knowledge and methodologies at advanced level and so take appropriate decisions in complex and unpredictable situations
- Prepare geoscientists to be autonomous, effective, professionals in promoting the sustainable development of geo-resources
8. Programme Intended Learning Outcomes

8.1. Knowledge and understanding
On successful completion graduates should have developed the ability to:

a. demonstrate advanced understanding of the concepts and principles of
   environmental management and sustainability, their complex and multi-faceted
   nature and their relevance to the exploitation of geo-resources
b. articulate and evaluate the diverse, contemporary and emerging approaches
   through which sustainability may be achieved in the geoscience sector

c. apply abstract concepts and theories of sustainability to develop and apply
   solutions to real environmental issues related to the development of geo-
   resources
d. demonstrate an advanced conceptual understanding of worldwide geodiversity
   and develop innovative approaches to its conservation

8.2. Cognitive and intellectual skills
On successful completion graduates should have developed the ability to:

a. Make sound judgments from complex, incomplete, or contradictory information
   and in unfamiliar contexts relevant to sustainable geoscience
b. Critically evaluate reported knowledge, theories, methods and practices relevant
   to sustainable geoscience, articulating strengths and weaknesses

c. Synthesise evidence relevant to sustainable geoscience from multiple sources,
   disciplines and formats, using knowledge from the forefront of understanding

d. Apply knowledge and methods to solve problems in complex situations

8.3. Key and transferable skills
On successful completion graduates should have developed the ability to:

a. Search for, sift and organise advanced information relevant to sustainable
   geoscience rapidly and effectively, drawing on a wide range of sources and
   recognising strengths and weaknesses in such information
b. Communicate complex information and ideas relevant to sustainable geoscience
   effectively and professionally to a variety of audiences and in a variety of formats

c. Work effectively within diverse groups, to a common aim, as a member or leader,
   meeting obligations to others

d. Demonstrate appropriate competence in technical skills relevant to sustainable
   geoscience, such as numeracy and spatial data handling

e. Identify problems and formulate strategies to solve them

8.4. Employment related skills
On successful completion graduates should have developed the ability to:

a. Demonstrate autonomy, self-reflection and self-management, exercising initiative
   and personal responsibility in meeting obligations and developing competence
b. Assimilate and assess information relevant to sustainable geoscience rapidly and
   apply it to new situations
c. Make decisions in complex and unpredictable situations relevant to sustainable geoscience
d. Manage a complex project relevant to geoscience from initiation to completion

8.5. Practical skills
On successful completion graduates should have developed the ability to:
a. Formulate complex and dynamic issues and problems relevant to sustainable geoscience in a way that will allow their investigation and solution
b. Design and carry out substantial research investigations relevant to sustainable geoscience, evaluating alternative data collection and analysis protocols, selecting appropriate ones and fulfilling these accurately and effectively
c. Interrogate, interpret and draw insights from complex data in a variety of formats
d. Select and deploy appropriate techniques to present and communicate information

9. Admissions Criteria, including APCL, APEL and DAS arrangements
The Programme Leader is responsible for ensuring that applicants hold the knowledge, understanding and skills required for successful participation in this programme, whether this has been acquired by through formal learning or by experience. Normally, applicants will hold at least a 2:2 Honours degree or its equivalent in geosciences or a strongly related discipline, such as environmental science or geography. Candidates must also hold a minimum of grade C in English Language at GCSE OR a minimum overall score of 6.5 in IELTS with no less than 5.5 in any component and a grade C or its equivalent in Mathematics. Established equivalencies to international qualifications will be used in making decisions on the suitability of formal qualifications. Candidates’ suitability is assessed through a combination of a written application, evidence of formal qualifications, personal references and candidate interviews, if required.

Applications from overseas students are welcomed. Wherever possible, the suitability of qualifications will be assessed through established relationships or equivalencies to UK qualifications. Overseas applicants must have proficiency in English that is in accordance with the current university regulations as described above; completion of an English language course prior to commencing the programme may be recommended to students for whom English is not their first language. Guidance for overseas applicants is available from the University’s website here, and the website also describes the University’s wider support for international students. Please do not hesitate to contact the programme leader for further guidance.

In compliance with the University’s equal opportunities policy, all appropriately qualified applicants are given equal consideration during the selection process.
Accreditation of Prior Experiential or Certificated Learning (APCL)
Students can exceptionally apply for exemption from any modules through APEL or APCL, following standard University procedures, as described in the current University regulations, at this [website](#).

10. 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, at this [website](#).

