	PROGRAMME SPECIFICATION	Newcastle University

1	**Awarding Institution**	Newcastle University
2	**Teaching Institution**	Newcastle University
3	**Final Award**	MSc
4	**Programme Title**	Drug Chemistry
5	**UCAS/Programme Code**	5099
6	**Programme Accreditation**	N/A
7	**QAA Subject Benchmark(s)**	Chemistry
8	**FHEQ Level**	Level 7
9	**Last updated**	Sept 2014

10	**Programme Aims**

1. To provide advanced training in modern drug chemistry

2. To provide an appreciation of how new drugs are developed, from their conception in the laboratory to their application, testing and subsequent industrial production

3. To provide an overview of the chemistry pertinent to modern drug design, as practiced in the pharmaceutical industry and in academia

4. To provide training in topics which constitute the "holy grail" of modern drug design and to introduce potential therapies not yet established commercially

5. To enable the student to achieve a high level of research competence and to gain experience through training in relevant aspects of laboratory work, including COSHH and safety

6. To provide the student with enhanced presentational skills.

11	**Learning Outcomes**

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills and other attributes in the following areas. The programme outcomes have references to the benchmark statements for Chemistry.

Knowledge and Understanding

On completing the programme students should know:

A1   The two main branches of drug chemistry (organic and medicinal)
A2   Practical laboratory Chemistry
A3   Data analysis and numeracy
A4   Spectroscopy and Chemical characterisation
A5   Specialist aspects of drug chemistry
A6   Research methods

Teaching and Learning Methods

Students acquire understanding and knowledge through lectures, seminars and workshops (**A1, A5**). In the laboratory class they consolidate the learning started in lectures by performing carefully designed and tested experiments (**A1, A2, A4**) and apply skill **A3**. Modules CHY8820, CHY8821, CHY8823 and CHY8824 cover some specialised areas of drug chemistry (**A5**). The Research Project, CHY8811, allows application and extension of taught material to the research environment (**A1–A6**). Throughout the period of the programme the student is expected to read around the taught material to supplement and strengthen the taught/learnt work. Reading lists are provided to facilitate this.

Assessment Strategy
Knowledge and understanding is assessed through unseen written examinations and in-course assessment (**A1, A3–A5**), practical reports (**A2**) and oral examinations on the Research Project (**A1–A6**).

Intellectual Skills
On completing the programme students should be able to: B1 Critically evaluate data B2 Apply learnt knowledge to unseen problems B3 Analyse and interpret data B4 Independently plan and undertake a research project.

Teaching and Learning Methods
Intellectual skills are developed by means of the teaching and learning programme described above. Students apply the concepts learnt to problems in laboratory work, seminars and coursework assignments (**B1–B3**). Students develop skills **B1–B4** in the design and conduct of the Research Project, CHY8811.

Assessment Strategy
Problem solving components of taught modules present in examinations and course work assess skills **B1–B3**. The Research Project, CHY8811, assesses skills **B1–B4** through written reports, oral presentations and oral examinations.

Practical Skills
On completing the programme students should be able to: C1 Work safely and independently in a chemistry laboratory C2 Plan and undertake an advanced practical course C3 Plan and undertake a research project.

Teaching and Learning Methods
Students receive close supervision from a demonstrator or member of staff in the laboratory when performing experiments to enable them to develop safe working practices and good techniques. Formative feedback is used to enable progressive development of these skills (**C1**). Due to the diverse backgrounds of students on the programme initial experiments in CHY8824 have detailed procedures. Later experiments allow students to plan and design their experiments, work with a greater level of independence and perform more technically demanding procedures (**C2**). CHY8811 allows the students to plan and undertake a research project requiring diverse practical techniques. Research teams require coordination of the effort to achieve the desired goal (**C3**).

Assessment Strategy
C1 and **C2** are assessed through practical reports (CHY8824). In addition to the final report, written and oral presentations are used to assess the planning and outcome of the Research Project, CHY8811 (**C3**).

Transferable/Key Skills
On completing the programme students should be able to: D1 Communicate and express clearly ideas both orally and in writing D2 Work in a group environment D3 Manage time and complete work to deadlines D4 Assess and form an opinion of other peoples work D5 Find information from a range of sources D6 Be self-reliant D7 Critically evaluate data and use when required.

Teaching and Learning Methods
Both lecture courses (through assignments) and practical courses require the students to produce regular written work which is submitted to deadlines (**D1, D3, D5, D6**). Assignments may also require critical evaluation and interpretation of data (**D7**). Both CHY8824 and the Research Project provide the opportunity for students to plan work and solve problems as part of a team (**D2**). Peer assessment is introduced in a formative sense in CHY8824 and through the planning of the Research Project (**D4**). All skills (**D1–D7**) are further developed through the Research Project.
Assessment Strategy
Written work and oral examinations are used to assess skill **D1**. Assignments as part of the taught modules assess **D1, D3, D5–D7**. The Research Project evaluates skills **D1–D7**. **D4** is addressed by peer assessment of individual contributions to the group effort and of team presentations on the Research Project. In addition skill **D2** is assessed in CHY8824 or CHY8810.

