

**Programme Title: BSc Applied Chemistry (3+1)
For students entering Foundation in 2015 (in China), Part 3 in 2018 (in Reading)**

Awarding Institution:	University of Reading
Teaching Institution:	University of Reading and Nanjing University of Information, Science and Technology
Relevant QAA subject benchmarking group(s):	Chemistry
Faculty of Life Sciences	
Programme length:	4 years total (1 year in Reading)
Date of specification:	06/11/2018
Programme Director:	Dr David Nutt
Programme Adviser:	TBC
Board of Studies:	Chemistry
Accreditation:	

Summary of programme aims and learning outcomes

This programme represents an articulated dual award between the University of Reading and NUIST, China by mutual credit transfer.

The programme is designed to provide a broad and rigorous study of modern chemistry through an internationally coordinated teaching approach.

Transferable skills

During the course of their studies at Reading, all students will be expected to enhance their academic and personal transferable skills in line with the University's Strategy for Learning and Teaching. In following this programme, students will have had the opportunity to develop such skills, in particular relating to communication, interpersonal skills, learning skills, research skills, numeracy, self management, use of IT and problem-solving, and will have been encouraged to further develop and enhance the full set of skills through a variety of opportunities available outside their curriculum.

In addition students will be expected to fully communicate in English and to develop an ability to draw from their knowledge of chemistry and apply it in a variety of different problem solving type applications. The training in transferable skills will be applied and enhanced within the individual research project students will carry out during their time at Reading.

Programme content

Students will study for 3 years on the BSc Applied Chemistry at NUIST, China. All details of the first 3 years at NUIST are available in the Operational Handbook. Students who successfully complete the first three year at NUIST and qualify according to the constraints set out in the agreement will transfer to the University of Reading for the final year of their degree. This year will be identified as Year 4 or Part 3 in this document. See Operational Handbook for full details of Years 1, 2 and 3 and assessment.

Foundation Year (two semesters) in Nanjing

Students follow an intensive programme of English for Academic Purposes alongside the following Chemistry module:

<i>NUIST Module Code</i>	<i>Module title</i>	<i>NUIST credits</i>	<i>UoR equivalent</i>	<i>Level</i>
	General Chemistry 1 & 2	2+3	20	4

In addition, students take modules taught in Chinese, which do not affect direct admission to the University of Reading.

Part 1 (two semesters) in Nanjing

<i>Code</i>	<i>Module title</i>	<i>NUIST credits</i>	<i>UoR equivalent</i>	<i>Level</i>
	Inorganic Chemistry 1 & 2	3+3	20	4
	Physical Chemistry 1 & 2	3+3	20	4
	Organic Chemistry 1 & 2	3+3	20	4
	Introductory Chemistry Experiment 1 & 2	4+6	40	4
	English for Chemists 1 & 2	3+3	20	4

Part 2 (two semesters) in Nanjing

<i>Code</i>	<i>Module title</i>	<i>NUIST credits</i>	<i>UoR equivalent</i>	<i>Level</i>
	Further Inorganic Chemistry 1 & 2	3+3	20	5
	Further Physical Chemistry 1 & 2	3+3	20	5
	Further Organic Chemistry 1 & 2	3+3	20	5
	Analytical Chemistry	3	10	5
	Extended Experimental Chemistry 1 & 2	3+6	30	5
	Environmental Chemistry	3	10	5
	Medicinal Chemistry	3	10	5

Students will undertake other modules in Part 1 and 2 in China not listed here which do not count to credit

Part 3 (three terms)		<i>Credits</i>	<i>Level</i>
<i>Compulsory modules</i>			
CH3ENG	<i>English language for chemists</i>	10	6
CH3NUI	<i>Health and Safety and Professional Skills</i>	10	6
CH3PRA	<i>Advanced Laboratory Skills</i>	20	6
CH3PRJ	<i>Research project</i>	40	6
CH3I1	<i>d- and f- Block Chemistry</i>	10	6
CH3O2	<i>Advanced Organic Chemistry- Contemporary Synthetic Methodology</i>	10	6
CH3P1	<i>Advanced Topics in Physical Chemistry 1</i>	10	6
CH3AN2	<i>Advanced Analytical Techniques for Inorganic Structure Determination</i>	10	6

Progression requirements

To progress on to Part 3 of the Reading course students must obtain an overall average mark of 70% on all compulsory chemistry modules listed above and completed by the end of Semester 5 in NUIST and gain level 6.5 in the IELTS or TEEP English Language test.