11. Exceptions to Regulations
None

12. Transitional Arrangements
None
13. Mapping and Appendices:

13.1. ILO’s against Modules Mapping

<table>
<thead>
<tr>
<th>Knowledge and understanding: on successful completion, graduates should be able to:</th>
<th>Assessed in:</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. demonstrate understanding of the concepts and principles of environmental management and sustainability, their complex and multi-faceted nature and their relevance to the exploitation of geo-resources</td>
<td>GEES516, GEOL5007</td>
</tr>
<tr>
<td>b. articulate and evaluate the diverse, contemporary and emerging approaches through which sustainability may be achieved in the geoscience sector</td>
<td>GEOL5006, GEES516, GEOL5007, GEES518/GEOL5008</td>
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<tr>
<td>c. apply abstract concepts and theories of sustainability to develop and apply solutions to real environmental issues.</td>
<td>GEES516, GEES518/GEOL5008</td>
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<tr>
<td>d. Demonstrate an advanced conceptual understanding of worldwide geodiversity and develop innovative approaches to its conservation</td>
<td>GEOL5006, GEOL5007, GEOL5008</td>
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<tr>
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<tbody>
<tr>
<td>a. Make sound judgments from complex, incomplete, or contradictory information and in unfamiliar contexts</td>
<td>GEOL5006, GEES520, GEES517, GEES518/GEOL5008</td>
</tr>
<tr>
<td>b. Critically evaluate reported knowledge, theories, methods and practices, articulating strengths and weaknesses</td>
<td>GEES516, GEES517, GEOL5007, GEES520</td>
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<td>c. Synthesise evidence from multiple sources, disciplines and formats, using knowledge from the forefront of understanding</td>
<td>GEES516, GEES517, GEES520</td>
</tr>
<tr>
<td>d. Apply knowledge and methods to solve problems in complex situations</td>
<td>GEES515, GEES516, GEES517, GEOL5007, GEOL518/GEOL5008, GEES520</td>
</tr>
</tbody>
</table>
### Key and transferable skills: graduates should be able to:

| a | Demonstrate appropriate competence in a range of digital environments | GEOL5006, GEES517 |
| b | Search for, sift and organise advanced information rapidly and effectively, drawing on a wide range of sources and recognising strengths and weaknesses in such information | GEES516, GEES517, GEOL5007, GEES520 |
| c | Communicate complex information and ideas effectively and professionally to a variety of audiences and in a variety of formats | GEES516, GEES517, GEOL5007 |
| d | Work effectively within diverse groups, to a common aim, as a member or leader, meeting obligations to others | GEOL5006, GEES516, GEES517 |
| e | Identify problems and formulate strategies to solve them | GEOL5006, GEES520 GEES518/GEOL5008 |

### Practical skills: on successful completion, graduates should be able to:

| a | Formulate complex and dynamic issues and problems in a way that will allow their investigation and solution | GEOL5006, GEES520 GEES517 |
| b | Interrogate, interpret and draw insights from complex data in a variety of formats | GEOL5006, GEES520 GEES517 |
| c | Design and carry out substantial research investigations, evaluating alternative data collection and analysis protocols, selecting appropriate ones and fulfilling these accurately and effectively | GEES520, GEES518/GEOL5008 |
| d | Select and deploy appropriate techniques to present and communicate information | GEOL5006, GEES520 GEES518/GEOL5008 |
Employment-related skills: on successful completion, graduates should be able to:

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| a | Demonstrate autonomy, self-reflection and self-management, exercising initiative and personal responsibility in meeting obligations and developing competence | GEES515  
GEES520  
GEES518/GEOL5008 |
| b | Assimilate and assess information rapidly and apply it to new situations    | GEES515  
GEES518/GEOL5008 |
| c | Make decisions in complex and unpredictable situations                      | GEES517, GEOL5007  
GEES518/GEOL5008  
GEES520 |
| d | Manage a complex project from initiation to completion                       | GEES518/GEOL5008  
GEES520 |

13.2. Assessment against Modules Mapping

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
<th>Generic</th>
<th>Exam</th>
<th>Test</th>
<th>Practical</th>
<th>Course work</th>
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<tbody>
<tr>
<td>GEOL5006</td>
<td>Sustainable Geoscience: Research and Communication</td>
<td>A1 Pass/Fail</td>
<td>E1</td>
<td>T1</td>
<td>P1</td>
<td>C1</td>
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<td>GEES515</td>
<td>Professional Practice in the Environmental Sector</td>
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