12	Programme Curriculum, Structure and Features
Basic structure of the programme	

The programme is offered in full time mode (1 year) or part time mode (2 year), to a total of 180 credits. The research project (CHY8811) is compulsory and successful completion of the programme leads to the award of the MSc degree.
Key features of the programme (including what makes the programme distinctive)
The taught programme highlights the key role of organic synthesis in drug discovery, including combinatorial synthesis, the use of radioisotopes, the concept of molecular recognition in the context of drug design and delivery.
The programme surveys the routes by which drugs are metabolised in the human body and details mechanisms of toxicity, reviews the mechanisms of action of the major drug classes used to treat infectious disease and cancer and demonstrates how modern drug design is performed.
The research project and dissertation will provide training in how to tackle and how to communicate the results of a significant research problem in drug chemistry.
The relevance of the programme to the pharmaceutical industry will be assured through the involvement of visiting scientists from leading pharmaceutical companies.
Programme regulations (link to on-line version)
http://www.ncl.ac.uk/regulations/programme/

13	Criteria for admission

Entry qualifications

A minimum of an upper-second-class BSc Honours degree in a chemically related subject. Applicants whose first language is not English require an IELTS score of at least 6.0, TOEFL 79 (Internet-based), or equivalent.

Admissions policy/selection tools

Upon receipt of a completed application form, the admissions selector will offer a place on the basis of information given on the application form. UK based students are invited to visit the School and meet current students.

Applicants not based in the UK are not required for interview

Non-standard Entry Requirements

Applicants who hold non-standard qualifications will be considered on an individual basis.

Additional Requirements

n/a

Level of English Language capability

IELTS 6.0 (or equivalent)

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14   Support for Student Learning

The Student Services portal provides links to key services and other information and is available at: *http://www.ncl.ac.uk/students/*

Induction
During the first week of the first semester students attend an induction programme. New students will be given a general introduction to University life and the University's principle support services and general information about the School and their programme, as described in the Degree Programme Handbook. New and continuing students will be given detailed programme information and the timetable of lectures/practicals/labs/ tutorials/etc. The International Office offers an additional induction programme for overseas students.

Study skills support
Students will learn a range of Personal Transferable Skills, including Study Skills, as outlined in the Programme Specification. Some of this material, e.g. time management is covered in the appropriate Induction Programme. Students are explicitly tutored on their approach to both group and individual projects.

Numeracy support is available through Maths Aid and help with academic writing is available from the Writing Development Centre (further information is available from the Robinson Library).

Academic and Pastoral support
Each undergraduate and taught postgraduate student will be assigned a personal tutor.*
A personal tutor is one part of a wider network of advice and guidance available to students to support their personal and general academic development. The module leader acts as the first point of contact for subject-specific academic advice. Thereafter the Degree Programme Director or Head of School may be consulted. Issues relating to the programme may be raised at the Student-Staff Committee, and/or at the Board of Studies. Within the academic unit, students may also receive additional academic and pastoral advice from a range of other student-facing staff including degree programme directors, dissertation/project supervisors, and administrative support staff.
*Arrangements may vary for students taking special types of provision.

The University also offers a wide range of institutional services and support upon which students can call, such as the Writing Development Centre, Careers Service and Student Wellbeing Service. This includes one-to-one counselling and guidance or group sessions / workshops on a range of topics, such as emotional issues e.g. stress and anxiety, student finance and budgeting, disability matters etc. There is specialist support available for students with dyslexia and mental health issues. Furthermore, the Student Union operates a Student Advice Centre, which can provide advocacy and support to students on a range of topics including housing, debt, legal issues etc.

Support for students with disabilities
The University's Disability Support team provides help and advice for disabled students at the University - and those thinking of coming to Newcastle. It provides individuals with: advice about the University's facilities, services and the accessibility of campus; details about the technical support available; guidance in study skills and advice on financial support arrangements; a resources room with equipment and software to assist students in their studies.

Learning resources
The University's main learning resources are provided by the Robinson and Walton Libraries (for books, journals, online resources), and Information Systems and Services, which supports campus-wide computing facilities.

All new students whose first language is not English are required to take an English Language Proficiency Test. This is administered by INTO Newcastle University Centre on behalf of Newcastle University. Where appropriate, in-sessional language training can be provided. The INTO Newcastle University Centre houses a range of resources which may be particularly appropriate for those interested in an Erasmus exchange.

15 Methods for evaluating and improving the quality and standards of teaching and learning

Module reviews
All modules are subject to review by questionnaires which are considered by the Board of Studies. Changes to, or the introduction of new, modules are considered at the Board of Studies and/or the School Teaching and Learning Committee. Student opinion is sought at the Student-Staff Committee and/or the Board of Studies. New modules and major changes to existing modules are subject to approval by the Faculty Learning, Teaching and Student Experience Committee.

