

INTEGRATED DEGREE OF PhD AND MSc IN ORAL SCIENCES (PAEDIATRIC DENTISTRY)

Integrated degree of PhD and MSc in Oral Sciences (Paediatric Dentistry)

Programme of study for Integrated degree of PhD and MSc in Oral Sciences (Paediatric Dentistry)¹

Year One (a total of ~~420~~ **130** 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 modules (60 credits) in the specialist areas of:

DSUR5055M Transferable Skills 1 (10 credits) (1 September – 30 September)

DSUR5061M Introduction to Research Methodology and Ethics (10 credits) (Semester 1)

DSUR5068M Medical Emergencies (10 credits) (1 September – 30 September)

DSUR5059M Core Epidemiology (10 credits) (Semester 1)

DSUR5069M Dental Radiology (10 credits) (1 September – 30 September)

DSUR5104M Statistical Methods (10 credits) (Semester 1)

DSUR5063M Service related research (10 credits) (1 September – 30 September)

- Compulsory specialised masters' level subject modules (60 credits in the specialist areas of:
DSUR5086M Paedodontics I (Clinical) (40 credits) (September to August)
DSUR5108M Paedodontics II (20 credits) (Semesters 1 & 2)

Year Two (a total of ~~60~~ **110** 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)
- ~~Compulsory Research Dissertation (60 credits)~~
- ~~Compulsory training and skills modules (10 credits)~~
- ~~Compulsory specialised subject modules (50 credits), in the specialist areas of: Paedodontics III (Clinical) Paedodontics IV~~

DSUR5056M Transferable skills II (10 credits) (1 September – 30 September)

DSUR5064M Research case studies (10 credits) (1 September – 30 September)

DSUR5065M Research project (40 credits) (Semesters 1 & 2)

DSUR5088M Paedodontics IV (10 credits) (Semesters 1 & 2)

DSUR5110M Paedodontics III (Clinical) (40 credits) September - August

- 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 (e.g. Writing for Research Students in the Sciences, Thesis Presentation).

Changes may be made from time to time to the title of modular courses and the optional modular courses that are available².

1 See also the general Programme of Study for the Integrated degrees of PhD and Master (MA, LLM or MSc, page 13) which specifies the overall arrangements for the University Integrated PhD and Masters programme.

2 Programmes will comprise the study of 180 credits unless, as for this programme, otherwise prescribed in the programme specification, during each programme year.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme PhD and MSc in Oral Sciences (Paediatric Dentistry)

1. Learning Outcomes

To meet the Learning Outcomes through a combination of taught components, transferable skills training and research components the students will:

- interpret and communicate knowledge relevant to their speciality through research and scholarship of publishable quality that would satisfy peer review
- present and defend research outcomes which extend the forefront of paediatric dentistry
- demonstrate a detailed knowledge of the subject area and expertise in generic and subject or professional skills
- demonstrate competency in clinical skills and patient management where appropriate
- relate theoretical/academic knowledge to clinical practice and understand the relevance of their research and knowledge to clinical dentistry
- take a proactive and self-reflective role in working and develop professional relationships with other professionals, and with patients and carers where appropriate
- formulate ideas and hypotheses proactively and develop, implement and execute plans by which to evaluate these
- be able to articulate complex ideas and discuss them with peers and other professionals
- critically evaluate current issues, research and advanced scholarship
- understand relevant ethical and legal issues
- understand relevant health and safety issues
- demonstrate responsible working practice

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

- 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

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- 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/clinical 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/clinical 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 in Oral Sciences (Paediatric Dentistry)

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 shown evidence of being able:

- to demonstrate in-depth, specialist knowledge and mastery of techniques relevant to the discipline and/or to demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of the discipline;
- to exhibit mastery in the exercise of generic and subject-specific intellectual abilities;
- to demonstrate a comprehensive understanding of techniques applicable to their own research or advanced scholarship;
- to take a proactive and self-reflective role in working and to develop professional relationships with others;
- proactively to formulate ideas and hypotheses and to develop, implement and execute plans by which to evaluate these;
- critically and creatively to evaluate current issues, research and advanced scholarship in the discipline.

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.

Doctor of Clinical Psychology

Programme of study for the degree of Doctor of Clinical Psychology

1. The following may be accepted as a candidate for the degree of Doctor of Clinical Psychology:

Graduates of an approved university or holders of a recognised degree awarded as a result of study at an approved institution other than a university, or holders of any other qualification approved for this purpose by the Senate, provided that the programme of study in the subject for which the qualification has been awarded has extended over not less than three years full-time study or equivalent part-time study and is acceptable to the Senate as being an adequate preparation for the research proposed, and which is recognised by the British Psychological Society as meeting the necessary qualifications for the Graduate Basis for Chartered Membership of the British Psychological Society.

2. The programme commences in October and is designed for approved graduates with a good honours degree in Psychology, either as a single subject or as a principal subject in a combined studies programme. Candidates are also required to hold for the duration of the programme a contract with the Leeds Teaching Hospitals NHS Trust. The scheme is offered by the School of Medicine, Institute of Health Sciences, Academic Unit of Psychiatry and Behavioural Sciences. Initial enquiries concerning applications for admission should be made to the National Clearing House for Clinical Psychology Courses, University of Leeds.
3. Candidates will in the first instance be accepted as a Provisional candidate for the degree of DClinPsychol.
4. Candidates pursuing the programme of study are required to observe relevant procedures in relation to ethical issues.
5. Candidates accepted will proceed by attending a programme of advanced study which will include:
 - (a) Formal instruction in the following subjects: approximately 700 hours teaching
 - Foundations of Practice I
 - Foundations of Practice II
 - Foundations of Practice III
 - Introduction to Personal Development
 - Continuing Personal Development
 - Consolidating Personal Development

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Professional Issues I

Professional Issues II

Professional Issues III

Introduction to research methods

Advanced research methods: design and analysis

Thesis: writing up and viva preparation

(b) Five clinical placements; supervised and assessed experience of the application of psychological techniques of investigation and treatment.

(c) Three pieces of research: a systematic case study; a service evaluation project; and a psychological investigation of clinical relevance presented in the form of a thesis.

Examinations and Assessments

6. Year 1

During the first year of the programme progress will be assessed by:

Two essays of no more than 5,000 words each. The subjects of the essays will be:

The evidence base for clinical practice 1 (to be submitted by the end of semester 1)

The evidence base for clinical practice 2 (to be submitted by the end of semester 2)

A presentation and a written report of a problem based learning exercise (To be submitted by the end of June in the first year of the programme).

Two periods of supervised clinical practice.

A systematic case study (5,000 words maximum) (to be submitted by early October in the second year of the Programme, the work having been completed by end of the second clinical placement).

During the first year of the programme candidates are required to submit a research proposal for their research thesis in September which is reviewed by a research panel by the end of September, and formative feedback given.

7. Year 2

In the second year progress will be assessed by:

One assessed essay to be submitted by the end of the second semester (5000 words maximum), the subject of the assessed essay will be:

Professional Issues

Two periods of supervised clinical practice.

A report of a Service Evaluation Project (5,000 words maximum) (to be submitted by early November in the third year of the programme with the work having been completed by the end of the second period of supervised clinical practice in Year 2).

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During the second year of the programme candidates are required to submit a report on their progress in their research thesis (thesis transfer document). The thesis transfer documentation is to be submitted by early March and will comprise:

- (a) A literature review (5000 words maximum) pertinent to the chosen topic of study that critically defines the topic area and the rationale for the study
- (b) A critical review of the methodology to be used in the research (3000 words maximum) to include a justification for selecting the method and specification of the proposed data analysis
- (c) A progress report (2000 words maximum) to include a commentary on progress with respect to the application to ethics committees, recruitment to the study, a timetable for the project, and an audit of the student's skills and needs.

This will normally be assessed by the end of April by means of an oral examination (transfer viva).

8. Year 3

In the third year of the programme students will submit:

One assessed essay (5,000 words maximum) by the end of the second semester on the subject:

A critical review of an area of advanced clinical practice in clinical psychology, highlighting theory-practice links

One period of supervised clinical practice.

A thesis on an empirical investigation of a substantive problem in the field of clinical psychology (40,000 words maximum).

Progression and Programme Failure

9. Students whose assessed essays, evaluation of the problem based learning exercise, systematic case study and service evaluation project fail to satisfy the examiners at the first attempt may normally be permitted to resubmit the assessment for further examination on one occasion only within 3 months of the date on which they were informed of the failure.
10. Students are required to satisfy the examiners in five periods of supervised clinical placements. The periods of supervised clinical placements will be assessed by ratings and reports from the clinical supervisor submitted at the end of each period of supervised practice. Reports of clinical competence will be considered by the Board of Examiners.
11. Students whose performance on a supervised clinical placement fails to satisfy the examiners at the first attempt are not permitted to repeat the period of supervised clinical

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placement. Students will be required to demonstrate their ability on the competencies required on the subsequent supervised clinical placement.

12. Candidates must present a thesis (40,000 words maximum) on the subject of his/her research and satisfy the examiners as specified in Ordinance X and its associated Regulations. In exceptional circumstances candidates may, with the approval of their supervisor, include Appendices (up to 20,000 words maximum) which will not be counted towards the overall word length of the thesis.
13. Except with the special permission of the relevant committee, every candidate is required to submit his/her thesis for examination for the degree of Doctor of Clinical Psychology by no later than the end of the fourth year after his/her entry upon the approved course of full-time study and research.
14. Following examination of the thesis, the examiners will be asked to make one of the following recommendations:
 - (a) Pass.
 - (b) Pass (subject to the correction of 'editorial and presentational corrections' or 'minor deficiencies'): these corrections must be made within four or twelve weeks respectively from the date of the oral examination. The internal examiner is responsible for ensuring that 'editorial and presentational corrections' or minor deficiencies are corrected by the candidate. The degree will not be awarded until confirmation that the corrections have been completed is received.
 - (c) Referral (see 15 below)
 - (d) Fail: the candidate has no further opportunity for submission.
15. If the thesis is not considered to be of sufficiently high standard, then on the recommendation of the examiners if there is evidence of the potential of a successful D.Clin.Psychol. submission the candidate will be granted permission to resubmit the work in a revised form for the degree of D.Clin.Psychol. within a period of eighteen months, on one occasion only and on payment of an additional fee.
16. Candidates will normally be deemed to have failed the Course and be asked to withdraw from the programme if they:
 - (1) fail any two pieces of work from the following:
 - Assessed essays (4)
 - Evaluation of problem based learning exercise
 - Systematic Case Study

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Service Evaluation Project

Supervised clinical placements;

or

(2) fail the thesis transfer viva;

or

(3) fail to satisfy the examiners in the Research Thesis viva. There is no opportunity for re-examination where the examiners recommend a research degree thesis is failed;

or

(4) commit gross professional misconduct or cease to have an appropriate clinical contract with the NHS.

17. The recommendation of the examiners is subject to confirmation by the Graduate Board's Examinations Group which will consider the examiners' report normally at the next meeting.

18. The award of the Doctor of Clinical Psychology confers (i) eligibility for entry as a clinical psychologist into the register of the Health and Care Professions Council, and (ii) eligibility for Chartered Membership of the British Psychological Society.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment for the degree of DClinPsychol

1. Learning Objectives and Outcomes

The thematic learning objectives and elemental learning outcomes

Clinical Practice

The thematic **learning objectives** are to enable the student to:

1. Demonstrate professional attitudes and behaviour (including an awareness of power and the socio-political context) as well as a range of personal development strategies.
2. Prepare and engage with the supervisory process as both supervisee and supervisor.
3. Facilitate and maintain therapeutic engagement and working alliances with service users, carers, teams and services; including managing challenging situations.

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4. Conduct assessment interviews and select, administer and interpret psychometric and idiosyncratic assessments, including risk assessment.
5. Develop, implement and communicate formulations with service users, carers, teams and services; including appropriate re-formulations.
6. Use theory-practice links to develop and implement interventions within different theoretical models adapted to individual needs.
7. Demonstrate the capacity to evaluate processes and outcomes at the organisational and systemic levels, as well as the individual level.
8. Communicate effectively with audiences who have a wide range of cognitive ability, sensory acuity and modes of communication; including giving clear and accurate written and verbal reports of work undertaken.
9. Plan formal and informal teaching sessions appropriately, facilitate the co-operative engagement of the training group and monitor effectiveness.
10. Demonstrate knowledge of the organisational setting and the need to work collaboratively with other professionals and colleagues, including demonstrating qualities of leadership.

The **learning outcomes** disaggregated from the above are as follows:

Ref. objective 1: PERSONAL AND PROFESSIONAL DEVELOPMENT

The student should be able to:

- a) Demonstrate professional attitudes and behaviour (reliable, responsible and open to learn; exhibiting an ethical framework for all aspects of the work; ensuring informed consent underpins all contacts)
- b) Manage an appropriate case and workload (demonstrates increasing autonomy in taking responsibility for this; is able to prioritise; recognises limits of own competence and requests assistance when in difficulty)
- c) Recognise and understand inherent power imbalances and how these may be minimised; understand the impact of one's own value base upon clinical practice
- d) Work effectively with difference, diversity and social inequalities in individuals' lives
- e) Develop resilience; including a continuous commitment to develop self-knowledge and self-awareness; the capacity to recognize and act accordingly when own fitness to practice is compromised.

Ref. objective 2: SUPERVISION

The student should be able to:

- a) Prepare and engage in the supervisory process (develop a shared understanding of the roles of both supervisor and supervisee; asking for/provision of relevant literature;

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giving and receiving of feedback and constructive criticism; ability to engage in collaborative discussion)

- b) Demonstrate an increasing ability to discuss both content and process within clinical work
- c) Utilise supervision to discuss support issues and needs with a clear awareness of the boundaries between supervision and personal therapy (i.e. that the supervisor cannot and should not act in the role of personal therapist)
- d) Develop the skills to provide supervision at an appropriate level within own sphere of competence (including contracting, discussion of boundaries, confidentiality and power, supervision models and feedback methods, power)

Ref. objective 3: THERAPEUTIC ENGAGEMENT AND WORKING ALLIANCES

The student should be able to:

- a) Facilitate therapeutic engagement and a secure base, demonstrating empathy, curiosity and a respectful attitude with service users, carers, colleagues and services
- b) Facilitate mutual understanding using accessible language; demonstrate knowledge and application of anti-oppressive practice
- c) Show an awareness of structure, boundary and termination issues and application in practice
- d) Exhibit skills in managing challenging situations with service users, carers, teams and services
- e) Demonstrate an increasing understanding and ability to increase sphere of influence through engagement with different levels of organisational systems (service users, teams, external agencies)

Ref. objective 4: PSYCHOLOGICAL ASSESSMENT

The student should be able to:

- a) Conduct assessment interviews (including taking a detailed history); select appropriate further assessment procedures where necessary (including observation, or gathering information from others)
- b) Administer and interpret psychometric assessments; understand key elements of psychometric theory and appropriate utilisation of this knowledge (i.e. awareness of limitations / ethical implications) in conjunction with a good working relationship
- c) Administer and interpret idiosyncratic assessments (with awareness of social context and organisational structure)
- d) Conduct appropriate risk assessment and use this to guide practice

Ref. objective 5: PSYCHOLOGICAL FORMULATION

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The student should be able to:

- a) Develop collaborative psychological formulations informed by theory and evidence about relevant individual, systemic, social, political, cultural and biological factors, in a way that helps service users better understand their experiences
- b) Construct formulations adapted to circumstance and context a) within an explicit theoretical model and b) utilising theoretical frameworks with an integrative, multi-model perspective as appropriate; reformulate as required
- c) Ensure that formulations are communicated in accessible language, culturally sensitive and non-discriminatory in terms of, for example, age, gender, disability and sexuality
- d) Lead on the implementation of formulation in services and utilizing formulation to enhance teamwork, multi-professional communication and psychological-mindedness in services.

Ref. objective 6: PSYCHOLOGICAL INTERVENTIONS

The student should be able to:

- a) Demonstrate knowledge of the empirical basis of treatments/interventions and practice guidance frameworks such as NICE and SIGN; critically appraise relevant literature, including an understanding of social approaches to intervention (e.g. community, critical, social constructionist perspectives)
- b) Make theory - practice links; demonstrate the ability to utilise multi-model interventions, adapting interventions to individual needs
- c) Conduct interventions a) related to secondary prevention and the promotion of health and well-being; b) in a way which promotes recovery of personal and social functioning as informed by service user values and goals.
- d) Have an awareness of the biopsychosocial model and the impact and relevance of psychopharmacological and other multidisciplinary interventions
- e) Intervene systemically with carers and professionals e.g. implementation of care plans
- f) Demonstrate an awareness of the limitations of psychological interventions, assess when further intervention may not be appropriate and communicate this sensitively

Ref. objective 7: EVALUATION AND RESEARCH

The student should be able to:

- a) Utilise and interpret appropriate individual measures to evaluate outcome (e.g. sessional and outcome measures)
- b) Utilise, comply and contribute to departmental evaluation and auditing procedures

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- c) Demonstrate the capacity to evaluate processes and outcomes at the organisational and systemic levels, as well as the individual level
- d) Demonstrate an awareness of outcomes frameworks in wider use within national healthcare systems and an understanding of clinical governance principles
- e) Conduct research (SCS or SEP) in respectful collaboration with stakeholders and within ethical and governance frameworks (e.g. BPS, HCPC, universities)

Ref. objective 8: COMMUNICATION

The student should be able to:

- a) Give clear and concise verbal and written reports of work undertaken in a timely manner
- b) Develop their own individual style of communication and confidence in this
- c) Adapt their style of communication to people with a wide range of levels of cognitive ability, sensory acuity and modes of communication
- d) Understand the process of communicating effectively through interpreters and having an awareness of the limitations
- e) Understand the process of providing expert psychological opinion and advice, including the preparation and presentation of evidence in formal settings.

