UNIVERSITY OF LEICESTER

Programme Specification (Postgraduate)

For students entering in 2020/21
Date amended: Feb 2019

1. Programme Title(s):

MSc/PG Diploma*/Certificate* in Chemical Research (Green Chemistry)
MSc/PG Diploma*/Certificate * in Chemical Research (Biological Chemistry)
MSc/PG Diploma*/Certificate * in Chemical Research (Physical Chemistry)
* Exit awards only

2. Awarding body or institution:

University of Leicester

3. a) Mode of study

Full-time

b) Type of study

Campus-based

4. Registration periods:

The normal period of registration is one year.

The maximum period of registration is two years.

5. Typical entry requirements:

A minimum of BSc (Lower Second Class Honours) in Chemistry or a related subject or equivalent; IELTS 6.0 or equivalent

6. Accreditation of Prior Learning:

None.

7. Programme aims:

The programme aims for the postgraduate diploma are to:

- Develop and build upon the knowledge and understanding obtained through undergraduate degree programmes, to equip students with the knowledge and skills to be able to carry out research in either Biological, Green or Physical Chemistry and to serve as links for graduates who wish to prepare for entry to a PhD programme or compete for employment as practicing chemists in a research environment.
- To reinforce and extend students' basic chemistry knowledge.
- To enhance students' practical skills.
- To teach students to plan a series of experiments to achieve specific objectives.
- To stimulate intellectual development, develop powers of critical analysis and ability to solve problems.
- To encourage students to reflect on their own strengths and weaknesses, and to provide them with opportunities to enhance transferable skills, particularly written and oral communication skills, IT and information handling, retrieval and manipulation skills, including databases and on-line resources.
- To equip students with the knowledge and generic skills for carrying out original research.

For Biological Chemistry:

- To provide an in depth understanding of some aspects of the role of chemistry in biology.
- To introduce students to some important areas of research in Chemical Biology.

For Green Chemistry:

- To provide an overview of Green Chemistry and an introduction to some topics of current research in this area.
- To encourage students to appreciate the challenges of sustainable technology and appreciate the role of Green Chemistry in the future development of the chemical industry.
- To introduce students to some important areas of research in Green Chemistry.

For Physical Chemistry:

- To provide and understanding of the application of fundamental physical principles in advanced applications of physical chemistry
- To introduce students to the important areas of research in physical chemistry.

The programme aims for the MSc are the same as above plus:

- To train students in chemical research methodology through planning and carrying out an extended research project.

8. Reference points used to inform the programme specification:

- QAA Frameworks for Higher Education Qualifications in England Wales and Northern Ireland
- QAA Master's Degree Characteristics
- QAA Benchmarking Statement Chemistry (2007)
- PDR report (May 2011)
- University Learning Strategy
- University Employability Strategy
- Graduate Survey (2014)
- First Destination Survey
- External Examiner's Reports

9. Programme Outcomes:

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
(a) Subject and Professional skills		
Knowledge		
Memorization and understanding of relevant chemistry theory including **either** synthesis and characterisation methods in organic chemistry **or** condensed and gas phase physical chemistry. Advanced knowledge of specific areas of Chemical Biology, Green Chemistry or physical chemistry	Lectures, independent work (group), specified reading, workshops. Programme specific lectures, independent work (group), specified reading, workshops.	Written exams, Marked assignments Written exams, Marked assignments
Concepts		
Enhanced grasp of the principles of either synthesis and characterization or physical chemistry. Ability to apply chemical concepts in new situations e.g. ability to predict physical and chemical properties by comparison with analogues.	Lectures, independent work (group), specified reading, workshops.	Written exams, Marked assignments
Techniques		
Practical demonstration of experimental method. Professional use of standard equipment, knowledge of safety procedures. Mastery of research methods (MSc)	Supervised laboratory work Research Project (MSc)	Laboratory samples, associated data, lab-notebooks and reports. Research project outline, dissertation (MSc)
Critical analysis		
Critical analysis of chemical information and summarise key findings of scientific papers. Abstract writing.	Supervised laboratory work Group work Reading primary research literature, research project (MSc)	Laboratory notebooks and reports Group presentations Extended essay; dissertation (MSc)