The final degree classification is calculated by taking the average mark for Part 2 compulsory modules stated in this Programme Specification (weighted as above) and converting to an equivalent Reading mark using the mark conversion agreed and detailed in the Operational Handbook (module CH2NUI). This mark is then added to the average mark for the Part 3 modules (weighted according to credits) in the ratio 1:2 to get a mark out of 100.

Part 2 (CH2NUI) contributes 33% and Part 3 contributes 67% towards the Final Degree classification.

Provided a student has attained an overall weighted average from Parts 2 and 3 as calculated above of 40% or higher and has not scored less than 40% in over 40 credits they will be eligible for a dual award.

The University's honours classification is as follows:

<u>Mark</u>	<u>Interpretation</u>
70% - 100%	First class
60% - 69%	Upper Second class
50% - 59%	Lower Second class
40% - 49%	Third class
0% - 39%	Fail

Summary of teaching and assessment

Teaching is organised in modules that involve a combination of lectures, tutorials, workshops and practical sessions. Modules are assessed by a mixture of coursework and formal examinations. At least 50% of the assessment will normally be by formal examination except for the Part 3 project.

Admission requirements

Entrants to this programme in China must satisfy the requirements of the NUIST admissions criteria. Entrants to Part 3 of the programme in Reading must obtain an average of 70% on all compulsory chemistry modules carried out in Years 1, 2 and 3 in NUIST and attain level 6.5 in the IELTS or TEEP test. Recruitment to the programme is carried out in China.

Admissions Tutor: Dr P B Cranwell

email : p.b.cranwell@rdg.ac.uk

Support for students and their learning

University support at Reading for students and their learning falls into two categories. Learning support includes IT Services, which has several hundred computers and the University Library, which across its three sites holds over a million volumes, subscribes to around 4,000 current periodicals, has a range of electronic sources of information and houses the Student Access to Independent Learning (S@IL) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-Wide Language Programme(IWLP).

Student guidance and welfare support is provided by Personal Tutors, School Senior Tutors, the Students' Union, the Medical Practice and the Student Services Centre. The Student

Services Centre is housed in the Carrington Building and includes the Careers Advisory Service, the Disability Advisory Service, Accommodation Advisory Team, Student Financial Support, Counselling and Study Advisors. Student Services has a Helpdesk available for enquiries made in person or online (www.risisweb.reading.ac.uk), or by calling the central enquiry number on (0118) 378 5555. Students can get key information and guidance from the team of Helpdesk Advisers, or make an appointment with a specialist adviser; Student Services also offer drop-in sessions on everything from accommodation to finance. The Carrington Building is open between 8:30 and 17:30 Monday to Thursday (17:00 Friday and during vacation periods). Further information can be found in the Student Electronic Diary (available on line) or on the Student website (www.reading.ac.uk/student).

In order to fully support students manage the transition from NUIST to Reading, students will be expected to attend, as a minimum, the pre-sessional English language course prior to the start of the autumn term. Further details of specific support for NUIST students can be found in Appendix 3.

At NUIST, China there is equivalent support available for students who will have access to the University library, containing books and journals in both Chinese and English and a suite of well-equipped IT and multi-media teaching rooms.

Student guidance is ensured by the Student Activities Support Centre in NUIST.

Career prospects

A BSc degree in Applied Chemistry from the University of Reading and NUIST, China provides a strong platform from which to undertake a wide range of careers both within the chemical community and outside and both in China and internationally. Chemists are highly valued for their numerical and problem solving skills as well as their technical knowledge. They can use their chemical knowledge as research workers, technical assistants, or sales and marketing personnel within the chemical industry. Alternatively, Chemistry graduates from Reading have found employment using their numerical and other skills in more general areas such as accounting and computing. In addition, many students with a BSc degree in chemistry pursue postgraduate work, either at Reading or elsewhere, by studying for a higher degree in specialised areas of Chemistry.