Ref. objective 9: TEACHING AND TRAINING

The student should be able to:

- a) Prepare and deliver teaching and training flexibly, in a way which takes into account the needs and goals of the audience (e.g. appropriate use of language, use of interactive methods, provision of handouts and facilitative training materials)
- b) Monitor and evaluate effectiveness through self-appraisal and structured feedback mechanisms

Ref. objective 10: ORGANISATIONAL AND SYSTEMIC INFLUENCE AND LEADERSHIP

The student should be able to:

- a) Demonstrate an awareness of the legislative and national planning contexts for service delivery and clinical practice and an understanding of the organisation in which the placement is based
- b) Work with service users and carers to facilitate their involvement in service planning and delivery
- c) Indirectly influence service delivery through working effectively and collaboratively in multidisciplinary and cross-professional teams and consultancy
- d) Demonstrate leadership qualities e.g. being aware of and working with interpersonal processes, proactivity, influencing the psychological mindedness of teams and

organisations, contributing to and fostering collaborative working practices within teams

- e) Recognise malpractice or unethical practice in systems and organisations and know how to respond to this; be familiar with 'whistleblowing' policies and issues.

Personal and Professional Development

The thematic **learning objectives** for this theme are grouped. They are to enable the student to:

Power and socio-political context issues

1. Understand the importance and relevance of issues to do with power and social inequalities, on both a personal and professional level
2. Work effectively with difference and diversity

Personal development

3. Show an active continuous commitment to develop self-knowledge and self-awareness

Professional attitudes and behaviour

4. Show a consistently open attitude towards all aspects of learning and development
5. fulfil the employer's expectations regarding professional behaviour, including active engagement in all supervisory arrangements
6. demonstrate an ethical framework for all aspects of work, including a working knowledge of relevant practice guidelines, policies and legislation
7. work collaboratively and constructively with other professionals, colleagues and users of services
8. behave respectfully to others at all times
9. prepare for professional employment, having clear aims and objectives for continued professional development

Professional autonomy and professional limits

10. manage a workload, including multi-tasking, and show a clear recognition of the limits of individual competence.

The **learning outcomes** disaggregated from the above are as follows:

Ref. objective group 1: Power and socio-political context issues

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The student should be able to:

- a) recognise and understand the effects of power imbalances, and how they can be minimised
- b) critique a range of theoretical models and related practices for the ways in which power imbalances and social inequalities are maintained and reproduced
- c) understand the roots of oppression and its role in the aetiology of psychological disturbance, and the consequential need to develop anti-oppressive
- d) recognise and work with difference and diversity, and commit to developing cultural (in the broadest sense, including e.g. issues to do with class, gender, dis/ability, ethnicity, sexuality) competency in all aspects of professional life
- e) apply knowledge and understanding in all these areas in an increasingly sophisticated manner, and in increasingly complex situations

Ref. objective group 2: Personal development

The student should be able to:

- a) experiment with a variety of personal development strategies, and explore new ways of interacting with others
- b) engage with the personal and professional development curriculum and goals, maintaining an open attitude
- c) build and develop strategies to manage the emotional and physical impact of the work, and seek out help and support when required
- d) invite critical comment and respond in a constructive manner
- e) monitor their own fitness to practice, recognise when this is compromised and take steps to manage this risk as appropriate

Ref. objective group 3: Professional attitudes and behaviour

The student should be able to:

- a) demonstrate a continuing openness and keenness to learn, to seek knowledge and develop new skills
- b) demonstrate active participation in all supervisory relationships and arrangements, including negotiation, preparation, utilisation and recording of sessions
- c) manage own learning needs and develop strategies for meeting them
- d) demonstrate reliability, conscientiousness, and an ability to meet deadlines
- e) apply expertise in judging the consequences, for self and others, of maintaining / relaxing boundaries in all professional relationships
- f) approach conflict situations with thoughtfulness, and from a constructive stance
- g) consistently consider ethical issues and apply these considerations in complex clinical contexts (e.g. the process of informed consent)

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- h) understand and put into practice the boundaries and limitations of confidentiality
- i) demonstrate knowledge of professional practice guidelines
- j) understand the importance and have knowledge of relevant local and national policies, procedures, guidelines and legislation, and their relevance to professional practice
- k) work collaboratively and constructively with other psychologists, other professionals, and users of services, respecting diverse viewpoints
- l) show a respectful and valuing attitude to all others
- m) demonstrate knowledge and understanding of employment practices and related issues in host organisation (e.g. time keeping, record keeping, meeting deadlines, managing leave, health and safety and good working relationships)
- n) demonstrate appropriate preparation for job interviews
- o) demonstrate a purposeful plan for continued professional development, including the transition from trainee to qualified clinical psychologist

Ref. objective group 4: Professional autonomy and professional limits

The student should be able to:

- a) negotiate for and manage an appropriate case and workload at different stages of training, and prioritise the caseload effectively
- b) recognise the extent and limitations of personal and professional competence and seek out timely and appropriate consultation and assistance when required
- c) develop the ability to multi-task
- d) understand the transferable skills developed during training and how these can be of value to employers, colleagues and service users.

Research

The thematic **learning objectives** are to enable the student to:

1. identify and devise an original research question set in the context of existing research and theoretical models, and current priorities and opportunities
2. identify, access, collect, record, manage, analyse and synthesise information, using an appropriate research method and solving problems that arise during the process
3. be aware of the strengths and limitations of different research designs, and be able to critically appraise their own findings and those of others
4. present and defend ideas and outcomes, using appropriate media

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5. demonstrate an understanding of the ways in which research may be communicated to enhance the impact on practice and support the learning and teaching of others
6. understand and comply with relevant legal, ethical, health and safety issues
7. comprehend the distinctions between methods appropriate to theoretical and service research, and the political, social and cultural context within which these fall
8. demonstrate the skills needed to interact / collaborate with participants, colleagues and organisations during the research process
9. appreciate the utility of research in developing clinical practice, and the factors that influence change in individuals and organisations
10. manage a research project using the necessary equipment and techniques, to meet specified outcomes within the time allocated.

The **learning outcomes** disaggregated from the above are as follows:

Ref. objective 1 the student should be able to:

- a) identify an original topic for research and /or original problem to be tackled
- b) formulate the topic or problem into a research question(s) that may be answered
- c) devise a research method appropriate for answering the research question
- d) carry out a research project to completion
- e) set research in the context of previous research and knowledge, and current priorities and opportunities
- f) relate one's own findings to existing research and model development
- g) develop theoretical concepts.

Ref. objective 2 the student should be able to:

- a) identify and access appropriate library and/or archive-based information
- b) collect, record and manage information and/or findings
- c) analyse and synthesise information and/or findings
- d) recognise and demonstrate originality and independent thinking
- e) demonstrate practical and analytical skills
- f) demonstrate problem-solving skills.

Ref. objective 3 the student should be able to:

- a) be aware of the strengths and limitations of different research designs including quantitative and qualitative approaches
- b) critically evaluate one's own findings and those of others.

Ref. objective 4 the student should be able to:

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- a) present and defend ideas and outcomes of research using appropriate media such as oral presentations, posters, published documents, conference contributions, progress reports etc.
- b) present research outcomes in the form of a thesis and defend them at viva.

Ref. objective 5 the student should be able to:

- a) understand the ways in which research may be communicated to enhance the impact on practice
- b) support the learning and research of others.

Ref. objective 6 the student should be able to:

- a) understand relevant ethical and legal issues and the importance of maintaining the well-being of research participants
- b) appreciate and comply with the systems for ensuring ethical research practice e.g. local research ethics committees and research governance
- c) understand and act upon relevant health and safety issues e.g. personal safety when data collecting
- d) demonstrate responsible working practice.

Ref. objective 7 the student should be able to:

- a) appreciate the distinctions between theoretical and service research, audit and case studies, and the methods appropriate for each
- b) demonstrate an understanding of the political, social and cultural context of research.

Ref. objective 8 the student should be able to:

- a) interact appropriately with participants, colleagues and organisations during the research process
- b) collaborate successfully with other researchers from the same or different organisations.

Ref. objective 9 the student should be able to:

- a) appreciate the clinical implications of one's own and other's research
- b) understand the role of research in changing practice and the other factors influencing change in individuals and organisations
- c) appreciate the utility and limitations of research evidence for clinical practice.

Ref. objective 10 the student should be able to:

DOCTOR OF CLINICAL PSYCHOLOGY

- a) plan and organise a programme of research so as to submit his/her thesis within the standard period of study
- b) show flexibility and adaptability in managing a research project
- c) appreciate and manage relationships with supervisors, team members and others
- d) use IT packages and techniques to carry out relevant tasks
- e) manage own learning by e.g. identifying personal strengths and training needs, setting objectives, drawing upon/using sources of support, attending relevant training events and recording and reflecting on progress.

2. Assessment

Achievement will be assessed by the examination of the candidate's thesis by an internal and external examiner appointed for that purpose, and performance under oral examination. It will also include the assessment of achievement by a variety of methods in accordance with the learning outcomes of the taught and clinical components specified for the programme. Assessment of the thesis 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/clinical 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/clinical 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.

Doctor of Philosophy – Integrated Tribology

Programme of study for Doctor of Philosophy – Integrated Tribology

Taught Components Year 1

Year One (a total of 105 credits, of which a minimum of 90 credits must be level M, in taught modular courses will be taken)

- Compulsory training and skills module:

MEC6907 Tribology Masterclass (University of Sheffield)

MECH5004 Training and Professional Development Activities (30 credits)

- Compulsory group project:

MECH5585 Mini project - group (30 credits)

- Compulsory individual project:

MECH5575 Mini project – individual (30 credits)

- Candidates are required to select one optional module from both lists A & B

List A

MECH5570M Introduction to Tribology (15 credits)

MECH5660M Lubrication and Lubricants (15 credits)

MECH5510M Computational & Experimental Methods (15 credits)

MECH5021M Oilfield Chemistry and Corrosion (15 credits)

List B

MECH5410M Surface Engineering (15 credits)

MECH5195M Automotive Driveline (15 credits)

- The candidate will commence research under the direction of their supervisor(s)

Other optional modules may be selected, subject to consideration and approval of the Programme Manager. Candidates are advised to discuss this with their supervisors.

Students who do not complete the above taught requirements will not be able to proceed to the degree of PhD, but may be eligible instead for the award of Postgraduate Diploma in Integrated Tribology.

Students will be required to pass at least 90 taught credits in order to progress on the programme.

Research Component Year 1

Students will begin their main PhD research in year one. In order to progress students must satisfy the CDT Academic Progression Committee by demonstrating aptitude for doctoral level research, along with the taught components of the programme.

Examinations

Students will be notified of their host examinations timetables when appropriate.

Year 2

Students must submit their transfer report by no later than 18 months from the start of the candidature. Students will be required to successfully transfer to full PhD status in order to progress on the programme.

Years Three and Four

The candidate will continue research under the direction of their supervisor(s).

Impact Project

From Month 30 of the candidature, students will carry out a six month impact project where they apply research in an industrial environment. Students undertaking industrial one-to-one projects will spend this placement with their industrial sponsor, whereas students completing pre-competitive research will choose from a list of industrial placement offers. The industrial impact projects will be defined in a facilitated workshop, with students present as key participants.

Learning Outcomes / Transferable Key Skills / Learning Context /Assessment for PhD

1. Learning Outcomes

On completion of the research programme 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 satisfies peer review;
- to present and defend original research outcomes which extend the forefront of a discipline or relevant area of professional/clinical practice;
- to demonstrate systematic and extensive knowledge of the subject area and expertise in generic and subject/professional skills;
- to take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- to independently and proactively formulate ideas and hypotheses and to design, develop, implement and execute plans by which to evaluate these;
- to critically and creatively evaluate current issues, research and advanced scholarship in the discipline;
- 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:

- 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

This 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 / clinical 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/clinical 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

Doctor of Health and Social Care

Programme of Study for the degree of Doctor of Health and Social Care¹

Admission

1. The following may be accepted as candidates for the Professional Doctorate in Health and Social Care:
 - Graduates of an approved university or equivalent institution with an upper second class honours degree or above in a subject relevant to the proposed research;
 - Candidates should also have relevant professional training in the area of the proposed research and experience of professional engagement with current practice development and innovation.
2. Where the applicant's first language is not English, applicants for admission to the programme leading to the award of the degree of Doctor of Health and Social Care must, before they can be admitted to the University, provide evidence that they have obtained the specified band score on one of the recognised English language qualifications as follows:
 - British Council IELTS – score of 6.5 overall, with no element less than 6.0;
 - TOEFL iBT – overall score of 94 with the reading and speaking element no less than 23, listening element no less than 21 and the writing element no less than 24.
3. Students who have achieved master's level accreditation for study within an approved university or equivalent institution may apply for accreditation of up to a maximum of 60 credits in taught components of their DHSC programme.² All applications for such Accredited Prior Learning (APL) are considered on their merits and awards of credit transfer are made at the discretion of the School of Healthcare's Individualised Programmes Panel (IPP), in accordance with published guidelines for the degree, and subject to approval by the relevant University committee. The following will apply:
 - (a) applications should be made at the time of DHSC application and, in all cases, applications must be processed by the end of the first semester;
 - (b) for credit to be eligible for transfer it must have been awarded within five years prior to the commencement of DHSC registration;
 - (c) accredited prior learning may be granted only against the taught modules within the DHSC programme and may be granted only in so far as the prior learning relates to the applicant's proposed DHSC programme;
 - (d) accredited prior learning is not allowable, in any circumstances, against the DHSC thesis or the thesis preparation components;

¹ This programme has been withdrawn to new applicants from 2012-13.

² Candidates may apply for accreditation of up to a maximum of 90 taught credits in recognition of modules studied as part of another postgraduate programme in the School; claiming accreditation of a greater proportion of the programme would be considered on an "ad personam" basis.

DOCTOR OF HEALTH AND SOCIAL CARE

(e) other arrangements deemed acceptable by the relevant University committee, in lieu of (a) – (d) above.

4. Candidates will in the first instance be accepted as a postgraduate research student for the degree of DHSC.
5. On entry every candidate will be allocated a supervisory team comprising a lead supervisor and co-supervisor(s).

Content of Programme of Study

6. Candidates will complete a total of 180 credits³ of M level modules over the first 15 months (full-time study) or 3 years (part-time study).
7. The composition of taught modular courses will be as follows:
 - 15M credit compulsory module in transferable skills
 - 60M credits of compulsory modules in research methods
 - 15M credits of optional modules in research methods
 - 30M credits of compulsory modules in knowledge and skills in leadership
 - 30M credit compulsory module in working effectively within complex professional systems and practice
 - 30M credit compulsory dissertation/upgrade module

Progression

8. A successful transfer is dependent upon the candidate having passed (i.e. achieved a mark of 50% or above) all taught modules which have been delivered and examined up to the point of transfer.
9. By the end of the first 15 months of full-time study, and 30 months of part-time study, candidates will complete the assignment in the Dissertation/Upgrade module, which will form the basis of an assessment for transfer to the specific doctoral degree category of DHSC. An assessment panel will be established, in accordance with the University's Code of Practice for Research Degree Candidatures, to assess each candidate for transfer to full DHSC registration. All candidates will be interviewed by an assessment panel and this will take the form of a viva voce examination.
10. A candidate who is initially unsuccessful in the transfer assessment may be given, at the discretion of the assessment panel, one further opportunity for review normally within a period of three months (six months at the maximum).
11. A candidate will not be permitted to proceed to the final thesis preparation element of the programme without successfully passing the transfer process.

Examination and Assessment

12. The normal expectation is that candidates will successfully complete modular courses (i.e. passed assessed modules at 50% or above) and accruing no less than 180 credits for the taught components by the end of Year 2 for full-time study or by the end of Year 3 for part-time study.

³ In the absence of Accredited Prior Learning (APL)

DOCTOR OF HEALTH AND SOCIAL CARE

13. Candidates are required to submit a thesis for examination of up to 50,000 words in length in the area of their specialist field of study and satisfy the examiners as specified in Ordinance X and its associated Regulations.
14. Except with the special permission of the relevant committee, every candidate is required to submit his/her thesis for examination for the degree of Doctor of Health and Social Care by no later than:
 - (i) The end of the fourth year after his/her entry upon the approved course of full-time study and research; or
 - (ii) The end of the seventh year after his/her entry upon the approved course of part-time study and research.
15. Where the progress and quality of the candidate's research justify it, the relevant committee is empowered to reduce the required minimum period of study, as specified in Article 5 of Ordinance X provided that no candidate shall submit for examination before the completion of:
 - (i) A total of two calendar years of full-time study; or
 - (ii) A total of three years of part-time study.
16. Following examination, the examiners will be asked to make one of the following recommendations.
 - a. Pass.
 - b. Pass (subject to the correction of 'editorial and presentational corrections' or 'minor deficiencies'): these corrections must be made within four or twelve weeks respectively from the date of the oral examination. The internal examiner is responsible for ensuring that 'editorial and presentational corrections' or minor deficiencies are corrected by the candidate. The degree will not be awarded until confirmation that the corrections have been completed is received.
 - c. Referral (see 17 below)
 - d. Fail: the candidate has no further opportunity for submission.
17. If the thesis is not considered to be of sufficiently high standard to recommend the award of the degree but there is evidence of a potential successful DHSC submission, then on the recommendation of the examiners the candidate will be granted permission to resubmit the work in a revised form for the degree of DHSC within a period of eighteen months, on one occasion only and on payment of an additional fee.
18. The recommendation of the examiners is subject to confirmation by the Graduate Board's Examinations Group which will consider the examiners' report.