Intended Learning Outcomes	Teaching and Learning Methods	How Demonstrated?
Presentation		
Presentation of chemical information in appropriate formats Distinguish between relevant and irrelevant material depending on the context e.g. for an oral presentation or for a written report Participation in scientific discussion Give a 20 minute seminar (MSc)	Instruction on use of appropriate software Group work Project supervision Contributing member at research group teaching sessions (MSc)	Laboratory notebooks Project reports Group presentations Project presentation (MSc)
Appraisal of evidence		
Understand scientific reasoning and hence plan an investigation using appropriate methods Be able to evaluate different sources of information Recognise that more than one solution may be possible to a problem and may depend on the data available	Supervised group mini-projects. Workshop/ group exercises Project supervision (MSc)	Laboratory samples, associated data, lab-notebooks and reports. Research outline Assessed work (oral and written presentation) Dissertation (MSc)
(b) Transferable skills		
Research skills		
Progressive improvement in the ability to locate, organise and evaluate evidence, report on findings, analyse complex ideas and solve chemical problems	Workshops (problem solving) Laboratory data analysis Use of online databases Contributing member at research group teaching sessions (MSc) Project supervision (MSc)	Written exams, coursework Library exercises Essay writing Project reports Laboratory assessment Dissertation (MSc)
Communication skills		
Response to questioning Ability to deliver an oral presentation using appropriate visual aids Laboratory notebook Report writing, conforming to standard chemical conventions.	Workshops Lecture advice from project supervisor use of PowerPoint Contributing member at research group teaching sessions (MSc) Writing workshops	Oral assessment (vivas) Oral presentations for modules and projects Assessed lab-notebook Project reports. Dissertation (MSc)
Data presentation		
Ability to present chemical information clearly and effectively in appropriate format	Research methods lectures and exercises, use of Chemical Software, e.g. drawing or molecular modelling	Lab reports, assessed problems, project reports, oral presentations. Dissertation (MSc)
Information technology		
Use of spreadsheets, word processing, presentation software, data management, project specific (chemical) software.	Laboratory data analysis. Group working. Project supervision (MSc)	Lab reports, assessed problems, project reports, oral presentations. Dissertation (MSc)
Problem solving		
Ability to solve chemical problems.	Lectures, laboratory data analysis, group work. Research project (MSc)	Written exams, coursework. Library exercises. Group assessments/reports.
Working relationships		
Knowing how and when to draw on the knowledge & expertise of others Recognition of strengths and weaknesses of self and others, using this to promote group learning.	Group problem solving Negotiating duties for group tasks. Working in shared research laboratories (MSc)	Group assessment (outcomes and peer assessment)
Managing learning		
Ability to manage, reflect on and develop own learning Time management	Done via progress files. Lab–work and projects	Progress file will be discussed with tutor Meeting deadlines, project assessment (MSc)
Career management		
Ability to prepare a CV Knowledge of how to find and apply for research positions	Lecture Lecture, Career's event	CV assessment Meeting with course tutor

10. Special features:

Small group tutorials; group problem solving; independent learning; research based projects.

11. Indications of programme quality:

External Examiners' reports; Departmental review; Percentage of students going on to higher degrees.

12. Scheme of Assessment

This programme complies with Senate Regulation 6 governing taught postgraduate programmes:

http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes

This programme follows: Masters programme with 120 credits taught + 60 credits research project.

13. Progression points

This programme complies with Senate Regulation 6 governing taught postgraduate programmes:

http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes

June Panel of Examiners:

>45 credits failed at first attempt – student will not continue with the research project.

June Board of Examiners:

>30 credits failed after reassessment – student will not continue with the research project.

In cases where a student has failed to meet a requirement to progress he or she will be required to withdraw from the course and a recommendation will be made to the Board of Examiners for an intermediate award where appropriate.

14. Rules relating to re-sits or re-submissions:

This programme complies with Senate Regulation 6 governing taught postgraduate programmes:
http://www2.le.ac.uk/offices/sas2/regulations/general-regulations-for-taught-programmes
Subject to the modifications below:

Where a student fails to achieve the 50% pass mark in a module s/he shall be entitled to re-sit or re-submit any of the failed components once, subject to a maximum mark for each re-assessed component of assessment of 50%.
Where a student has failed the research project, s/he shall be entitled to re-submit the dissertation component. There is no opportunity to repeat the laboratory element of the research project.

15. Additional information [e.g. timetable for admissions]

The programmes commence in mid-September, usually ahead of the University's undergraduate term dates.

16. External Examiners

The details of the External Examiner(s) for this programme and the most recent External Examiners' reports can be found here.

Appendix 1: Programme structure (programme regulations)

See programme regulations.

Biological Chemistry

Module Code	Title	Credits
CH7001	Advanced Structure Determination	20
CH7002	Advanced Synthetic Methods	20
CH7051	Research Methodology I	20
CH7011	Biological Chemistry	20
CH7052	Research Methodology II	20
CH7053	Research Methodology III	20
CH7061	Research Project	60

Green Chemistry

Module Code	Title	Credits
CH7001	Advanced Structure Determination	20
CH7002	Advanced Synthetic Methods	20
CH7051	Research Methodology I	20
CH7021	Green Chemistry	20
CH7052	Research Methodology II	20
CH7053	Research Methodology III	20
CH7061	Research Project	60

Physical Chemistry

Module Code	Title	Credits
CH7005	Methods in Physical Chemistry I	20
CH7006	Methods in Physical Chemistry II	20
CH7051	Research Methodology I	20
CH7041	Advanced Physical Chemistry	20
CH7052	Research Methodology II	20
CH7053	Research Methodology III	20
CH7061	Research Project	60

Appendix 2: Module Specifications

See module specification database http://www.le.ac.uk/sas/courses/documentation