Programme of study for the Integrated degree of PhD and MSc (Exploration Geophysics)¹

Year One (a total of 120 credits in taught modular courses will be taken as well as the research project)

- The candidate will commence research under the direction of their supervisor(s).
- Compulsory training and skills module:
  SOEE5155M Seismic Fundamentals and Acquisition (15 credits)
  Candidates also undertake a number of non-credit bearing generic skills courses from a range provided by central training providers (SDDU, ISS, Library), the Faculty or outside bodies.
- Compulsory specialised subject modules as follows:
  SOEE5166M Computational Inverse Theory (15 credits)
  SOEE5129M Petrophysics and Petroleum Geology (15 credits)
  SOEE 5135M Seismic Reservoir Evaluation and Recent Developments (15 credits)
  SOEE5142M Geophysical and Geological Field Methods and Geological Interpretation (15 credits)
  SOEE5174M Gravity and Magnetic Methods (15 credits)
  SOEE5155M Seismic Fundamentals and Acquisition (15 credits)
  SOEE5166M Seismic Data Processing (15 credits)
  SOEE5171M Seismic Reflection Interpretation and Sequence Stratigraphy (15 credits)

Year Two (a total of 60 credits in taught modular courses will be taken as well as the research project)

- The candidate will continue research under the direction of their supervisor(s)
- Further non-credit bearing training courses will be taken as appropriate from a range provided by central training providers (SDDU, ISS, Library), the Faculty or outside bodies.
- Compulsory specialised subject module:
  SOEE5110M Exploration Geophysics: Project and Dissertation (60 credits)

Candidates will be permitted to proceed to assessment for transfer to full PhD status if they achieve an average of 50% or more over all 180 credits of which 150 credits must be passed at 50% or more in each and every module undertaken, and of these 135 credits must be at M level. In addition candidates are normally expected to pass the Masters with Merit.

Years Three and Four

- The candidate will continue research under the direction of their supervisor(s)
- Optional and compulsory non-credit bearing training and skills modules selected as appropriate from the wide-range of training courses provided at the University of Leeds (e.g. Writing for Research Students in the Sciences, Thesis Presentation).

Changes may be made from time to time to the titles of modular courses and the optional modular courses that are available.

¹ To be read in conjunction with the general Programme of Study for the Integrated degrees of PhD and Master (MA, LLM or MSc)
Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme PhD and MSc (Exploration Geophysics)

1. Learning Outcomes

On completion of the Integrated PhD and MSc (Exploration Geophysics) as a whole, students should have shown evidence of being able:

- to discover, interpret and communicate new knowledge through original research in the field of exploration geophysics and produce work of publishable quality which satisfies peer review;

- to present and defend research outcomes which extend the forefront of exploration geophysical research and development and professional practice;

- to independently and proactively formulate ideas and hypotheses and to design, develop, implement and execute plans by which to evaluate these;

- to demonstrate systematic and extensive knowledge of a range of topics in the area of exploration geophysics;

- to take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;

- to evaluate critically and creatively published research in a range of learned society journals and other literature;

- to exhibit generic and subject specific skills and techniques necessary to work effectively in employment in a higher capacity in industry or areas of professional practice, in liaison with academic and industrial partners, ensuring widening participation through engagement in public events, enterprise and knowledge transfer;

- to demonstrate a portfolio of transferable professional skills through the use of Personal Development Plans including, for example, communication and presentation skills, ethics, networking and team development, commercial awareness;

- to undertake an individual research project in the area of exploration geophysics;

- to demonstrate the skills necessary for a career as a researcher and/or for employment in a senior and leading capacity in a relevant area of industry;

- to evaluate their own achievement and that of others;

- to exhibit self-direction and effective decision making in complex and unpredictable situations;

- to demonstrate independent learning and the ability to work in a way which ensures continuing professional development.

- to demonstrate systematic knowledge of and be able to critically assess, analyse and engage with the ethical and legal context of their research and any ethical and legal implications of their research.