Course Failure

19. Candidates will normally be deemed to have failed the course and be asked to withdraw from the programme if:
 - (i) they fail to meet the requirements for taught modular study namely: marks at or above 50% for all credit-bearing modules; or
 - (ii) they fail to satisfy the transfer assessment panel; or

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(iii) they fail to satisfy the examiners in the research thesis.

Exit Points

20. Candidates who leave without completion of the research thesis element of the programme may, providing that they have satisfied the relevant regulations for the award of these qualifications:

- (i) elect to graduate with the Postgraduate Diploma in Health and Social Care;
- (ii) elect to graduate with the degree of Master of Science in Health and Social Care.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment for the degree of DHSC

1. Learning Outcomes

On completion of the research programme students should have shown evidence of being able:

- to discover, interpret and communicate new knowledge through original research of publishable quality in Health and Social Care professional practice and/or its facilitation which satisfies peer review;
- demonstrate systematic knowledge of and the ability to critically assess, analyse and engage with the ethical and legal Health and Social Care context of their research and any ethical and legal implications of their research;
- to present and defend research outcomes which extend the forefront of practice and/or policy-making in a Health and Social Care discipline or profession or relevant area of professional/clinical practice;
- to demonstrate systematic and extensive knowledge of the subject area and expertise in generic and subject/professional skills;
- to take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- to independently and proactively formulate ideas and hypotheses and to design, develop, implement and execute plans by which to evaluate these;
- to critically and creatively evaluate current issues, research and advanced scholarship in Health and Social Care professions practice and/or formulating/informing future policy.

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

- 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 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. During the course of the programme this will also include the assessment of achievement by a variety of methods in accordance with the learning outcomes of any taught modules specified for the programme. Final 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/clinical 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.

Dual Award PhD – University of Leeds and Universidade Estadual de Campinas (UNICAMP)

Dual Award PhD – University of Leeds and Universidade Estadual de Campinas (UNICAMP)

Programme of study for the Dual Award PhD – University of Leeds and Universidade Estadual de Campinas (UNICAMP)

Details

Upon successful completion and examination of study the student will receive 2 Doctor of Philosophy awards from both the University of Leeds and Universidade Estadual de Campinas (UNICAMP).

Home and Dual Institution

Universidade Estadual de Campinas (UNICAMP)

Students will be based at the Institute of Geosciences (IG)

University of Leeds

Students will be registered at the School of Earth and Environment.

PhD students are assigned to the same institute as their primary supervisor and in this case most students will be affiliated to Institute of Applied Geoscience (IAG).

Entry Requirements and Registration

An undergraduate degree equivalent to a UK first or second class Honours degree of Bachelor (in an appropriate discipline) and IELTS 6.5 (with not less than 6.0 in any component).

Students register as a PhD student at UNICAMP and as a provisional PhD student during years 1 and 2 at the University of Leeds.

Pattern of Study and Progress Monitoring

The Dual Award PhD – University of Leeds and Universidade Estadual de Campinas (UNICAMP) is a full-time programme of study with a maximum duration of 4 years.

A minimum of 10 supervision meetings must be held each year with both UNICAMP and Leeds supervisors. These meetings will be conducted online (via Skype or video conferencing) where all necessary members cannot be physically present. All supervision meetings must be recorded using the University of Leeds Personal Development Record (PDR).

Year One (Universidade Estadual de Campinas (UNICAMP))

Induction (UNICAMP)

Taught credits at UNICAMP (completed before coming to the University of Leeds)

Agreement of training plan

2000 word progress report at 9 months

Dual Award PhD – University of Leeds and Universidade Estadual de Campinas (UNICAMP)

Year Two (University of Leeds)

Induction (University of Leeds)

PhD study skills via SDDU

Transfer at end of year 2 at the University of Leeds

1 published or submitted article before qualificação
UNICAMP qualificação at end of year 2 at UNICAMP¹

Year Three (University of Leeds)

36 month progress report

Year Four (Universidade Estadual de Campinas (UNICAMP))

Year 4 spent at UNICAMP

1 published and 2 submitted articles before UNICAMP Defence

University of Leeds examination² at end of year 4 at UNICAMP (held before UNICAMP examination)

UNICAMP examination³ at end of year 4 at UNICAMP

Supervision

Students will have a minimum of 3 supervisors – 2 at the University of Leeds and 1 at UNICAMP. All supervisors must meet the minimum standard requirements for each Institution.

Examination

The student must undertake two separate examinations, one for the University of Leeds by viva voce and one for the Universidade Estadual de Campinas (UNICAMP) by defense, in accordance with each Institution's examination regulations.

Both examinations will take place within one week at UNICAMP, The University of Leeds examination will be held first, followed by UNICAMP.

The University of Leeds supervisor may be included as part of the UNICAMP examining panel.

To facilitate these arrangements the examiners appointed by Leeds will travel to Brazil to undertake the Leeds oral examination off-site at UNICAMP.

¹ The qualificação must be conducted at UNICAMP. Students are expected to return to the University of Leeds to continue Year 3 of their studies once completed.

² By viva voce

³ By defense

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme Integrated degree of PhD and MSc (Fluid Dynamics)

Learning Outcomes

On completion of the research programme 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 satisfies peer review;
- to present and defend original research outcomes which extend the forefront of a discipline or relevant area of professional/clinical practice;
- to demonstrate systematic and extensive knowledge of the subject area and expertise in generic and subject/professional skills;
- to take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- to independently and proactively formulate ideas and hypotheses and to design, develop, implement and execute plans by which to evaluate these;
- to critically and creatively evaluate current issues, research and advanced scholarship in the discipline;
- 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.

Transferable (Key) Skills

Students will have had 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

Learning Context

This 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

Dual Award PhD – University of Leeds and Universidade Estadual de Campinas (UNICAMP)

- 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

Doctor of Education

Programme of Study for the degree of Doctor of Education

1. Candidates may be accepted for study towards the degree of Doctor of Education in the School of Education. A Management Committee is responsible for the arrangements for research degree study in this school.
2. The following may be accepted as candidates for the degree of Doctor of Education:
 - (i) graduates of an approved university or equivalent institution who have been awarded at an appropriate standard, a masters degree in a subject area relevant to the proposed research;
 - or*
 - (ii) graduates of an approved university or equivalent institution with an upper second class honours degree or above in a subject area relevant to the proposed research;
 - or*
 - (iii) persons holding such other qualifications as may be deemed by the relevant committee, to be acceptable as equivalent to or in lieu of a degree.
3. A candidate applying for acceptance for the degree under the provisions of (iii) may be required to present evidence of a satisfactory general education or, in the absence of such evidence, may be required to pass an examination to be prescribed in each case by the relevant committee before his/her acceptance.
4. Students who have achieved master's level accreditation for study within an approved university or equivalent institution may apply for accreditation of up to a maximum of 90 credits in taught components of their EdD programme.¹ All applications for such accredited prior learning are considered on their merits and awards of credit transfer are made at the discretion of the Management Committee, in accordance with published guidelines for the degree, and subject to approval by the relevant University committee. The following will apply:
 - (a) applications should be made at the time of EdD application and, in all cases, applications must be processed by the end of the first semester;
 - (b) for credit to be eligible for transfer it must have been awarded within five years prior to the commencement of EdD registration;
 - (c) accredited prior learning may be granted only against the taught modules within the EdD programme and may be granted only in so far as the prior learning relates to the applicant's proposed EdD programme;
 - (d) accredited prior learning is not allowable, in any circumstances, against the EdD thesis or the thesis preparation components;

¹ Students on MA, MEd or MSc programmes in the School of Education, University of Leeds, who wish to cease their MA, MEd or MSc programmes and begin the EdD programme may apply for accreditation of up to a maximum of 120 credits in taught component.

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(e) other arrangements deemed acceptable by the relevant University committee, in lieu of (a) – (d) above.

5. On entry to the degree candidates will declare a specialist field of study, this is a general area in which they will concentrate their studies, and from which they will develop the topic of their thesis. On entry every candidate will be appointed an individual academic supervisor charged with discussing and advising on the coherence of modular choices in relation to the intended thesis area (specialist field of study). Examples of specialist fields of study include:

Educational administration and management

Educational psychology

Mathematical education

Policy studies

Post-compulsory and continuing education

Lifelong learning

Primary education

Science education

Special education

TESOL

Teacher education and mentoring

ICT in Education

Vocational education

Education and Training 14-19

Adult and continuing education

Higher and further education

Additional fields of study will be approved from time to time.

Content of Programme of Study

Taught Modules

Candidates are required to study modules totalling 150 credits² (this will normally be 5 x 30 credit modules). The composition of the taught modular courses will be as follows:

EDUC 5060M Getting Started: Research Questions and Approaches in Education (15 credits);

EDUC5061M Philosophical underpinning of educational research (15 credits);

EDUC5062M Qualitative data: processes of collection, interpretation and analysis (15 credits);

EDUC5063M Introduction to quantitative data analysis (15 credits).

2 x 30 credits thesis-related specialist content modules

1 x 30 credits research method or thesis-related specialist content module

²In the absence of Accredited Prior Learning (APL).

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Up to three (90 credits) of the total five modules (150 credits) may be directed studies. The modules available are listed in the University's Taught Postgraduate Catalogue.

6. Part-time candidates upon successful completion of taught modules totalling 120 credits may submit a formal application to the Graduate Board for a 6 month break from their studies for the purpose of maintaining their professional career. The career break will normally be taken immediately after submission of work totalling 150 credits and never before.

Thesis preparation component and upgrade process

7. Candidates will in the first instance be accepted to the degree of Provisional EdD. Candidates are required to undertake a supervised study designed to yield the documentation necessary for consideration in the upgrade to full EdD registration process. It will include presentation of relevant literature, indication of research questions, indication of methodology and its rationale (design, including indication of proposed analysis) and a timeline.
8. The study requirements³ for all of the taught modules must be completed before the upgrade process can take place. The upgrade point is the point at which the student's progress through the programme components is assessed. For a part-time candidate this will normally be by no later than 36 months of study and for a full-time candidate this will normally be by no later than 24 months of study.
9. An assessment panel will be established, in accordance with the University's Code of Practice for Research Degree Candidatures, to assess each candidate for transfer to full EdD registration. The student must be interviewed by the assessment panel and this assessment should take the form of a viva voce examination. The panel will assess, as part of the upgrade process, the thesis preparation component and an overall assessment of either satisfactory or unsatisfactory will be made.
10. A candidate who is initially unsuccessful in the upgrade process may be given, at the discretion of the transfer panel, one further opportunity for review normally within a period of three months (six months at the maximum). Notes for Guidance on the preparation of a further submission will be given to the candidate by the transfer panel.
11. The thesis preparation component will not be graded on a mark scale and will thus not contribute to the profile of assessed module grades. However, a candidate must successfully complete the transfer review process before being permitted to continue with their studies. Following a successful transfer review a recommendation will be sent forward for consideration by the relevant University committee that a candidate be transferred to full EdD status, together with the name(s) of the supervisor(s) and proposed thesis title. The work contained within the thesis preparation component may subsequently be revised to form part of the thesis.

Examination and Assessment

Research Project

³"Study requirements" refers to attendance at classes, tutorials, etc. rather than to assignment completion or grading, since waiting for the latter could seriously delay the upgrading point.

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12. Candidates are required to submit a thesis for examination of up to 55,000 words in length in the area of their specialist field of study and satisfy the examiners as specified in Ordinance X and its associated Regulations.
13. Except with the special permission of the relevant committee, every candidate is required to submit his/her thesis for examination for the degree of Doctor of Education by no later than:
 - (i) the end of the fourth year after his/her entry upon the approved course of full-time study and research; or
 - (ii) the end of the seventh year after his/her entry upon the approved course of part-time study and research.
14. Where the progress and quality of the candidate's research justify it, the relevant committee is empowered to reduce the required minimum period of study, as specified in Article 5 of Ordinance X provided that no candidate shall submit for examination before the completion of:
 - (i) a total of two calendar years of full-time study; or
 - (ii) a total of three calendar years of part-time study.
15. Following examination, the examiners will be asked to make one of the following recommendations.
 - (a) Pass.
 - (b) Pass (subject to the correction of 'editorial and presentational corrections' or 'minor deficiencies'): these corrections must be made within four or twelve weeks respectively from the date of the oral examination. The internal examiner is responsible for ensuring that minor errors or minor deficiencies are corrected by the candidate. The degree will not be awarded until confirmation that the corrections have been completed is received.
 - (c) Referral (see 17 below).
 - (d) Fail: the candidate has no further opportunity for submission.
16. If the thesis is not considered to be of sufficiently high standard to recommend the award of the degree but there is evidence of the potential of a successful EdD submission, then on the recommendation of the examiners the candidate will be granted permission to resubmit the work in a revised form for the degree of EdD within a period of eighteen months, on one occasion only and on payment of an additional fee.
17. The recommendation of the examiners is subject to confirmation by the Graduate Board's Examinations Group which will consider the examiners' report.
18. Learning Outcomes for the degree of Doctor of Education are published in a later section.

Course Failure

19. Candidates will normally be deemed to have failed the course and be asked to withdraw from the programme if:

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(i) they fail to meet the requirements for modular study namely: marks at or above 60% in 60% of their credits and no mark below 50% in the remaining 40% of their credits;

or

(ii) they fail to satisfy the transfer assessment panel;

or

(iii) they fail to satisfy the examiners in the research thesis.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment for the degree of EdD

1. Learning Outcomes

Learning Outcomes for taught components; students will be able to

- demonstrate in-depth, specialist knowledge and mastery of techniques relevant to the discipline and/or to demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of the discipline;
- exhibit mastery in the exercise of generic and subject-specific intellectual abilities;
- demonstrate a comprehensive understanding of techniques applicable to their own research or advanced scholarship;
- take a proactive and self-reflective role in the working and develop professional relationships with others;
- proactively formulate ideas and hypotheses and develop, implement and execute plans by which to develop these;
- critically and creatively evaluate current issues, research and advanced scholarship in the discipline.

Learning Outcomes for research components; students will be able to

- discover, interpret and communicate new knowledge through original research of publishable quality which would satisfy peer review and/or contribute to scholarship within a professional context;
- independently and proactively formulate ideas and design, develop, implement and execute plans by which to evaluate these;
- demonstrate systematic and extensive knowledge of the subject and expertise in generic and subject/professional skills;
- critically and creatively evaluate current issues, research and advanced scholarship in the relevant field of education;
- demonstrate a comprehensive understanding of techniques applicable to own research and engage with the relevant ethical or legal issues in the specialist educational field;
- present and defend research outcomes which extend the forefront of the discipline and/or relevant area of professional practice;
- take a proactive and self reflective role in working and develop professional relationships with others where appropriate;

DOCTOR OF EDUCATION

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

- 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 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. During the course of the programme there will also be assessment of achievement by a variety of methods in accordance with the learning outcomes of any taught modules specified for the programme. Final 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.

Integrated degree of PhD and MSc (Advanced Particulate Materials)¹

Programme of study for the Integrated degree of PhD and MSc (Advanced Particulate Materials)²

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)

¹ Entry to this programme has been suspended from 2014 -2015

² To be read in conjunction with the general Programme of Study for the Integrated degrees of PhD

INTEGRATED DEGREE OF PhD AND MSc (ADVANCED PARTICULATE MATERIALS)

INTEGRATED DEGREES OF PhD AND MSc (ADVANCED PARTICULATE MATERIALS)

- 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)

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.

INTEGRATED DEGREE OF PhD AND MSc (ADVANCED PARTICULATE MATERIALS)

- 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.

Integrated degree of PhD and MSc (Bioenergy)

Programme of study for the integrated degree of PhD and MSc (Bioenergy)¹

Year One (a total of 135 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) from Term 3
- Compulsory training and skills module:
CAPE5950 Transferable Skills and Professional Development (15 credits)
- Compulsory specialised subject modules as follows:
CAPE5970 Interdisciplinary Research Project (90 credits)
CAPE5440 Advanced Renewable Technologies (15 credits)
- Candidates will be required to study 15 credits from the following optional modules:
CAPE5990 Commercial Software (15 credits)
CIVE5392 Bioenergy from Wastes (15 credits)
CAPE5410 Energy Management and Conservation (15 credits)
CAPE5450 Energy Systems: Analysis and Efficiency (15 credits)
SOEE5550 Climate Change: Impacts and Adaptation (15 credits)

Students will be required to pass at least 120 taught credits in order to progress on the programme.