Opportunities for study abroad or for placements

Students will spend the final year of their programme in Reading. There are no other opportunities to study abroad.

Programme Outcomes

Knowledge and Understanding

<p>A. Knowledge and understanding of:</p> <ol style="list-style-type: none"> 1. the fundamental concepts and techniques chemistry 2. a selection of more specialist topics in the three main branches of the subject and in analytical chemistry 3. the main techniques involved in practical work 4. the spectroscopic methods used to identify molecules and to determine their structure and the basics of the underlying theory. 	<p>Teaching/learning methods and strategies</p> <p>The knowledge required for the basic topics is provided in formal lectures supported by problem sets for students to tackle on their own and which are discussed formally in tutorial sessions with members of staff.</p> <p>Practical classes are held throughout all years of the course in which students develop their skills prior to applying them in their project.</p> <p>Feedback on student work is provided by the discussion and return of work in tutorials and by regular workshop sessions during which students tackle unseen problems in the presence of academic staff who provide support.</p>
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All practical work is marked and returned to the student.

Assessment
Most knowledge is tested through a combination of coursework and unseen formal examinations, although 3 is assessed by coursework. Dissertations and oral presentations also contribute to assessment, particularly in Part 3.

Skills

- B. Intellectual skills** – able to:
1. think logically
 2. analyse and solve problems
 3. organise tasks into a structured form
 4. understand the evolving state of knowledge in a rapidly developing area
 5. transfer appropriate knowledge and methods from one topic within the subject to another
 6. plan, conduct and write a report on an independent project.

Teaching/learning methods and strategies

→ Logic is an essential part of the understanding and construction of synthetic methods and mechanistic pathways which form the framework for much organic and inorganic chemistry.

While not exclusively the preserve of physical chemistry, problem solving plays a major part in this section of the course.

Latest developments in the subject are introduced where appropriate, particularly in Part 3.

Practical reports in all years provide training for the Part 3 project report.

Assessment
1-4 are assessed directly and indirectly in most parts of this chemistry course, while 5 contributes to the most successful work. 6 is assessed in the Part 3 project report.

C Practical Skills:- be able to

1. follow practical instructions safely and accurately
2. carry out a variety of experimental procedures
3. measure and interpret various spectroscopic techniques
4. interpret quantitatively the results of their experiments
5. formulate safety protocols
6. devise suitable experimental methods for tackling a particular problem

Teaching/learning methods and strategies

Detailed practical manuals are provided for all practical courses together with sources of recommended further reading

Workshop sessions are held to assist students in interpreting spectroscopic information obtained on unknown compounds.

In Part 3 students work on individual projects under the supervision of one or more members of staff.

Assessment

1 to 4 are tested to different extents by the practical work and reports associated with the chemistry course.

3 is assessed through problems set in written examinations.

5 is specifically assessed during the module CH3NUI in Part 3, although safe working procedures are emphasised at every stage.

3 is specifically but not exclusively assessed within core modules involving practical work and problem solving.

6 is assessed in the Part 3 project.

D. Transferable skills – able to:

1. use IT (word-processing, spreadsheets and chemical databases)
2. communicate scientific ideas
3. give oral presentations
4. work as part of a team
5. use of information and library resources
6. manage time
7. plan their career.

Teaching/learning methods and strategies

The use of IT is embedded throughout the programme in China and in Reading, but, is specifically addressed in the core module CH3NUI.

Team work and career planning are part of module CH3ENG and CH3NUI. Oral presentations are associated with module CH3PR and CH3ENG.

Library resources are specifically addressed within the third year project and CH3NUI and CH3ENG.

Time management is essential for the timely and effective completion of the programme

Assessment

1 - 5 contribute assessed coursework within the compulsory module on analytical and professional skills, CH3NUI.

Please note - This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance processes or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.