2. Transferable (Key) Skills

Students will have had the opportunity to acquire the following abilities through the research training and research specified for the programme.
INTEGRATED DEGREE OF PHD AND MSC (EXPLORATION GEOPHYSICS)

- the skills necessary for a career as a researcher and/or for employment in a senior and leading capacity in a relevant area of professional practice or industry;
- evaluating their own achievement and that of others;
- self-direction and effective decision making in complex and unpredictable situations;
- independent learning and the ability to work in a way which ensures continuing professional development;

3. Learning Context

The learning context will include the critical analysis of, and decision making in, complex and unpredictable professional and situations. The structure of the programme will provide research and/or professional training, breadth and depth of study and opportunities for drawing upon appropriate resources and techniques. Opportunities will be provided for students to:

- develop to a high level interests and informed opinions
- develop to a high level their design and management of their learning activities
- develop to a high level their communication of their conclusions;
- make an original contribution to the field

Students will be expected to engage in the exercise of autonomous initiative in their study and work in professional environments.

4. Assessment

Achievement will be assessed by the examination of the candidate's thesis and performance under oral examination. Assessment will involve the achievement of the candidate in:

- evidencing an ability to conduct original and independent broad and in-depth enquiry within the discipline or within different aspects of the area of professional practice normally leading to published work;
- drawing on and/or developing a range of research techniques and methodologies appropriate to enquiries into the discipline/area of professional practice;
- demonstrating independent critical ability in the application of breadth and depth of knowledge to complex issues within the discipline or specialist area of professional practice;
- drawing on a range of perspectives on the area of study;
- evaluating and criticising received opinion;
- making reasoned and well-informed judgements on complex issues within the specialism whilst understanding the limitations on judgements made in the absence of complete data
- the written style and overall presentation of the thesis.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment for MSc (Exploration Geophysics)

As the degree programme contains a Masters level qualification, candidates are required to achieve the Masters learning outcomes at the appropriate stage within the Integrated PhD and Masters programme.

1. Learning Outcomes

On completion of the programme students should have provided evidence of being able to:

- demonstrate in-depth, specialist knowledge and mastery of techniques relevant to applied geophysics, and/or to demonstrate sophisticated understanding of concepts, information, and techniques at the forefront of the geophysical exploration as applied to resource exploration and engineering or environmental issues;
- exhibit mastery in the exercise of generic and subject-specific skills intellectual abilities;
- demonstrate comprehensive understanding of techniques applicable to their own research,
advanced scholarship, or professional practice in industry, academia, or government service;
• take a proactive and self-reflective role in working, and develop a professional relationship with others;
• formulate proactively ideas and hypotheses, and to develop, implement and apply techniques with which to evaluate them;
• evaluate critically and creatively current issues, research, and advanced scholarship in exploration geophysics.

2. Transferable (key) skills
Masters (Taught) students will have had the opportunity to acquire the following abilities as defined in the modules specified for the programme:
• the skills necessary to undertake a higher research degree and/or for employment in a higher capacity in industry or area of professional practice;
• evaluating their own achievement and that of others;
• self direction and effective decision making in complex and unpredictable situations;
• independent learning and the ability to work in a way which ensures continuing professional development;
• critically to engage in the development of professional/disciplinary boundaries and norms.

3. Learning Context
For Masters (Taught) students the learning context will include the analysis of, and decision making in, complex and unpredictable situations. The structure of the programme will provide breadth and/or depth of study and opportunities for drawing upon appropriate resources and techniques. Opportunities will be provided for students to develop:
• interests and informed opinions
• their involvement in the design and management of their learning activities
• their communication of their conclusions.;
Students will be expected to progress to fully autonomous study and work.

4. Assessment
Achievement for the degree of Master (taught programme) will be assessed by a variety of methods in accordance with the learning outcomes of the modules specified for the year/programme and will involve the achievement of the students in:
• evidencing an ability to conduct independent in-depth enquiry within the discipline;
• demonstrating the ability to apply breadth and/or depth of knowledge to a complex specialist area;
• drawing on a range of perspectives on an area of study;
• evaluating and criticising received opinion;
• make reasoned judgements whilst understanding the limitations on judgements made in the absence of complete data.