Year Two (a total of 45 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)
- Compulsory training and skills module:
CAPE5960 Transferable Skills and Professional Development (30 credits)
- Candidates will be required to study 15 credits from the following optional modules:
CAPE5990 Commercial Software (15 credits)
CIVE5392 Bioenergy from Wastes (15 credits)
CAPE5410 Energy Management and Conservation (15 credits)
CAPE5450 Energy Systems: Analysis and Efficiency (15 credits)
SOEE5550 Climate Change: Impacts and Adaptation (15 credits)

Students will be required to pass at least 150 taught credits and successfully Transfer to full PhD status in order to progress on the programme.

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 Integrated degree of PhD and MSc (Bioenergy)

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 in the field of bioenergy and produce scholarship of publishable quality which satisfies peer review;
- independently and proactively formulate ideas and hypotheses and to design, develop, implement and execute plans by which to evaluate these;
- demonstrate systematic and extensive knowledge across the four interdisciplinary themes of Feedstocks, processing and safety; Conversion; Products, Utilisation and Impact; Sustainability and Whole Systems;
- critically and creatively evaluate current issues, research and advanced scholarship in the above themes;
- exhibit generic and subject specific skills and techniques necessary for effective working in an interdisciplinary research-intensive environment, in liaison with academic and industrial partners, ensuring widening participation through engagement in public events, enterprise and knowledge transfer;
- 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 take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- undertake an individual research project in the area of Bioenergy, incorporating research in a specific area, but also including reference to the wider context of energy policy, legislation and environmental impact; to present and defend research outcomes which extend the forefront of the bioenergy discipline and professional practice;
- 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 professional practice or industry;
- evaluate their own achievement and that of others;
- exhibit self-direction and effective decision making in complex and unpredictable situations;
- demonstrate independent learning and the ability to work in a way which ensures continuing professional development.

2. Transferable (Key) Skills

- 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;

INTEGRATED PHD OF PHD AND MSC (BIOENERGY)

- 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;
- work effectively in an external environment e.g. industry, overseas laboratory.

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:

- 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 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 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.
- Presenting work in a variety of ways e.g. oral presentation to academic groups, lay public; examination, viva, coursework.

Integrated degree of PhD and MSc (Complex Particulate Products and Processes)

Programme of study for the integrated degree of PhD and MSc (Complex Particulate Products and Processes)¹

Year One (a total of 150 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) from term 3.
- Compulsory training and skills module:
CAPE5940M Personal Development and Research Skills, Semester 3 (60 credits)
- Compulsory specialised subject modules:
CAPE5300M Chemical Products Design and Development, Semester 3 (15 credits)
CAPE5900M Creativity and Team Work, Semester 1 (15 credits)
CAPE5910M Chemical Product Design Project, Semester 2 (30 credits)
LUBS5247M Managing for Innovation, Semester 2 (15 credits)
~~CAPE5920M Particle Product Processing Project, Semester 3 (15 credits)~~
- **Optional specialised subject modules (30 credits) selected from the following list:**
CAPE5610M Particle Processor Engineering, Semester 2 (15 credits)
~~**CAPE5705M Phase Transformations and Microstructural Control, Semester 2 (15 credits)**~~
CAPE5340M Advances in Chemical Engineering, Semester 2 (15 credits)

Alongside these taught modules, candidates are required to study 30 credit of PhD research

Year Two (a total of 30 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)
- Compulsory specialised subject modules:
CAPE5920M Particle Product Processing Project, Semester 3 (15 credits)
~~CAPE5935M Particle Product Design Project (30 credits) Semester 1 (15 credits)~~

Alongside these taught modules, candidates are required to study 150 credit of PhD research

Students who have been successful in the assessed modules and research components during Year 2 of study, will undergo a transfer assessment process at the end of Year Two.

Students will be required to pass at least 150 taught credits and successfully Transfer to full PhD status in order to progress on the programme.

Years Three and Four

- The candidate will continue research under the direction of their supervisor(s)

¹ To be read in conjunction with the general Programme of Study for the Integrated degrees of PhD and Master (MA, LL.M or MSc)

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme Integrated degree of PhD and MSc (Complex Particulate Products and Processes)

1. Learning Outcomes

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

- to demonstrate in-depth, but also broad-based and interdisciplinary, specialist knowledge and mastery of techniques relevant to Fluid Dynamics (selected from the CDT themes: Reacting Flows, Mixing and Safety; Environmental Flows; Geophysical Flows; Microflows and Heat Transfer; Particulate Flows, Sediments and Rheology; and cross-cutting tools and techniques): to demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of the discipline;
- to exhibit mastery in the exercise of generic and subject-specific intellectual abilities including fundamental theory, mathematical modelling, numerical methods and experimental techniques;
- to demonstrate a comprehensive understanding of techniques applicable to their own research or advanced scholarship;
- to take a proactive and self-reflective role in working and to develop professional relationships with others;
- proactively to formulate ideas and hypotheses and to develop, implement and execute plans by which to evaluate these;
- critically and creatively to evaluate current issues, research and advanced scholarship in the discipline.
- Undertake a team research project and be able to plan, research, execute and analyse the results from an appropriate programme of work.

2. Transferable (Key) Skills

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;
- work effectively in an external environment e.g. industry, overseas laboratory.

3. Learning Context

INTEGRATED DEGREE OF PHD AND MSC (COMPLEX PARTICULATE PRODUCTS AND PROCESSES)

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:

- 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 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;
- Presenting work in a variety of ways e.g. oral presentation to academic groups, lay public; examination, viva, coursework;
- The written style and overall presentation of the thesis.

Integrated degree of PhD and MSc (Complex Particulate Products and Processes)

Programme of study for the integrated degree of PhD and MSc (Complex Particulate Products and Processes)¹

Year One (a total of 150 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) from term 3.
- Compulsory training and skills module:
CAPE5940M Personal Development and Research Skills, Semester 3 (60 credits)
- Compulsory specialised subject modules:
CAPE5300M Chemical Products Design and Development, Semester 3 (15 credits)
CAPE5900M Creativity and Team Work, Semester 1 (15 credits)
CAPE5910M Chemical Product Design Project, Semester 3 (30 credits)
CAPE5921M Particle Product Processing Project, Semester 3 (30 credits)

Alongside these taught modules, candidates are required to study 30 credit of PhD research

Year Two (a total of 30 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)
- Compulsory specialised subject modules:
CAPE5930M Particle Product Design Project, Semester 1 (15 credits)
LUBS5247M Managing for Innovation, Semester 2 (15 credits)

Alongside these taught modules, candidates are required to study 150 credit of PhD research

Students who have been successful in the assessed modules and research components during Year 2 of study, will undergo a transfer assessment process at the end of Year Two.

Students will be required to pass at least 150 taught credits and successfully Transfer to full PhD status in order to progress on the programme.

Years Three and Four

- The candidate will continue research under the direction of their supervisor(s)

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme Integrated degree of PhD and MSc (Complex Particulate Products and Processes)

1. Learning Outcomes

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

¹ To be read in conjunction with the general Programme of Study for the Integrated degrees of PhD and Master (MA, LL.M or MSc)

INTEGRATED DEGREE OF PHD AND MSC (COMPLEX PARTICULATE PRODUCTS AND PROCESSES)

- to demonstrate in-depth, but also broad-based and interdisciplinary, specialist knowledge and mastery of techniques relevant to Fluid Dynamics (selected from the CDT themes: Reacting Flows, Mixing and Safety; Environmental Flows; Geophysical Flows; Microflows and Heat Transfer; Particulate Flows, Sediments and Rheology; and cross-cutting tools and techniques): to demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of the discipline;
- to exhibit mastery in the exercise of generic and subject-specific intellectual abilities including fundamental theory, mathematical modelling, numerical methods and experimental techniques;
- to demonstrate a comprehensive understanding of techniques applicable to their own research or advanced scholarship;
- to take a proactive and self-reflective role in working and to develop professional relationships with others;
- proactively to formulate ideas and hypotheses and to develop, implement and execute plans by which to evaluate these;
- critically and creatively to evaluate current issues, research and advanced scholarship in the discipline.
- Undertake a team research project and be able to plan, research, execute and analyse the results from an appropriate programme of work.

2. Transferable (Key) Skills

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;
- work effectively in an external environment e.g. industry, overseas laboratory.

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:

- high level interests and informed opinions;
- develop to a high level their design and management of their learning activities ;

INTEGRATED DEGREE OF PHD AND MSC (COMPLEX PARTICULATE PRODUCTS AND PROCESSES)

- 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 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;
- Presenting work in a variety of ways e.g. oral presentation to academic groups, lay public; examination, viva, coursework;
- The written style and overall presentation of the thesis.

Integrated degree of PhD and MSc (Chemical Process Research and Development)¹

Programme of study for the Integrated degree of PhD and MSc (Chemical Process Research and Development)²

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) (including literature review and PhD proposal).
- Compulsory training and skills module: CHEM5476M Laboratory Rotation Projects (60 credits). Candidates undertake a number of non-credit bearing generic skills courses from a range provided by central training providers (SDDU, ISS, Library), Faculty or outside bodies, in accordance with current guidelines for the School of Chemistry.
- Compulsory³ specialised subject module as follows:
CHEM5226M Case studies in Fine Chemical and Pharmaceutical Synthesis (15 credits)
- Students to choose 45 credits from the following optional modules, chosen on the basis of the background of the student i.e. whether chemistry or engineering:

CHEM5116M Advanced Organic Synthesis for Fine Chemical and Pharmaceutical Synthesis (15 credits)

CHEM5126M Organic Synthesis for Pharmaceutical and Fine Chemical Synthesis (15 credits)

PEME5300M Process Chemistry and Chemical Technology (15 credits) PEME5315M Batch Process Engineering (15 credits)

PEME5370M Pharmaceutical Analytical Techniques (15 credits)

PEME5380M Plant Design Project (15 credits)

In the unlikely event that a student does not have the appropriate background in chemistry or engineering to take these modules, then alternatives at a comparable level must be taken and agreed in advance with the CDT management group.

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.
- Compulsory specialised subject modules, 60 credits selected from the following list chosen for their relevance to the PhD:

CHEM5216M Physical Organic Process Chemistry (15 credits) CHEM5510M Advanced programmed learning in organic chemistry (10 credits)

CHEM5611M Advanced Topics in Chemical Biology (10 credits)

CHEM5612M Advanced Topics in Synthetic Chemistry (10 credits)

¹ Entry to this programme has been suspended for 2014 -2015

² See also the general Programme of Study for the Integrated degrees of PhD and Master (MA, LL.M or MSc) which specifies the overall arrangements for the University Integrated PhD and Masters programme.

³ If already taken as part of first degree, an alternative module at comparable level (agreed in advance with the CDT management group) must be studied.

INTEGRATED DEGREE OF PHD AND MSc (CHEMICAL PROCESS RESEARCH AND DEVELOPMENT)

PEME5310M Multi-Scale Modeling (15 credits)
PEME5314M Chemical Reaction Processes (15 credits)
PEME5315M Batch Process Engineering (15 credits)
PEME5340M Advances in Chemical Engineering (15 credits)
PEME5360M Pharmaceutical Product Formulation (15 credits)
PEME5370M Pharmaceutical Analytical Techniques (15 credits)

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 title of modular courses and the optional modular courses that are available.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme PhD and MSc (Chemical Process Research and Development)

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 in the field of Chemical Process Research and Development and produce scholarship of publishable quality which satisfies peer review;
- to present and defend research outcomes which extend the forefront of Chemical Process Research and Development and professional practice;
- to demonstrate systematic and extensive knowledge across the interdisciplinary themes of Chemistry and Chemical Engineering
- to take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- to independently and proactively formulate ideas and hypotheses and to design, develop,
- implement and execute plans by which to evaluate these;
- to critically and creatively evaluate current issues, research and advanced scholarship in the above themes;
- to exhibit generic and subject specific skills and techniques necessary for effective working in an interdisciplinary research-intensive environment, 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 Chemical Process Research and Development, incorporating research in a specific area, but also including reference to the wider context of Chemical Process Research and Development policy, legislation and environmental impact;

INTEGRATED DEGREE OF PHD AND MSC (CHEMICAL PROCESS RESEARCH AND DEVELOPMENT)

- 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 professional practice or 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

- 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 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;

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- 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
- written style and overall presentation of the thesis.

Integrated degree of PhD and MSc (Exploration Geophysics)

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)

¹ To be read in conjunction with the general Programme of Study for the Integrated degrees of PhD and Master (MA, LLM or MSc)

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- 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.

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

- 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;

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- 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;

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- 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.

Integrated degree of PhD and MSc (Fluid Dynamics)

Programme of study for the integrated degree of PhD and MSc (Fluid Dynamics)¹

Year One (a total of 135 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) from term 3.
- Compulsory training and skills module:
COMP5990 Professional Development & Skills 1 (15 credits)
COMP5991 Professional Development & Skills 2 (15 credits)
- Compulsory specialised subject modules:
CCFD5170 Commercial Software (15 credits)
MATH5453 Foundations of Fluid Dynamics (30 credits)
MECH5870 Multidisciplinary Team Project (60 credits)

At the end of the first year the Fluid Dynamics CDT Management Committee will assess the performance of the student on the basis of achievement in the module assessment, required training and other activity. Students will be required to pass at least 120 taught credits in order to progress on the programme.

Year Two (a total of 45 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)
- Compulsory training and skills module:
COMP5992 Professional Development & Skills 3 (15 credits)
- Candidates are required to take two (30 credits) of the following options:
COMP5930 Scientific Computation (15 credits)
MECH5265 Combustion in Engines (15 credits)
PEME5310 Multi-Scale Modelling (15 credits)
SOEE5835 Advanced Atmosphere and Ocean Dynamics (15 credits)

Other optional modules will be approved. Candidates are advised to discuss this with their supervisors.

Students who have been successful in the assessed modules and research components during Year 2 of study, will undergo a transfer assessment process at the end of year 2.

Students will be required to pass at least 150 taught credits and successfully Transfer to full PhD status in order to progress on the programme.

Years Three and Four

- The candidate will continue research under the direction of their supervisor(s)

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 Integrated degree of PhD and MSc (Fluid Dynamics)

1. Learning Outcomes

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

- to demonstrate in-depth, but also broad-based and interdisciplinary, specialist knowledge and mastery of techniques relevant to Fluid Dynamics (selected from the CDT themes: Reacting Flows, Mixing and Safety; Environmental Flows; Geophysical Flows; Microflows and Heat Transfer; Particulate Flows, Sediments and Rheology; and cross-cutting tools and techniques): to demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of the discipline;
- to exhibit mastery in the exercise of generic and subject-specific intellectual abilities including fundamental theory, mathematical modelling, numerical methods and experimental techniques;
- to demonstrate a comprehensive understanding of techniques applicable to their own research or advanced scholarship;
- to take a proactive and self-reflective role in working and to develop professional relationships with others;
- proactively to formulate ideas and hypotheses and to develop, implement and execute plans by which to evaluate these;
- critically and creatively to evaluate current issues, research and advanced scholarship in the discipline.
- Undertake a team research project and be able to plan, research, execute and analyse the results from an appropriate programme of work.

2. Transferable (Key) Skills

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;
- work effectively in an external environment e.g. industry, overseas laboratory.

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

INTEGRATED PHD OF PHD AND MSC (FLUID DYNAMICS)

provide breadth and/or depth of study and opportunities for drawing upon appropriate resources and techniques. Opportunities will be provided for students to develop:

- 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 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;
- Presenting work in a variety of ways e.g. oral presentation to academic groups, lay public; examination, viva, coursework;
- The written style and overall presentation of the thesis.

Integrated degree of PhD and MSc (Low Carbon Technologies)¹

Programme of study for the Integrated degree of PhD and MSc (Low Carbon Technologies)²

Year One (a total of 135 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) from term 3.
- Compulsory training and skills module:
PEME5480 Transferable Skills & Professional Development 1 (15 credits). Candidates undertake a number of non-credit bearing generic skills courses from a range provided by central training providers (SDDU, ISS, Library), the Faculty of Engineering or outside bodies.
- Compulsory specialised subject modules as follows:

PEME5400 Interdisciplinary Research Projects (60 credits)
PEME5431 Sustainable Energy Processes (30 credits)
PEME5445 Climate Change Control Technology (15 credits)
SOEE5561 Climate Change Mitigation (15 credits)

Year Two (a total of 45 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).
- Compulsory training and skills module PEME5485 Transferable Skills & Professional Development 2 (15 credits) (including industrial/research organisation placement) with further non-credit bearing training courses being taken as appropriate.
- Optional specialised subject modules (30 credits) selected from the following list:

PEME5420 Advanced Energy Systems (15 credits)
SOEE5051 Business, Environment & Sustainability (15 credits)
CCFD5170 Commercial Software (15 credits)
SOEE5540M Climate Change; Physical Science Basis (15 credits)
SOEE5281M Introduction to Sustainability (15 credits)
PIED5596M World Politics and the Environment (15 credits)

Any other M level module relevant to the research that is approved by the Programme Director and Supervisor.

Candidates will be permitted to transfer to full PhD status provided they satisfy the transfer

¹ Entry to this programme has been suspended for 2014 -2015

² See also the general Programme of Study for the Integrated degrees of PhD and Master (MA, LLM or MSc) which specifies the overall arrangements for the University Integrated PhD and Masters programme.

