Programme of study for the Integrated degree of PhD and MSc (Advanced Particulate Materials)[1]

Entry to this programme has been suspended from 2014 -2015

Year One (a total of 120 credits in taught modular courses (including 60 credit MSc Research Project) will be taken as well as commencement of the PhD research project)

- The candidate will commence research under the direction of their supervisor(s) during Year 1.
- Compulsory training and skills module:
  PEME5480M Transferable Skills & Professional Development 1(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:

  PEME5300M Process Chemistry and Chemical Technology (15 credits)
  CMNS5400M Processing and Properties of Inorganic Nanomaterials (15 credits)
  PEME5000M Research Project MSc (60 credits)
- Candidates are required to study one 15 credit option chosen for relevance to PhD *(it is expected that candidates who have a theoretical/modelling PhD topic will normally take PEME5310 whilst those following an experimental route will take PEME5711M)*

  PEME5310 Multi-Scale Modelling (15 credits)
  PEME5711M Materials Structures and Characterisation (15 credits)

  Other optional modules chosen outside the list will be only as an exception with programme director approval.

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

- The candidate will continue research under the direction of their supervisor(s)
- Compulsory training and skills modules:

  PEME5485M Transferable Skills & Professional Development II (15 credits)
- Further non-credit bearing training courses will be taken as appropriate.
- Compulsory specialised subject module:

  PEME5330M Advanced Reaction Engineering (15 credits)
  PEME5760M Advanced Materials and Processes (15 credits)

  Candidates are required to study one 15 credit option chosen for relevance to PhD *(it is expected that candidates who have a theoretical/modelling PhD topic will normally take either PEME5350M or PEME5710M whilst those following an experimental route will take PEME5340M)*

  PEME5340M Advances in Chemical Engineering (15 credits)
  PEME5350M Computational Transfer Processes (15 credits)
  PEME5710M Materials Modelling (15 credits)

[1] Entry to this programme has been suspended from 2014 -2015. To be read in conjunction with the general Programme of Study for the Integrated degrees of PhD

Other optional modules chosen outside the list will be only as an exception with programme director approval.

Candidates will be permitted to proceed to assessment for transfer to full PhD status if they achieve 50% or more in all assessed credit-bearing modules.

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.

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

Learning Outcomes / Transferable Key Skills / Learning Context/ Assessment – overall programme PhD and MSc (Advanced Particulate Materials)

1. Learning Outcomes

On completion of the Integrated PhD with MSc as a whole, students should have shown evidence of being able to:

- discover, interpret and communicate new knowledge through original research and/or scholarship of publishable quality which would satisfy peer review;
- present and defend research outcomes which extend the forefront of a discipline or relevant area of professional practice;
- demonstrate systematic and extensive knowledge of the subject area and expertise in generic and subject/professional skills;
- take a proactive and self reflective role in working and to develop professional relationships with others where appropriate;
- independently and proactively formulate ideas and hypotheses and to design, develop, implement and execute plans by which to evaluate these;
- critically and creatively evaluate current issues, research and advanced scholarship in the discipline.
- 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.
- understand the baseline and advanced principles of a particular engineering discipline (e.g. Chemical or Materials) and how these are applied to the study of particulate materials;
- perform accurate analyses, within the rigorous standards expected of the engineering profession;
- define problems and develop and evaluate solutions for both basic and complex engineering issues;
- have demonstrated the capability to use techniques to acquire and analyse data and engineering information relevant to particulate materials;
- demonstrate the range of professional competencies that are relevant to the chemical and materials industries and show a clear understanding of the regulatory, safety and professionalism expectations of those industries;

2. Transferable (Key) skills

Students will have the opportunity to acquire the following abilities through the research training and research specified for the programme

- 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/clinical 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/or clinical 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.