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panel and they also achieve an average of 50% 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

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 title of modular courses and the optional modular courses that are available.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme PhD and MSc (Low Carbon Technologies)

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 in the field of low carbon technologies and produce scholarship of publishable quality which satisfies peer review;
- independently and proactively formulate ideas and hypotheses and to design, develop, implement and execute plans by which to evaluate these;
- demonstrate systematic and extensive knowledge across the four interdisciplinary themes of Transport and Energy, Carbon Storage, Low Carbon Enabling Technologies and Climate Change & Energy Systems Research;
- critically and creatively evaluate current issues, research and advanced scholarship in the above themes;
- exhibit generic and subject specific skills and techniques necessary for effective working in an interdisciplinary research-intensive environment, in liaison with academic and industrial partners, ensuring widening participation through engagement in public events, enterprise and knowledge transfer;
- 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 take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- undertake an individual research project in the area of Low Carbon Technologies, incorporating research in a specific area, but also including reference to the wider context of low carbon technologies policy, legislation and environmental impact; to present and defend research outcomes which extend the forefront of the low carbon technologies discipline and professional practice;
- 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 professional practice or industry;
- evaluate their own achievement and that of others;
- exhibit self-direction and effective decision making in complex and unpredictable situations;

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

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

- 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.

INTEGRATED DEGREE OF PHD AND MSc (LOW CARBON TECHNOLOGIES)

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment for MSc (Low Carbon Technologies)

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 MSc programme students should have shown evidence of being able to:

- demonstrate in-depth specialist knowledge and mastery of techniques and information relevant to low carbon technologies in the four interdisciplinary themes of: Transport and Energy, Carbon Storage, Low Carbon Enabling Technologies and Climate Change & Energy Systems Research; demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of these disciplines;
- exhibit a wide breadth of knowledge of generic and specific industry related skills such as the use of modelling software, data collection, aspects of legislation;
- demonstrate a comprehensive understanding of techniques applicable to their own research or advanced scholarship in the fields of low carbon technologies;
- take a proactive and self-reflective role in working and developing professional relationships with others;
- critically and creatively evaluate current issues, research and advanced scholarship in the field of low carbon technologies;
- undertake an individual and team research project and be able to plan, research, execute and analyse the results from an appropriate programme of work.

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

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- 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.

Integrated degree of PhD and LLM (Legal Studies)¹

Programme of Study for Integrated degree of PhD and LLM (Legal Studies)²

A minimum of 180 credits in modular courses will be taken in Years One and Two:

Year One (a total of 90 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 modules (30 credits): Research Methods (LAW 5660M) and Generic Training and Skills I (LAW 5001M)
- Compulsory specialised subject modules (60 credits) which are route specific. Candidates will study one of the following routes:

Cyberlaw

Advanced Cyberlaw (LAW5231M, 30 credits)

E-Commerce Law and Policy (LAW5236M, 15 credits)

And candidates are required to choose 15 credits from the list of optional modules

Criminal Law

Advanced Criminal Law (LAW5740M, 30 credits)

Criminal Justice Processes (LAW5010M, 30 credits)

European Legal Studies

European Business Law (LAW5320M, 15 credits)

European Human Rights (LAW5330M, 15 credits)

Introduction to the Constitutional and Institutional Structures of the EU (LAW5480M, 15 credits)

And candidates are required to choose 15 credits from the list of optional modules

European and International Business Law

European Business Law (LAW5320M, 15 credits)

Business and Institutional Transactions Law (LAW5595M, 15 credits)

Insolvency Law (LAW5460M, 15 credits)

And candidates are required to choose 15 credits from the list of optional modules

International Business Law

Business and Institutional Transactions Law (LAW5595M, 15 credits)

Insolvency Law (LAW5460M, 15 credits)

And candidates are required to choose 15 credits from the list of optional modules

Insolvency Law

Insolvency Law (LAW5460M, 15 credits)

Advanced Insolvency Law (LAW5465M, 15 credits)

¹ Entry to this programme has been suspended from 2013-14.

² See also the general Programme of Study for the Integrated degrees of PhD and Master (MA, LLM or MSc) which specifies the overall arrangements for the University Integrated PhD and Masters programme.

INTEGRATED DEGREE OF PHD AND LLM (LEGAL STUDIES)

International Corporate Rescue (LAW5567M, 15 credits)

And candidates are required to choose 15 credits from the list of optional modules

International Law

International Law (LAW5870M, 30 credits)

International Human Rights (LAW5860M, 15 credits)

And candidates are required to choose 15 credits from the list of optional modules

International Trade Law

World Trade Organisation Law (LAW5655M, 15 credits)

International Economic Law (LAW5830M, 15 credits)

International Law of Foreign Investment (LAW5465M, 15 credits)

And candidates are required to choose 15 credits from the list of optional modules

Human Rights

The Protection of Rights in National and International Law (LAW5900M, 30 credits)

And candidates are required to choose 30 credits from the list of optional modules.

This list of optional modules can be viewed at

<http://webprod1.leeds.ac.uk/banner/modulesearch.asp?L=TP&Y=201112&F=M&E=LAW&N=all&Elect=no&S=&A=any>

Year Two (a total of 90 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)
- Compulsory training and skills modules (15 credits): Generic Training and Skills II (LAW 5002M)
- Compulsory specialist skills modules (75 credits): A 60 credit Mastership Report Dissertation (LAW 5780) and 15 credit Negotiated Study (LAW 5101M)

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, including SDDU: Thesis presentation (in Year 3) and SDDU: The final stages of your research degree (Year 4)

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

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme PhD and LLM (Legal Studies)

1. Learning Outcomes

Knowledge & Understanding

- Demonstrate a comprehensive understanding of techniques and methodologies relevant to the discipline expressed through the presentation and defence of research outcomes which can potentially extend the forefront of academic research in Law and/or relevant area of professional practice;

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- Demonstrate a systematic and extensive knowledge informed by the forefront of the discipline
- analyse and engage with the implications of ethical issues to inform interpretation of own legal research

Academic/ Intellectual Skills

- critically and creatively evaluate current issues, research and advanced scholarship in the chosen specialist domain
- independently and proactively formulate ideas and hypotheses and design, develop, implement and execute plans by which to evaluate these

Other Skills/Attributes

- communicate clearly and effectively to a specialist audience
- to take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate

Goals

- an individual, high quality academic research proposal (in Law) that contributes to the development and explanation of new knowledge through original research of publishable quality which satisfies peer review (Year 1)
- complete chapter, table of contents, abstract and bibliography of sufficient quality for transfer to PhD student status (year 2)

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

- 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 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.

INTEGRATED DEGREE OF PHD AND LLM (LEGAL STUDIES)

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 LLM (Legal Studies)

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

- formulation of appropriate research questions and adoption of critical and analytical approach in legal research and writing
- formation of effective relationships with one's supervisor and others in the academic community
- enhanced understanding of the nature of academic research in law, including in depth knowledge of relevant legal research and current issues
- enhanced understanding of the various ways in which academic research is carried out: qualitative and quantitative research, comparative research, doctrinal approaches, and theoretical research, and the advantages and disadvantages of each of these
- ability to assess the ethical, moral and politics aspects of legal research and the implications of these for one's own research
- ability to engage critically with the products of legal research, in the form of scholarly books and academic articles acquisition of in depth knowledge of relevant legal research and current issues
- ability to engage critically with the products of legal research, in the form of scholarly books and academic articles acquisition of in depth knowledge of relevant legal research and current issues

INTEGRATED DEGREE OF PHD AND LLM (LEGAL STUDIES)

2. Transferable (key) skills

LLM (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 LLM (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 LLM (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

Integrated degrees of PhD and Master (MA, LLM or MSc)

Programme of Study for Integrated degrees of PhD and Master (MA, LLM or MSc)

See the Programme of Study entry for the individual integrated PhD and Masters programmes in subsequent sections for further information.

1. The Integrated degrees of PhD and Master, which provide for the integrated award of both degrees, are undertaken by a combination of taught specialist modules, training and skills courses and research study. This integrated approach offers students a learning environment in which to broaden and deepen subject knowledge while providing the opportunity for inter-disciplinary study to extend their expertise in new directions.

2. The University currently offers 15 programmes leading to the Integrated degrees of PhD and Master:

- Integrated degree of PhD and LLM (Legal Studies)¹
- Integrated degree of PhD and MSc in Oral Sciences (Clinical)²
- Integrated degree of PhD and MSc in Oral Science (Paediatric Dentistry)
- Integrated degree of PhD and MSc (Low Carbon Technologies)³
- Integrated degree of PhD and MSc (Nuclear Fuel Cycle)
- Integrated degree of PhD and MSc (Chemical Process Research and Development)⁴
- Integrated degree of PhD and MSc (Medical and Biological Engineering)⁵
- Integrated degree of PhD and MSc (Molecular-scale Engineering)⁶
- Integrated degree of PhD and MSc (Advanced Particulate Materials)⁷
- Integrated degree of PhD and MSc (Exploration Geophysics)
- Integrated degree of PhD and MSc (Bioenergy)
- Integrated degree of PhD and MSc (Fluid Dynamics)
- Integrated degree of PhD and MSc (Tissue Engineering and Regenerative Medicine – Innovation in Medical & Biological Engineering)
- Integrated degree of PhD and MSc (Structural Geology with Geophysics)
- Integrated degree of PhD and MSc (Complex Particulate Products and Processes)

3. Applicants for the degrees must normally possess the equivalent of a good honours degree (minimum 2:1 or equivalent) and appropriate English language qualifications to meet the University's entry requirements. There will be one entry point for the integrated degrees of PhD and Master that will be in September/October at the beginning of each session.

¹ Entry to this programme is suspended with effect from 2013-14

² Entry to this programme has been withdrawn to new applicants from 2012-13

³ Entry to this programme is suspended with effect from 2014-15

⁴ Entry to this programme is suspended with effect from 2014-15

⁵ Entry to this programme is suspended with effect from 2014-15

⁶ Entry to this programme is suspended with effect from 2015-16

⁷ Entry to this programme is suspended with effect from 2014-15

INTEGRATED DEGREES OF PhD AND MASTER (MA, LL.M, MSc)

Programme of Study, Progress and Monitoring

4.The integrated degrees of PhD and Master are normally 4 year full-time programmes of study.

5.Progress is formally reviewed at appropriate stages and, at least annually, candidates are required to undergo a thorough review process, emphasising the different stages in the progress, development and training. The arrangements for formal reports on progress by the supervisors are described in the University Code of Practice for Research Degree Candidatures. A training plan must be in place within one month of starting the research project.

6.The relevant committee has modified the arrangements for provisional registration for the integrated degrees of PhD and Master in accordance with article 5c of Ordinance X. Candidates are accepted for study to the registration category of Postgraduate Research. Upon completion of the first year, candidates are required to undergo a review of their academic progression, against the rules of the award as outlined in the relevant Programme of Study, to determine if transfer to Provisional PhD status is approved. If successful in transfer to Provisional PhD status, candidates will be required to undergo the formal, rigorous assessment procedure for transfer to full PhD status before the end of the second year of study. The decision to transfer to full PhD status will be based on the submission of the prescribed documentation for assessment and all students must undergo an oral examination by an Assessment Panel which must include at least one independent individual who has not been involved in the supervisory support of the candidate. The student will be interviewed by the Assessment Panel in the form of a viva voce examination.

Supervision

7.Supervisor(s) will be appointed for each student at the commencement of the candidature to guide the student through an appropriate pathway of optional courses and to assist with planning for the integration of all the elements of the programme.

8.In all years of study the supervisors will take responsibility for ensuring that appropriate skills and other training is undertaken and that the University's policy on Personal Development Planning is applied.

Examination and Assessment

9.The normal expectation is that candidates will successfully complete a number of modular courses before the commencement of Year 3 of study and submit their theses for examination by the end of Year 4, although an additional overtime period of up to 12 months will be available if necessary. Some candidates may leave the programme at an earlier stage and may be awarded an alternative qualification, subject to fulfilling the relevant requirements.

10.Candidates are required to submit a thesis (100,000 words maximum) for examination by no later than the end of the fifth year after entry upon the approved course of study and research.

INTEGRATED DEGREES OF PhD AND MASTER (MA, LL.M, MSc)

11. When the progress and quality of the candidate's research justify it, the relevant committee is empowered to reduce the required period of study provided that no candidate shall submit a thesis for examination before the completion of a total of three calendar years of study.

12. A University Examination Board for Taught programmes will confirm the award of the degree of Master (if the candidate has satisfied the regulations for the award of that degree under Ordinance XI (Taught Postgraduate Awards) under the relevant rules for award).

13. Following final examination of the thesis and after completion of the programme of study the examiners will be asked to select one of the following recommendations:

- (a) Pass for the PhD thesis.
- (b) Pass (subject to the correction of 'editorial and presentational corrections' or 'minor deficiencies' in the PhD thesis): these corrections must be made within four or twelve weeks respectively from the date of the oral examination. The internal examiner is responsible for ensuring that 'editorial and presentational corrections' or 'minor deficiencies' are corrected by the candidate. The degree will not be awarded until confirmation that the corrections have been completed is received.
- (c) Referral
- (d) Recommend award of MPhil⁸: for those candidates who fail to achieve the standard for the award of a PhD but who nevertheless satisfy the criteria for the award of the degree of MPhil.
- (e) Recommend award of MPhil⁸ (subject to the correction of 'editorial and presentational corrections' or 'minor deficiencies'): these corrections must be made within four or twelve weeks respectively from the date of the oral examination. The internal examiner is responsible for ensuring that 'editorial and presentational corrections' or 'minor deficiencies' are corrected by the candidate. The degree will not be awarded until confirmation that the corrections have been completed is received.
- (f) Referral for MPhil⁸
- (g) Fail: the candidate has no further opportunity for submission for the Integrated degrees of PhD and Master.

14. If the thesis is not considered to be of sufficiently high standard to recommend the award of the degree but there is evidence of the potential of a successful PhD or MPhil submission, then on the recommendation of the examiners either (a) the candidate will be granted permission to resubmit the work in a revised form for the degree of PhD within a period of eighteen months, on one occasion only and on payment of an additional fee, or (b) the

⁸ In such cases the degree of MPhil may not be awarded with distinction

INTEGRATED DEGREES OF PhD AND MASTER (MA, LL.M, MSc)

candidate will be granted permission to resubmit the work in a revised form for the degree of MPhil within a period of twelve months, on one occasion only and on payment of an additional fee.

15. Any candidate whose thesis has been referred for the degree of PhD may, subject to approval by the Head of their School, exercise the option of resubmitting a revised thesis for consideration for the award of the degree of Master of Philosophy.

16. The degree of PhD or MPhil may only be awarded on the submission of a thesis which satisfies the examiners, as detailed in Ordinance X and its associated regulations.

17. The recommendation of the examiners, for the PhD, and the overall recommendation for the Integrated degree of PhD and Master, is subject to confirmation by the Examinations Group of the Graduate Board which will consider the examiners' report normally at the next meeting.

18. Candidates for the Integrated degrees of PhD and Master are required to meet the learning outcomes for both the degrees of PhD and Master, which are described in the additional information for the specific Integrated degree programme.

Award of MPhil

19. Candidates for the Integrated Degrees of PhD and Master, who have fulfilled the requirements for the award of the degree of Master and then proceed to examination for the award of the degree of PhD, but who are not successful in the PhD examination are eligible for the award of the degree of MPhil if they satisfy the requirements for examination set out in Article 13 of Ordinance X. If successful in the examination for the MPhil degree such candidates will receive two separate degree awards, namely the relevant degree of Master (MA, LL.M or MSc) and the award of the degree of Master of Philosophy.

Course Failure

20. Candidates will normally be deemed to have failed the Programme of Study for the Integrated degree of PhD and Master and be asked to withdraw from the programme if:

- (i) they fail to meet the requirements for the award of the degree of Master (as set out in Ordinance XI (Taught Postgraduate Awards)); or
- (ii) unless otherwise stated in the programme of study entry for the specific subject area, they fail to Pass at least 180 taught credits with at least 50% in each course undertaken; or
- (iii) they fail to satisfy the Examination Board in Year 1 and the transfer panel in Year 2; or
- (iv) they fail to satisfy the examiners in the research thesis (there is no opportunity for resubmission where the examiners recommend that a research degree thesis be failed).

21. Candidates who do not achieve a satisfactory standard at the first attempt in examinations or assessments for modular courses must undertake any re-examination, as

INTEGRATED DEGREES OF PhD AND MASTER (MA, LLM, MSc)

set out in Regulation 18 of the Regulations for Ordinance X.

22. Candidates are required to pass to the required standard all compulsory courses and modules which form part of their prescribed programme of study.

Exit Paths

23. Candidates are eligible for the award of Postgraduate Certificate, Postgraduate Diploma and Mastership qualifications at certain exit points in the programme, provided that they have satisfied the relevant regulations for the award of these qualifications as set out in Ordinance XI (Taught Postgraduate Awards) and the Rules for award, if they either decide to leave or do not progress beyond the relevant stages.

- Postgraduate Certificate (60 taught credits)
- Postgraduate Diploma (120 taught credits unless otherwise stated)
- MA, LLM and MSc (Candidates must achieve an average of 50% 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, together with any further periods of practice, study and research as may be prescribed in the programme of study concerned).

Integrated degree of PhD and MSc (Medical and Biological Engineering)¹

Programme of study for the Integrated degree of PhD and MSc (Medical and Biological Engineering)²

Year One (a total of 115 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) either from term 1 or term 2.
- Compulsory training and skills modules:
MECH5005M Training and Professional Development Activities 1 (15 credits).

- Candidates undertake a number of non-credit bearing generic skills courses from a range provided by for example central training providers (SDDU, ISS, Library), the Faculty or outside bodies.

- Compulsory (100 credits) specialised subject modules as follows:

MECH5007M Systematic Review (15 credits)

MECH5008M Cross-Disciplinary Laboratory Placements (20 credits)

MECH5009M Research Project Proposals (5 credits)

MEDP5321M Research Methods (15 credits)

Specialised subject modules (45 credits³) will be chosen from an approved list of optional modules which are listed in the Student Course Handbook.

Year Two (a total of 65 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).
- Compulsory (30 credits) specialised subject modules as follows:
- MECH5003M Industrial Research Project (15 credits³)
- MECH5006M Training and Professional Development Activities 2 (15 credits)
- Further non-credit bearing training courses to be taken as appropriate.

Specialised subject modules (35 credits) will be chosen from an approved list of optional modules which are listed in the Student Course Handbook.

Candidates will be permitted to proceed to assessment for transfer to full PhD status if they achieve an average of 50% 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.

¹ Entry to this programme has been suspended for 2014 -2015

² See also the general Programme of Study for the Integrated degrees of PhD and Master (MA, LLM or MSc) which specifies the overall arrangements for the University Integrated PhD and Masters programme.

³ Other approved modules may be added to the list of optional modules from time to time

INTEGRATED DEGREE OF PHD AND MSC (MEDICAL AND BIOLOGICAL ENGINEERING)

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

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme PhD and MSc (Medical and Biological Engineering)

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 in the field of medical and biological engineering and produce scholarship of publishable quality which satisfies peer review;
- independently and proactively formulate ideas and hypotheses and to design, develop, implement and execute plans by which to evaluate these;
- demonstrate systematic and extensive knowledge across the three broad interdisciplinary themes of Joint replacements and cartilage substitution; Spinal biomechanics and interventions; and Tissue engineering;
- critically and creatively evaluate current issues, research and advanced scholarship in the above themes;
- 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.
- exhibit generic and subject specific skills and techniques necessary for effective working in an interdisciplinary research-intensive environment, in liaison with academic and industrial partners, ensuring widening participation through engagement in public events, enterprise and knowledge transfer;
- 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 take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- undertake an individual research project in the area of Medical and Biological Engineering, incorporating research in a specific area, but also including reference to the wider context of industrial and clinical development; to present and defend research outcomes which extend the forefront of the Medical and Biological Engineering discipline;
- 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 professional practice or industry;
- evaluate their own achievement and that of others;
- exhibit self-direction and effective decision making in complex and unpredictable situations;

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

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

- 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/clinical 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/clinical 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.

Integrated degree of PhD and MSc in Oral Sciences (Clinical)¹

Programme of study for Integrated degree of PhD and MSc in Oral Sciences (Clinical)²

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 modules (30 credits).
- Compulsory specialised subject modules (90 credits) from a wide range of masters' level modules in the specialist areas of:

Dental Public Health,
Oral and Maxillofacial Surgery,
Oral Sciences,
Craniofacial Biology,
Paediatric Dentistry and Restorative Dentistry,

A wide range of Masters' level modules area also available from the Faculty of Biological Sciences.

- Optional course on the essentials of Learning and Teaching (and assessment). These courses are intended to prepare those candidates who wish to enter an academic career in Higher Education.

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)
- Compulsory training and skills modules (30 credits)
- Compulsory specialised subject modules (30 credits), from those available for Year One (excluding those taken during Year One)

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 (e.g. Writing for Research Students in the Sciences, Thesis Presentation).

During the programme it is possible for candidates to attend optional courses on the essentials of Learning and Teaching (and assessment). These courses may assist those candidates who intend to enter an academic career in Higher Education.

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

¹ This programme has been withdrawn to new applicants from 2012-13. Please see Integrated degree of PhD and MSc in Oral Sciences (Paediatric Dentistry).

² See also the general Programme of Study for the Integrated degrees of PhD and Master (MA, LLM

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme Integrated degree of PhD and MSc in Oral Sciences (Clinical)

1 Learning Outcomes

To meet the Learning Outcomes through a combination of taught components, transferable skills training and research components the students will:

- interpret and communicate knowledge through research and scholarship of publishable quality that would satisfy peer review
- present and defend research outcomes which extend the forefront of the scientific discipline and/or area of clinical practice
- demonstrate a detailed knowledge of the subject area and expertise in generic and subject or professional skills
- be able to undertake decision-making in complex and unpredictable situations including, for clinical candidates, diagnosis and treatment planning (together with the limitations of treatment) and patient management
- be able to underpin clinical practice with theoretical knowledge (clinical candidates) and understand the relevance of their research and theoretic knowledge to clinical dentistry
- take a proactive and self-reflective role in working and develop professional relationships with others, particularly in relation to functioning within a multi-disciplinary team
- formulate ideas and hypotheses proactively and develop, implement and execute plans by which to evaluate these
- be able to articulate complex ideas and discuss them with peers and other professionals
- critically evaluate current issues, research and advanced scholarship
- understand relevant ethical and legal issues and be able to apply them in their research
- understand relevant health and safety issues
- demonstrate responsible working practice

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

- 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:

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- 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/clinical 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/clinical 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 (Oral Sciences)

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 shown evidence of being able:

- to demonstrate in-depth, specialist knowledge and mastery of techniques relevant to the discipline and/or to demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of the discipline;
- to exhibit mastery in the exercise of generic and subject-specific intellectual abilities;
- to demonstrate a comprehensive understanding of techniques applicable to their own research or advanced scholarship;
- to take a proactive and self-reflective role in working and to develop professional relationships with others;
- proactively to formulate ideas and hypotheses and to develop, implement and execute plans by which to evaluate these;

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- critically and creatively to evaluate current issues, research and advanced scholarship in the discipline.
- to understand relevant ethical and legal issues
- to understand relevant health and safety issues
- to demonstrate responsible working practice

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.

Integrated degree of PhD and MSc (Molecular-scale Engineering)

Programme of study for the Integrated degree of PhD and MSc (Molecular-scale Engineering)¹

Year One (a total of 150 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) from term 3.
- Compulsory training and skills module:
ELEC5290M Cross-disciplinary research placement (30 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:
ELEC5225M Molecular-Scale Engineering (15 credits)
ELEC5255M Nanofabrication and Characterisation (15 credits)
CMNS5100M Generic Methodologies for Nanotechnology (15 credits)
JUSH6730 Bionanomaterials (15 credits)
JUSH6001 Translational Molecular Biology (15 credits)
JUSH6100 Preliminary PhD Project (45 credits)

Year Two (a total of 30 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 modules:
30 credits selected from the following list chosen for relevance to PhD:
ELEC5500M Micro- and Nano-Electromechanical Systems (15 credits)
ELEC5650M Medical Electronics and E-health (15 credits)
JUSH6750 Biophotonics and Bioimaging (15 credits)
JUSH6108 Biopolymers and Biomaterials (15 credits)

Candidates will be permitted to proceed to assessment for transfer to full PhD status if they achieve an average of 50% 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.

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).

¹ See also the general Programme of Study for the Integrated degrees of PhD and Master (MA, LLM or MSc) which specifies the overall arrangements for the University Integrated PhD and Masters programme.

INTEGRATED DEGREE OF PHD AND MSc (MOLECULAR-SCALE ENGINEERING)

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 (Molecular-scale Engineering)

1. Learning Outcomes

On completion of the Integrated PhD and MSc (Molecular-Scale Engineering) as a whole, students should have shown evidence of being able:

- discover, interpret and communicate new knowledge through original research in the field of molecular-scale engineering and produce work of publishable quality which satisfies peer review;
- to present and defend research outcomes which extend the forefront of molecular-scale engineering discipline and professional practice;
- to independently and proactively formulate ideas and hypotheses and to design, develop,
- implement and execute plans by which to evaluate these;
- demonstrate systematic and extensive knowledge of a range of topics in the area of molecular-scale engineering;
- 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 for effective working in an interdisciplinary research-intensive environment, 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 take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- to undertake an individual research project in the area of molecular-scale engineering;
- 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;
- evaluate their own achievement and that of others;
- exhibit self-direction and effective decision making in complex and unpredictable situations;
- 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.

INTEGRATED DEGREE OF PHD AND MSC (MOLECULAR-SCALE ENGINEERING)

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

- 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 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 (Molecular-scale Engineering)

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 MSc programme students should have shown evidence of being able:

- demonstrate in-depth specialist knowledge and understanding of techniques relevant to molecular-scale engineering, informed by knowledge at the forefront of the discipline;
- demonstrate and use a high level of analytical problem solving skills and competencies;
- use their knowledge and understanding of the underpinning engineering and scientific principles within the context of molecular-scale technology;
- use their analytical skills to solve non-routine molecular-scale engineering problems;
- demonstrate an appreciation of the context in which molecular-scale engineering is practised and managed, particularly an awareness of the management of quality and health & safety systems and environmental and sustainability issues;
- apply their skills in molecular-scale engineering to real world science and engineering problems;
- undertake project work independently and be able to plan, research, execute and analyse the results from an appropriate programme of work.

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.

INTEGRATED DEGREE OF PHD AND MSC (MOLECULAR-SCALE ENGINEERING)

Students will be expected to progress to fully autonomous study and work.

4. Assessment

Masters (Taught)

- 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.

Integrated degree of PhD and MSc (Molecular-scale Engineering)¹

Programme of study for the Integrated degree of PhD and MSc (Molecular-scale Engineering)²

Year One (a total of 150 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) from term 3.
- Compulsory training and skills module:
ELEC5290M Cross-disciplinary research placement (30 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:
ELEC5225M Molecular-Scale Engineering (15 credits)
ELEC5255M Nanofabrication and Characterisation (15 credits)
CMNS5100M Generic Methodologies for Nanotechnology (15 credits)
JUSH6730 Bionanomaterials (15 credits)
JUSH6001 Translational Molecular Biology (15 credits)
JUSH6100 Preliminary PhD Project (45 credits)

Year Two (a total of 30 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 modules:
30 credits selected from the following list chosen for relevance to PhD: ELEC5500M Micro- and Nano-Electromechanical Systems (15 credits) ELEC5650M Medical Electronics and E-health (15 credits)
JUSH6750 Biophotonics and Bioimaging (15 credits)
JUSH6108 Biopolymers and Biomaterials (15 credits)

Candidates will be permitted to proceed to assessment for transfer to full PhD status if they achieve an average of 50% 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.

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.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme PhD and MSc (Molecular-scale Engineering)

¹ Entry to this programme is suspended with effect from 2015-16

² See also the general Programme of Study for the Integrated degrees of PhD and Master (MA, LLM or MSc) which specifies the overall arrangements for the University Integrated PhD and Masters programme.

1. Learning Outcomes

On completion of the Integrated PhD and MSc (Molecular-Scale Engineering) as a whole, students should have shown evidence of being able:

- discover, interpret and communicate new knowledge through original research in the field of molecular-scale engineering and produce work of publishable quality which satisfies peer review;
- to present and defend research outcomes which extend the forefront of molecular-scale engineering discipline and professional practice;
- to independently and proactively formulate ideas and hypotheses and to design, develop,
- implement and execute plans by which to evaluate these;
- demonstrate systematic and extensive knowledge of a range of topics in the area of molecular-scale engineering;
- 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 for effective working in an interdisciplinary research-intensive environment, 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 take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- to undertake an individual research project in the area of molecular-scale engineering;
- 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;
- evaluate their own achievement and that of others;
- exhibit self-direction and effective decision making in complex and unpredictable situations;
- 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.

INTEGRATED DEGREE OF PHD AND MSC (MOLECULAR-SCALE ENGINEERING)

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

- 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 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.

INTEGRATED DEGREE OF PHD AND MSC (MOLECULAR-SCALE ENGINEERING)

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment for MSc (Molecular-scale Engineering)

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 MSc programme students should have shown evidence of being able:

- demonstrate in-depth specialist knowledge and understanding of techniques relevant to molecular-scale engineering, informed by knowledge at the forefront of the discipline;
- demonstrate and use a high level of analytical problem solving skills and competencies;
- use their knowledge and understanding of the underpinning engineering and scientific principles within the context of molecular-scale technology;
- use their analytical skills to solve non-routine molecular-scale engineering problems;
- demonstrate an appreciation of the context in which molecular-scale engineering is practised and managed, particularly an awareness of the management of quality and health & safety systems and environmental and sustainability issues;
- apply their skills in molecular-scale engineering to real world science and engineering problems;
- undertake project work independently and be able to plan, research, execute and analyse the results from an appropriate programme of work.

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.

INTEGRATED DEGREE OF PHD AND MSC (MOLECULAR-SCALE ENGINEERING)

Students will be expected to progress to fully autonomous study and work.

4. Assessment

Masters (Taught)

- 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.

Integrated degree of PhD and MSc (Nuclear Fuel Cycle)¹

Programme of study for the Integrated degree of PhD and MSc (Nuclear Fuel Cycle)²

Year One (a total of ~~120~~ **90** credits in taught modular courses (including 60 credit MSc Research Project) will be taken as well as commencement of the PhD research project)
Compulsory training and skills module:

- Compulsory training and skills module:

~~PEME5480M~~ **CAPE5950M** Transferable Skills & Professional Development 1 (15 credits)
(Semester 3)

- Compulsory specialised subject modules as follows:

~~PEME5361M~~ Nuclear Fundamentals (15 credits)

~~PEME5385M~~ Nuclear Reactor Engineering (30 credits)

~~PEME5000~~ **CAPE5000M** Research Project (MSc) (60 credits) (Semester 3)

~~PEME5371M~~ **CAPE5331M Nuclear Operations (15 credits) (Semester 3) MOVED FROM YEAR 2**

Candidates also undertake a number of non-credit bearing generic skills courses from a range provided by central training providers (SDDU, ISS, Library etc), the Faculty or outside bodies.

Year Two (a total of ~~60~~ **75** 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 module:

~~PEME5485M~~ **CAPE5980M** Transferable Skills & Professional Development 2 (15 credits).
(Semester 3)

- Further non-credit bearing training courses will be taken as appropriate.

- Compulsory specialised subject modules:

~~PEME5395M~~ **CAPE5380M** Nuclear Futures (15 credits)

~~PEME5371M~~ Nuclear Operations (15 credits) **moved to Year 1**

CAPE5370M Nuclear Engineering and the Nuclear Industry (30 credits)(Semester 3)

Plus 15 credits selected from the following list chosen for relevance to the PhD:

~~PEME5315M~~ **CAPE5312M** Batch Process Engineering 15 credits (Semester 2)

CAPE5420M Fuel Processing 15 credits (Semester 1)

~~PEME5611M~~ **CAPE5610M** Particle Process Engineering 15 credits (Semester 2)

CAPE5730M Materials Selection and Failure Analysis 15 credits (Semester 1)

¹ Entry to this programme has been suspended for 2014 -2015

² See also the general Programme of Study for the Integrated degrees of PhD and Master (MA, LLM or MSc) which specifies the overall arrangements for the University Integrated PhD and Masters programme.

INTEGRATED DEGREE OF PHD AND MSC (NUCLEAR FUEL CYCLE)

~~PEME5310M Multi-Scale Modelling (15 credits)~~

~~PEME5420M Advanced Energy Systems (15 credits)~~

~~PEME5350M Computational Transfer Processes (15 credits)~~

CIVE5025M Advanced Concrete Design - MEng 15 credits (Semester 2)

CIVE5026M Deterioration and Maintenance of Concrete Structures (MEng) (15 credits) (Semester 2)

CIVE5977M Advanced Steel and Composite Design - (MSc) 15 credits (Semester 1)

MECH5510M Computational and Experimental Methods 15 credits (Semester 1)

MECH5550M Research Methods 15 credits

~~COMP5320M Computational Modelling (15 credits)~~

Other approved modules may be added to the list of optional modules from time to time.

Candidates will be permitted to proceed to assessment for transfer to full PhD status if they achieve 50% 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 title of modular courses and the optional modular courses that are available.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme PhD and MSc (Nuclear Fuel Cycle)

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;

INTEGRATED DEGREE OF PHD AND MSC (NUCLEAR FUEL CYCLE)

- understand the baseline and advanced principles of a particular engineering discipline (e.g. Chemical, Civil, Mechanical) and how these are applied in the nuclear industry;
- perform accurate analyses, within the rigorous standards expected by the nuclear industry;
- define problems and develop and evaluate solutions for both basic and complex engineering issues in the nuclear industry;
- have demonstrated the capability to use techniques to acquire and analyse data and engineering information relevant to the nuclear industry;
- demonstrate the range of professional competencies that are relevant to the nuclear industry and show a clear understanding of the regulatory, safety and professionalism expectations of that industry.

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:

- 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

INTEGRATED DEGREE OF PHD AND MSC (NUCLEAR FUEL CYCLE)

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 (Nuclear Fuel Cycle) Outcomes

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

2

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

- demonstrate in-depth, specialist knowledge and mastery of techniques relevant to the discipline and/or to demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of the discipline;
- exhibit mastery in the exercise of generic and subject-specific intellectual abilities;
- demonstrate a comprehensive understanding of techniques applicable to their own research or advanced scholarship;
- take a proactive and self-reflective role in working and to develop professional relationships with others;
- formulate ideas and hypotheses proactively and to develop, implement and execute plans by which to evaluate these;
- evaluate critically and creatively current issues, research and advanced scholarship in the discipline.

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.

Integrated degree of PhD and MSc (Nuclear Fuel Cycle)¹

Programme of study for the Integrated degree of PhD and MSc (Nuclear Fuel Cycle)²

Year One (a total of 90 credits in taught modular courses (including 60 credit MSc Research Project) will be taken as well as commencement of the PhD research project)

Compulsory training and skills module:

- Compulsory training and skills module:

CAPE5950M Transferable Skills & Professional Development 1 (15 credits) (Semester 3)

- Compulsory specialised subject modules as follows:

CAPE5000M Research Project (MSc) (60 credits) (Semester 3)

CAPE5331M Nuclear Operations (15 credits) (Semester 3)

Candidates also undertake a number of non-credit bearing generic skills courses from a range provided by central training providers (SDDU, ISS, Library etc), the Faculty or outside bodies.

Year Two (a total of 75 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 module:

CAPE5980M Transferable Skills & Professional Development 2 (15 credits)(Semester 3)

- Further non-credit bearing training courses will be taken as appropriate.

- Compulsory specialised subject modules:

CAPE5380M Nuclear Futures (15 credits)

CAPE5370M Nuclear Engineering and the Nuclear Industry (30 credits)(Semester 3)

Plus 15 credits selected from the following list chosen for relevance to the PhD:

CAPE5312M Batch Process Engineering 15 credits (Semester 2)

CAPE5420M Fuel Processing 15 credits (Semester 1)

CAPE5610M Particle Process Engineering 15 credits (Semester 2)

CAPE5730M Materials Selection and Failure Analysis 15 credits (Semester 1)

CIVE5025M Advanced Concrete Design - MEng 15 credits (Semester 2)

CIVE5026M Deterioration and Maintenance of Concrete Structures (MEng) (15 credits) (Semester 2)

CIVE5977M Advanced Steel and Composite Design - (MSc) 15 credits (Semester 1)

MECH5510M Computational and Experimental Methods 15 credits (Semester 1)

MECH5550M Research Methods 15 credits

¹ Entry to this programme has been suspended for 2014 -2015

² See also the general Programme of Study for the Integrated degrees of PhD and Master (MA, LL.M or MSc) which specifies the overall arrangements for the University Integrated PhD and Masters programme.

INTEGRATED DEGREE OF PHD AND MSC (NUCLEAR FUEL CYCLE)

Other approved modules may be added to the list of optional modules from time to time.

Candidates will be permitted to proceed to assessment for transfer to full PhD status if they achieve 50% 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 title of modular courses and the optional modular courses that are available.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme PhD and MSc (Nuclear Fuel Cycle)

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, Civil, Mechanical) and how these are applied in the nuclear industry;
- perform accurate analyses, within the rigorous standards expected by the nuclear industry;
- define problems and develop and evaluate solutions for both basic and complex engineering issues in the nuclear industry;

INTEGRATED DEGREE OF PHD AND MSC (NUCLEAR FUEL CYCLE)

- have demonstrated the capability to use techniques to acquire and analyse data and engineering information relevant to the nuclear industry;
- demonstrate the range of professional competencies that are relevant to the nuclear industry and show a clear understanding of the regulatory, safety and professionalism expectations of that industry.

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:

- 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;

INTEGRATED DEGREE OF PHD AND MSC (NUCLEAR FUEL CYCLE)

- 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 (Nuclear Fuel Cycle) Outcomes

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

2

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

- demonstrate in-depth, specialist knowledge and mastery of techniques relevant to the discipline and/or to demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of the discipline;
- exhibit mastery in the exercise of generic and subject-specific intellectual abilities;
- demonstrate a comprehensive understanding of techniques applicable to their own research or advanced scholarship;
- take a proactive and self-reflective role in working and to develop professional relationships with others;
- formulate ideas and hypotheses proactively and to develop, implement and execute plans by which to evaluate these;
- evaluate critically and creatively current issues, research and advanced scholarship in the discipline.

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;

INTEGRATED DEGREE OF PHD AND MSC (NUCLEAR FUEL CYCLE)

- 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.

Programme of study for the integrated degree of PhD and MSc (Structural Geology with 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) from term 3.
- Compulsory training and skills module:
SOEE5763M 3D Structure: Techniques and Visualisation (15 credits)
SOEE5752M Applied Geodynamics and Basin Evolution (15 credits)

Non-credit bearing activity based on individual will be identified in annual training analysis undertaken between student and supervisors. Training may include Faculty or SDDU-managed courses, including library and ISS, or research specific courses offered elsewhere, as well as conferences.

- Compulsory specialised subject modules:
SOEE5157M Applied Geophysical Methods (15 credits)
SOEE5174M Integrated Sub Surface Analysis (30 credits)
SOEE5722M Applied Structural Models (20 credits)
SOEE5733M Geomechanics (10 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)
- Compulsory specialised subject module:
SOEE5111M Structural Geology Independent Project (60 credits)

Non-credit bearing activity based on individual will be identified in annual training analysis undertaken between student and supervisors. Training may include Faculty or SDDU-managed courses, including library and ISS, or research specific courses offered elsewhere, as well as conferences.

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, LL.M or MSc)

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme Integrated degree of PhD and MSc (Structural Geology with Geophysics)

1. Learning Outcomes

On completion of the Integrated PhD and MSc (Structural Geology with 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 applied structural geology 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 (STRUCTURAL GEOLOGY WITH 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

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:

- 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 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;
- Presenting work in a variety of ways e.g. oral presentation to academic groups, lay public; examination, viva, coursework.

Integrated degree of PhD and MSc (Tissue Engineering and Regenerative Medicine – Innovation in Medical & Biological Engineering)

Programme of study for the integrated degree of PhD and MSc (Tissue Engineering and Regenerative Medicine – Innovation in Medical & Biological Engineering)

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) from term 3.
- Compulsory training and skills module:
MECH5005 Training and professional development activities (15 credits)
- Compulsory specialised subject modules:
LUBS5247 Managing for innovation (15 credits)
MECH5002 Cross disciplinary laboratory placement (15 credits)
MECH5007 Systematic review (15 credits)
MECH5009 Research project proposal (5 credits)
MECH5565 Medical engineering experimental design and analysis (15 credits)
- Candidates are required to select two (30 credits) from the following optional modules with a maximum of 40 credits below level M in Year 1:

CMNS5110 Generic Methodologies for Bionanotechnology (15 credits)
CMNS5500 Self-Assembling Nanostructured Molecular Material & Devices (15 credits)
CMNS5800 Bionanotechnology (15 credits)
CMNS5850M Nanotoxicology (15 credits)
DSUR5072 Stem Cell Therapy and Tissue Engineering (10 credits)
MECH3225 Biomedical Engineering Design (20 credits)
MECH5221 Spinal Biomechanics and Instrumentation (distance learning) (15 credits)
MECH5270 Basic Orthopaedic Engineering (15 credits)¹
MECH5410 Surface Engineering (15 credits)
MECH5490 Biomaterials (short course) (15 credits)
MECH5500 Functional Joint Replacement Technology (short course) (15 credits)
MECH5510 Computational; and Experimental Methods (15 credits)
MECH5570 Introduction to Tribology (15 credits)
MICR1201 Introduction to Microbiology (10 credits)
MICR1220 Introduction to Immunology (10 credits)
MICR5100 Tissue Engineering (15 credits)
PHYS5320 Thin Films and Surfaces (15 credits)

Students will be required to pass at least 90 taught credits in order to progress on the programme.

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)
- Compulsory training and skills module:

¹ Is only for students from a non-engineering / physical sciences background.

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MECH5006 Training and professional development activities 2 (15 credits)

- Compulsory specialised subject modules:
MECH5003 Industrial Research Project (15 credits)
LUBS5980M Innovation Management in Practice (15 credits)
- Candidates are required to study 15 credits from the following optional modules with a maximum of 30 credits below level M across the two years of study:
CMNS5110 Generic Methodologies for Bionanotechnology (15 credits)
CMNS5500 Self-Assembling Nanostructured Molecular Material & Devices (15 credits)
CMNS5800 Bionanotechnology (15 credits)²
CMNS5850M Nanotoxicology (15 credits)
DSUR5072 Stem Cell Therapy and Tissue Engineering (10 credits)
MECH3225 Biomedical Engineering Design (20 credits)
MECH5221 Spinal Biomechanics and Instrumentation (distance learning) (15 credits)
MECH5270 Basic Orthopaedic Engineering (15 credits)³
MECH5410 Surface Engineering (15 credits)
MECH5490 Biomaterials (short course) (15 credits)
MECH5500 Functional Joint Replacement Technology (short course) (15 credits)
MECH5510 Computational; and Experimental Methods (15 credits)
MECH5570 Introduction to Tribology (15 credits)
MICR1201 Introduction to Microbiology (10 credits)
MICR1220 Introduction to Immunology (10 credits)
MICR5100 Tissue Engineering (15 credits)
PHYS5320 Thin Films and Surfaces (15 credits)

Students will be required to pass at least 150 taught credits and successfully transfer to full PhD status in order to progress on the programme.

Years Three and Four

- The candidate will continue research under the direction of their supervisor(s)

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment – overall programme integrated degree of PhD and MSc (Tissue Engineering and Regenerative Medicine – Innovation in Medical & Biological Engineering)

1. Learning Outcomes

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

- to demonstrate in-depth, specialist knowledge and mastery of techniques relevant to medical technologies in the interdisciplinary theme of Tissue Engineering and Regenerative Medicine and/or to demonstrate a sophisticated understanding of concepts, information and techniques at the forefront of the discipline;
- to exhibit a wide breadth of knowledge and mastery of generic and subject-specific intellectual abilities and specific industry/clinical related skills such as the use of modelling software, data collection, aspects of legislation, innovation and ethics;

² Only one Training and Development Activity module can be counted towards the qualification if exiting the degree scheme early.

³ Is only for students from a non-engineering / physical sciences background.

INTEGRATED DEGREE OF PHD AND MSC (TISSUE ENGINEERING AND REGENERATIVE MEDICINE – INNOVATION IN MEDICAL AND BIOLOGICAL ENGINEERING)

- to demonstrate a comprehensive understanding of techniques applicable to their own research or advanced scholarship in the field of Tissue Engineering and Regenerative Medicine;
- to take a proactive and self-reflective role in working and to develop professional relationships with others;
- proactively to formulate ideas and hypotheses and to develop, implement and execute plans by which to evaluate these;
- critically and creatively to evaluate current issues, research and advanced scholarship in the discipline.
- undertake a research project and be able to plan, research, execute and analyse the results from an appropriate programme of work.

2. Transferable (Key) Skills

Masters (Taught), Postgraduate Diploma & Postgraduate Certificate 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;

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;

INTEGRATED DEGREE OF PHD AND MSC (TISSUE ENGINEERING AND REGENERATIVE MEDICINE – INNOVATION IN MEDICAL AND BIOLOGICAL ENGINEERING)

- 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.

Master by Research

Programme of study for the degrees of Master by Research

1. Candidates may undertake study for the degree of Master by Research in one of the following categories:

Master of Arts by Research	MA
Master of Education by Research	MEd
Master of Science by Research	MSc
Master of Science (Engineering) by Research	MSc(Eng)
2. Submission of theses for the degrees of MA, MEd, MSc and MSc(Eng) by research should normally take place within 12 months of full-time or 24 months of part-time study (see also 10 & 11 below).
3. Due to the particular nature of the MA, MEd, MSc and MSc(Eng) by research and the requirements for completion within the specified time periods applicants for admission should normally have at least an upper second class honours degree or previous research experience.
4. The research project for candidates for the degrees of MA, MEd, MSc and MSc(Eng) by research must be clearly designed and planned at the time of application to enable submission within the limited time available. The proposed project must be submitted for approval by the relevant committee prior to acceptance of any applicant.

Progress and Monitoring

5. Candidates accepted directly to the degrees of MA, MEd, MSc and MSc(Eng) are not required to undergo formal assessment for transfer to a definite degree category. However, there should be regular reports by the supervisor on the student's progress. As a minimum, there should be a report at the mid-point of the first year and, in the case of part-time candidates, the end of the first year and at least annually thereafter.
6. Candidates accepted directly to one of the Masters degrees by research, except those registered in the Faculty of Arts, are not normally permitted to transfer registration to either the degree of PhD or MPhil.

Supervision

7. A supervisor(s) will be appointed for each student at the commencement of the candidature.

Examination and Assessment

8. Candidates for one of the Masters degrees by research must present a thesis (30,000 words maximum) on the subject of his/her research which must contain matter at a level suitable for publication and must satisfy the examiners as specified in Ordinance X and its associated Regulations.
9. In the case of the degrees of Master of Education, Master of Science and Master of Science (Engineering) the language of the thesis shall be English. In the case of the degree of Master of Arts, in the area of modern languages, the language of the thesis shall normally be English, although, if the particular subject so demands, the relevant

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committee may be prepared to give permission at the time of the applicant's acceptance as a candidate for the MA degree by research for a thesis to be submitted in a language other than English.

10. Candidates for the degrees of MA, MEd, MSc and MSc(Eng) by supervised research will not be permitted to submit their thesis for examination before completion of either one calendar year of full-time study or two calendar years of part-time study.
11. For the degrees of MA, MEd, MSc and MSc(Eng) the last date for the submission of the thesis shall normally be at the end of the prescribed period of research, as described under 2 above. In exceptional circumstances this may be extended by not more than three months by prior permission of the relevant committee.
12. Following examination, the examiners will be asked to make one of the following recommendations
 - (a) Pass with distinction
 - (b) Pass
 - (c) Pass (subject to the correction of 'editorial and presentational corrections' or 'minor deficiencies'): these corrections must be made within four or twelve weeks respectively from the date of the oral examination. The internal examiner is responsible for ensuring that 'editorial and presentational corrections' or 'minor deficiencies' are corrected by the candidate. The degree will not be awarded until confirmation that the corrections have been completed is received
 - (d) Referral (see 13 below)
 - (e) Fail: the candidate has no further opportunity for submission for the degree.
13. If the thesis is not considered to be of sufficiently high standard to recommend the award of the degree but there is evidence of the potential of a successful Mastership by research submission, then on the recommendation of the examiners the candidate will be granted permission to resubmit the work in a revised form for the degree of Master by research within a period of nine months, on one occasion only and on payment of an additional fee.
14. The recommendation of the examiners is subject to confirmation by the Graduate Board's Examinations Group which will consider the examiners' report.
15. The Learning Outcomes for the Masters degrees by research are published below.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment for the degree of Master by Research

1. Learning Outcomes

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

- to interpret and communicate knowledge in their discipline through originality in their application of knowledge and a practical understanding of established techniques of research at a level suitable for publication in reputable journals/publications as appropriate to the field of research;

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- to present and defend research outcomes much of which is at, or informed by, the forefront of a discipline or area of professional/clinical practice;
- to demonstrate a detailed knowledge of the subject area and expertise in generic and subject/professional skills;
- to take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- formulate ideas and hypotheses proactively and to develop, implement and execute plans by which to evaluate these;
- to critically evaluate current issues, research and advanced scholarship in the discipline;
- to demonstrate knowledge of and be able to 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

- the skills necessary to undertake research at a higher level, for a future career as a researcher and/or for employment in a higher capacity in industry or area of professional/clinical 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.

3. Learning Context

For Master (MA, MEd, MSc and MSc[Eng]) by Research) the learning context will include the analysis of, and decision making in, complex and unpredictable situations. The structure of the programme will provide research training, depth of study and opportunities for drawing upon appropriate resources and techniques. In the case of MDS this may also include clinical skills development. 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 will be assessed by the examination of the candidate's thesis and performance under oral examination. It will involve the achievement of the candidate in:

- evidencing an ability to conduct independent in-depth enquiry within a significant aspect or different aspects of the discipline or area of clinical/professional practice which leads to the production of material at a level suitable for publication;

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- drawing on, and selecting appropriately from, a range of research techniques and methodologies in their enquiries into the discipline or area of clinical/professional practice;
- 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;
- making reasoned judgements whilst understanding the limitations on judgements made in the absence of complete data;
- the written style and overall presentation of the thesis

Doctor of Philosophy

Programme of Study for the degree of Doctor of Philosophy

1. Candidates may undertake study for the degree of PhD in any Faculty of the University or accredited Institution, or in association with another institution approved as a partner to offer Joint degrees with the University, under the supervision of a member of staff who satisfies the eligibility requirements specified by the relevant committee. Supervisors will be appointed at the commencement of the programme of study.
2. The requirements for the degree, including periods of study and examination requirements are set out in Ordinance X and its associated regulations¹.
3. All candidates for the degree of PhD are expected to undertake appropriate generic training. Candidates in some Faculties may be required to undertake some elements of advanced study and complete written examinations satisfactorily before proceeding to the submission of a thesis.

Split-site Candidatures

(i) for those who commenced study before September 2007

4. Prior to acceptance for the degree, applicants for the degree of PhD under the International 'Split-Site' arrangements are required to demonstrate that, whilst not in Leeds, they are able to work within an appropriate academic environment and are required, before acceptance, to furnish a statement from an official in a position to guarantee access to appropriate academic and research facilities. Whilst not in residency in the University candidates under the international "split-site" arrangements are permitted to study either on a full-time or part-time basis. A period between 4 and 12 months should normally be spent in full-time residency in the University.

(ii) for those who commenced study from September 2007 onwards

5. Three models of split-site PhD study are available:
 - (a) Model A involving a Strategic Partnership with a Commercial/Industrial Organisation (available from September 2007) Subject to an agreement being reached between the University and the other organisation, applicants may be accepted for full-time PhD research degree study for a standard period of study of 3 years. Applicants will normally be required to have obtained a relevant degree of at least equivalent to a UK second class honours degree as well as at least 6.5 on IELTS (with no

¹ The normal standard period of study for a full-time PhD is 3 calendar years, except for certain schemes including some within the Faculty of Biological Sciences and within Doctoral Training Centres where the normal period of full-time study is 4 calendar years. Special arrangements may also apply to the split-site programmes and to programmes leading to joint awards with other institutions.

component below 6.0) or an equivalent English language qualification. Some Schools may require higher levels of English language. There is normally a minimum requirement of 18 months full-time study in residence at the University of Leeds but overall the candidate is normally required to spend 50% of the candidature in each organisation.

(b) Model B involving a Capacity Building Partnership normally with an international academic or research institution (available from September 2010)

Subject to an agreement being reached between the University and the other organisation, applicants may be accepted for PhD research degree study. Such applicants will normally be required to have obtained a relevant degree of at least equivalent to a UK second class honours degree as well as at least 6.5 on IELTS (with no component below 6.0) or an equivalent English language qualification. Some Schools may require higher levels of English language. Study will normally be by full-time study over a period of 3 years. There is normally a minimum requirement of 18 months full-time study at residence at Leeds but overall the candidate is normally required to spend 50% of the candidature in each organisation.

(c) (Model C involving individual students studying mainly on a part-time basis

Subject to a statement of support from the applicant's employer, which guarantees, with appropriate evidence, that relevant resources and facilities are in place for the research, applicants may be accepted for PhD research degree study. Applicants will normally be expected to have obtained a relevant degree at least equivalent to a UK upper second class honours and a Master's degree as well as at least 6.5 on IELTS (with no component below 6.0) or an equivalent English language qualification. Some Schools may require higher levels of English language. The period of study will extend over a standard period of five years and the method of study will be mainly part-time with normally full-time attendance in residence at the University of Leeds for a period of at least 8 months over the course of the programme. The first two months should normally be undertaken at the commencement of the candidature in full-time attendance in residence at Leeds.

2. Progress and Monitoring

6. Candidates will in the first instance be accepted either as a provisional candidate for the degree of PhD or as a postgraduate research student. After the initial period of provisional registration, candidates are subject to the process whereby they are formally assessed² and, if successful in the assessment, are transferred to the specific degree category of PhD or MPhil. Full-time candidates must undergo assessment by no later than 12 months of study. Part-time candidates must undergo assessment by no later than 24 months of study. Candidates must be present at the University of Leeds for the transfer assessment, including candidates studying under the 'split-site' arrangements. This equally applies to a second (or repeat) transfer assessment, should one be needed.

² Some programmes in certain Doctoral Training Centres and in the Faculty of Biological Sciences have a standard period of study of four years full-time and the assessment for transfer to a specific degree category of either PhD or MPhil takes place towards the end of the second year.

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If they are unable to do so their studies may have to be suspended until such a time as they are able to attend for assessment.

7. The decision to transfer will be based on the submission of appropriate material for assessment and all students must undergo an oral examination by an Assessment Panel which must include at least one independent individual who has not been involved in the supervisory support of the candidate. The student will be interviewed by the Assessment Panel in the form of a viva voce examination.
8. A case for an extension to the period of provisional registration would have to be made on academic grounds to the relevant committee. In such cases any period of extension will be no more than six months.
9. The arrangements for formal reports on progress by the supervisor(s) are described in the University Code of Practice for Research Degree Candidatures which is published in the Research Student Handbook which is available at:
<http://ses.leeds.ac.uk/researchdegreepolicies>

3. Examination and Assessment

10. Candidates must present a thesis³ (100,000 words maximum) on the subject of his/her research and satisfy the examiners as specified in Ordinance X and its associated Regulations.
11. Except with the special permission of the relevant committee, every candidate is required to submit his/her thesis for examination for the degree of Doctor of Philosophy by no later than:
 - (i) the end of the fourth year after his/her entry upon the approved course of full-time study and research which includes Model A and Model B of the split-site arrangements;
or
 - (ii) the end of the fifth year after his/her entry upon an approved course of full-time study and research within a Doctoral Training Centre where the standard period of study is four years;
or
 - (iii) the end of the seventh year after his/her entry upon the approved course of part-time study and research including Model C of the split-site arrangements;
12. As permitted in Ordinance X (Article 8), when the progress and quality of the candidate's research justify it, the relevant committee is empowered to reduce the required minimum period of study provided that no candidate shall submit for examination of the thesis before the completion of:

³ Except where an alternative method of submission is stipulated in the Regulations for Ordinance X. In Schools where an alternative form of submission is permitted, specific regulations for the binding and presentation of the work are published.

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- (i) a total of two calendar years of full-time study;
 - (ii) a total of three calendar years of part-time study;
 - (iii) a total of three calendar years for candidates studying under the split-site arrangements;
13. Following examination, the examiners will be asked to make one of the following recommendations
- (a) Pass.
 - (b) Pass (subject to the correction of 'editorial and presentational corrections' or 'minor deficiencies'): these corrections must be made within four or twelve weeks respectively from the date of the oral examination. The internal examiner is responsible for ensuring that 'editorial and presentational corrections' or minor deficiencies are corrected by the candidate. The degree will not be awarded until confirmation that the corrections have been completed is received.
 - (c) Referral (see 15 below)
 - (d) Recommend award of MPhil⁴: for those candidates who fail to achieve the standard for the award of a PhD but who nevertheless satisfy the criteria for the award of the degree of MPhil.
 - (e) Recommend award of MPhil⁴ (subject to the correction of 'editorial and presentational corrections' or 'minor deficiencies'): These corrections must be made within four or twelve weeks respectively from the date of the oral examination. The internal examiner is responsible for ensuring that 'editorial and presentational corrections' or 'minor deficiencies' are corrected by the candidate. The degree will not be awarded until confirmation that the corrections have been completed is received
 - (f) Referral for MPhil¹ (see 15)
 - (g) Fail: the candidate has no further opportunity for submission.
14. If the thesis is not considered to be of sufficiently high standard to recommend the award of the degree of Doctor of Philosophy but there is evidence of the potential of a successful PhD or MPhil submission, then on the recommendation of the examiners either (a) the candidate will be granted permission to resubmit the work in a revised form for the degree of PhD within a period of eighteen months, on one occasion only and on payment of an additional fee, or (b) the candidate will be granted permission to resubmit the work in a revised form for the degree of MPhil within a period of twelve months, on one occasion only and on payment of an additional fee.
15. Any candidate whose thesis has been referred for the degree of PhD may, subject to approval by the Head of their School, exercise the option of resubmitting a revised thesis for consideration for the award of the degree of Master of Philosophy.

⁴ In these circumstances the degree of MPhil may not be awarded with distinction

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16. The recommendation of the examiners is subject to confirmation by the Graduate Board's Examinations Group which will consider the examiners' report. In the case of joint awards with another institution the recommendation of the Examiners is also subject to confirmation by the other institution.
17. The Learning Outcomes for the degree of Doctor of Philosophy are published below.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment for PhD

1. Learning Outcomes

On completion of the research programme 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 satisfies peer review;
- to present and defend original research outcomes which extend the forefront of a discipline or relevant area of professional/clinical practice;
- to demonstrate systematic and extensive knowledge of the subject area and expertise in generic and subject/professional skills;
- to take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- to independently and proactively formulate ideas and hypotheses and to design, develop, implement and execute plans by which to evaluate these;
- to critically and creatively evaluate current issues, research and advanced scholarship in the discipline;
- 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

- 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

This 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

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- 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 thesis⁵ 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/clinical 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/clinical 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

⁵ or alternative form of thesis as prescribed under regulation 26

Doctor of Philosophy

Programme of Study for the degree of Doctor of Philosophy

1. Candidates may undertake study for the degree of PhD in any Faculty of the University or accredited Institution, or in association with another institution approved as a partner to offer Joint degrees with the University, under the supervision of a member of staff who satisfies the eligibility requirements specified by the relevant committee. Supervisors will be appointed at the commencement of the programme of study.
2. The requirements for the degree, including periods of study and examination requirements are set out in Ordinance X and its associated regulations¹.
3. All candidates for the degree of PhD are expected to undertake appropriate generic training. Candidates in some Faculties may be required to undertake some elements of advanced study and complete written examinations satisfactorily before proceeding to the submission of a thesis.
4. Only members of staff of the University and affiliated institutions may apply for candidature for the degree of PhD undertaken by published work. The University publishes the detailed arrangements on an annual basis.

Split-site Candidatures

(i) for those who commenced study before September 2007

5. Prior to acceptance for the degree, applicants for the degree of PhD under the International 'Split-Site' arrangements are required to demonstrate that, whilst not in Leeds, they are able to work within an appropriate academic environment and are required, before acceptance, to furnish a statement from an official in a position to guarantee access to appropriate academic and research facilities. Whilst not in residency in the University candidates under the international "split-site" arrangements are permitted to study either on a full-time or part-time basis. A period between 4 and 12 months should normally be spent in full-time residency in the University.

(ii) for those who commenced study from September 2007 onwards

6. Three models of split-site PhD study are available:
 - (a) Model A involving a Strategic Partnership with a Commercial/Industrial Organisation (available from September 2007) Subject to an agreement being reached between the University and the other organisation, applicants may be accepted for full-time PhD research degree study for a standard period of study of 3 years. Applicants will normally be required to have obtained a relevant degree of at least equivalent to a UK second class honours degree as well as at least 6.5 on IELTS (with no

¹ The normal standard period of study for a full-time PhD is 3 calendar years, except for certain schemes including some within the Faculty of Biological Sciences and within Doctoral Training Centres where the normal period of full-time study is 4 calendar years. Special arrangements may also apply to the split-site programmes and to programmes leading to joint awards with other institutions.

component below 6.0) or an equivalent English language qualification. Some Schools may require higher levels of English language. There is normally a minimum requirement of 18 months full-time study in residence at the University of Leeds but overall the candidate is normally required to spend 50% of the candidature in each organisation.

(b) Model B involving a Capacity Building Partnership normally with an international academic or research institution (available from September 2010)

Subject to an agreement being reached between the University and the other organisation, applicants may be accepted for PhD research degree study. Such applicants will normally be required to have obtained a relevant degree of at least equivalent to a UK second class honours degree as well as at least 6.5 on IELTS (with no component below 6.0) or an equivalent English language qualification. Some Schools may require higher levels of English language. Study will normally be by full-time study over a period of 3 years. There is normally a minimum requirement of 18 months full-time study at residence at Leeds but overall the candidate is normally required to spend 50% of the candidature in each organisation.

(c) (Model C involving individual students studying mainly on a part-time basis

Subject to a statement of support from the applicant's employer, which guarantees, with appropriate evidence, that relevant resources and facilities are in place for the research, applicants may be accepted for PhD research degree study. Applicants will normally be expected to have obtained a relevant degree at least equivalent to a UK upper second class honours and a Master's degree as well as at least 6.5 on IELTS (with no component below 6.0) or an equivalent English language qualification. Some Schools may require higher levels of English language. The period of study will extend over a standard period of five years and the method of study will be mainly part-time with normally full-time attendance in residence at the University of Leeds for a period of at least 8 months over the course of the programme. The first two months should normally be undertaken at the commencement of the candidature in full-time attendance in residence at Leeds.

2. Progress and Monitoring

7. Candidates will in the first instance be accepted either as a provisional candidate for the degree of PhD or as a postgraduate research student. After the initial period of provisional registration, candidates are subject to the process whereby they are formally assessed² and, if successful in the assessment, are transferred to the specific degree category of PhD or MPhil. Full-time candidates must undergo assessment by no later than 12 months of study. Part-time candidates must undergo assessment by no later than 24 months of study. Candidates must be present at the University of Leeds for the transfer assessment, including candidates studying under the 'split-site' arrangements. This equally applies to a second (or repeat) transfer assessment, should one be needed.

² Some programmes in certain Doctoral Training Centres and in the Faculty of Biological Sciences have a standard period of study of four years full-time and the assessment for transfer to a specific degree category of either PhD or MPhil takes place towards the end of the second year.

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If they are unable to do so their studies may have to be suspended until such a time as they are able to attend for assessment.

8. The decision to transfer will be based on the submission of appropriate material for assessment and all students must undergo an oral examination by an Assessment Panel which must include at least one independent individual who has not been involved in the supervisory support of the candidate. The student will be interviewed by the Assessment Panel in the form of a viva voce examination.
9. A case for an extension to the period of provisional registration would have to be made on academic grounds to the relevant committee. In such cases any period of extension will be no more than six months.
10. The arrangements for formal reports on progress by the supervisor(s) are described in the University Code of Practice for Research Degree Candidatures which is published in the Research Student Handbook which is available at:
<http://ses.leeds.ac.uk/researchdegreepolicies>

3. Examination and Assessment

11. Candidates must present a thesis³ (100,000 words maximum) on the subject of his/her research and satisfy the examiners as specified in Ordinance X and its associated Regulations.
12. Except with the special permission of the relevant committee, every candidate is required to submit his/her thesis for examination for the degree of Doctor of Philosophy by no later than:
 - (i) the end of the fourth year after his/her entry upon the approved course of full-time study and research which includes Model A and Model B of the split-site arrangements;
or
 - (ii) the end of the fifth year after his/her entry upon an approved course of full-time study and research within a Doctoral Training Centre where the standard period of study is four years;
or
 - (iii) the end of the seventh year after his/her entry upon the approved course of part-time study and research including Model C of the split-site arrangements;
or
 - (iv) staff candidates for the degree of PhD by published work may present for examination at any stage, after consultation with their adviser.
13. As permitted in Ordinance X (Article 8), when the progress and quality of the candidate's research justify it, the relevant committee is empowered to reduce the required minimum period of study provided that no candidate shall submit for examination of the thesis before the completion of:

³ Except where an alternative method of submission is stipulated in the Regulations for Ordinance X. In Schools where an alternative form of submission is permitted, specific regulations for the binding and presentation of the work are published.

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- (i) a total of two calendar years of full-time study;
 - (ii) a total of three calendar years of part-time study;
 - (iii) a total of three calendar years for candidates studying under the split-site arrangements;
 - (iv) staff candidates for the degree of PhD by published work may present for examination at any stage, after consultation with their adviser.
14. Following examination, the examiners will be asked to make one of the following recommendations
- (a) Pass.
 - (b) Pass (subject to the correction of 'editorial and presentational corrections' or 'minor deficiencies'): these corrections must be made within four or twelve weeks respectively from the date of the oral examination. The internal examiner is responsible for ensuring that 'editorial and presentational corrections' or minor deficiencies are corrected by the candidate. The degree will not be awarded until confirmation that the corrections have been completed is received.
 - (c) Referral (see 15 below)
 - (d) Recommend award of MPhil⁴: for those candidates who fail to achieve the standard for the award of a PhD but who nevertheless satisfy the criteria for the award of the degree of MPhil.
 - (e) Recommend award of MPhil⁴ (subject to the correction of 'editorial and presentational corrections' or 'minor deficiencies'): These corrections must be made within four or twelve weeks respectively from the date of the oral examination. The internal examiner is responsible for ensuring that 'editorial and presentational corrections' or 'minor deficiencies' are corrected by the candidate. The degree will not be awarded until confirmation that the corrections have been completed is received
 - (f) Referral for MPhil¹ (see 15)
 - (g) Fail: the candidate has no further opportunity for submission.
15. If the thesis is not considered to be of sufficiently high standard to recommend the award of the degree of Doctor of Philosophy but there is evidence of the potential of a successful PhD or MPhil submission, then on the recommendation of the examiners either (a) the candidate will be granted permission to resubmit the work in a revised form for the degree of PhD within a period of eighteen months, on one occasion only and on payment of an additional fee, or (b) the candidate will be granted permission to resubmit the work in a revised form for the degree of MPhil within a period of twelve months, on one occasion only and on payment of an additional fee.
16. Any candidate whose thesis has been referred for the degree of PhD may, subject to approval by the Head of their School, exercise the option of resubmitting a revised thesis for consideration for the award of the degree of Master of Philosophy.

⁴ In these circumstances the degree of MPhil may not be awarded with distinction

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17. The recommendation of the examiners is subject to confirmation by the Graduate Board's Examinations Group which will consider the examiners' report. In the case of joint awards with another institution the recommendation of the Examiners is also subject to confirmation by the other institution.
18. The Learning Outcomes for the degree of Doctor of Philosophy are published below.

Learning Outcomes / Transferable Key Skills / Learning Context / Assessment for PhD

1. Learning Outcomes

On completion of the research programme 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 satisfies peer review;
- to present and defend original research outcomes which extend the forefront of a discipline or relevant area of professional/clinical practice;
- to demonstrate systematic and extensive knowledge of the subject area and expertise in generic and subject/professional skills;
- to take a proactive and self-reflective role in working and to develop professional relationships with others where appropriate;
- to independently and proactively formulate ideas and hypotheses and to design, develop, implement and execute plans by which to evaluate these;
- to critically and creatively evaluate current issues, research and advanced scholarship in the discipline;
- 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

- 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

This 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

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- 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 thesis⁵ 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/clinical 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/clinical 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

⁵ or alternative form of thesis as prescribed under regulation 26