Programme reviews
The Board of Studies conducts an Annual Monitoring and Review of the degree programme and reports to Faculty Learning, Teaching and Student Experience Committee. The FLTSEC takes an overview of all programmes within the Faculty and reports any Faculty or institutional issues to the Faculty Learning, Teaching and Student Experience Committee.

External Examiner reports
External Examiner reports are considered by the Board of Studies. The Board responds to these reports through Faculty Learning, Teaching and Student Experience Committee. External Examiner reports are shared with institutional student representatives, through the Student-Staff Committee.

Student evaluations
All modules, and the degree programme, are subject to review by student questionnaires. Informal student evaluation is also obtained at the Student-Staff Committee, and the Board of Studies. The results from student surveys are considered as part of the Annual Monitoring and Review of the programme and any arising actions are captured at programme and School / institutional level and reported to the appropriate body.

Mechanisms for gaining student feedback
Feedback is channelled via the Student-Staff Committee and the Board of Studies.

Faculty and University Review Mechanisms
Every six years degree programmes in each subject area undergo periodic review. This involves both the detailed consideration of a range of documentation, and a review visit by a review team (normally one day in duration) which includes an external subject specialist and a student representative. Following the review a report is produced, which forms the basis for a decision by University Learning, Teaching and Student Experience Committee on whether the programmes reviewed should be re-approved for a further six year period.

Accreditation reports

Additional mechanisms

N/A

16	Regulation of assessment

Pass mark

The pass mark is 50%

Course requirements
Progression is subject to the University's Masters Degree Progress Regulations, Taught and Research and Examination Conventions for Taught Masters Degrees. There are reassessment opportunities, with certain restrictions. Limited compensation up to 40 credits of the taught element and down to a mark of 40% is possible for candidates who commenced their programme in 2013/14 or earlier. For students starting their programme in 2014/15 or later, no compensation is possible.

The University employs a common marking scheme, which is specified in the Taught Postgraduate Examination Conventions, namely:

Summary description applicable to postgraduate Masters programmes		Summary description applicable to postgraduate Certificate and Diploma programmes	
<50	Fail	<50	Fail
50-59	Pass	50 or above	Pass
60-69	Pass with Merit		
70 or above	Pass with Distinction		

Role of the External Examiner

An External Examiner, a distinguished member of the subject community, is appointed by Faculty Teaching and Learning Committee, following recommendation from the Board of Studies. The External Examiner is expected to:

   i. See and approve assessment papers

   ii. Moderate examination and coursework marking

   iii. Attend the Board of Examiners

   iv. Report to the University on the standards of the programme

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In addition, information relating to the programme is provided in:

The University Prospectus: http://www.ncl.ac.uk/postgraduate/

The School Brochure: http://www.ncl.ac.uk/marketing/services/print/publications/ordering/

Degree Programme and University Regulations: http://www.ncl.ac.uk/regulations/docs/

The Degree Programme Handbook: http://www.ncl.ac.uk/chemistry/undergrad/degrees/

Please note. This specification provides a concise summary of the main features of the programme and of the learning outcomes that a typical student might reasonably be expected to achieve if she/he takes full advantage of the learning opportunities provided. The accuracy of the information contained is reviewed by the University and may be checked by the Quality Assurance Agency for Higher Education.

Mapping of Intended Learning Outcomes onto Curriculum/Modules

Development of specific Intended Learning Outcomes occurs through the following modules
(compulsory modules in bold text, optional modules in normal, italic text)

Intended Learning Outcome	Module codes (Compulsory in Bold)
A1. The two main branches of drug chemistry (organic and medicinal)	**CHY8811, CHY8820, CHY8822, CHY8823, CHY8824,** *CHY8828*
A2. Practical laboratory Chemistry	**CHY8811, CHY8824**
A3. Data analysis and numeracy	**CHY8810, CHY8811, CHY8821, CHY8822, CHY8824,**
A4. Spectroscopy and Chemical characterisation	**CHY8811, CHY8821, CHY8824**
A5. Specialist aspects of drug chemistry	**CHY8821, CHY8822, CHY8823, CHY8824,** *CHY8828*
A6. Research methods	**CHY8810, CHY8811**
B1. Critically evaluate data	**CHY8811, CHY8821, CHY8824**
B2. Apply learnt knowledge to unseen problems	**CHY8810, CHY8811, CHY8820, CHY8821, CHY8824,** *CHY8828*
B3. Analyse and interpret data	**CHY8811, CHY8820, CHY8821, CHY8824**
B4. Independently plan and undertake a research project	**CHY8810, CHY8811**
C1. Work safely and independently in a chemistry laboratory	**CHY8811**
C2. Plan and undertake an advanced practical course	**CHY8824**
C3. Plan and undertake a research project	**CHY8810, CHY8811**
D1. Communicate and express clearly ideas both orally and in writing	**CHY8810**, **CHY8811**, **CHY8820**, **CHY8821**, **CHY8822, CHY8824,** *CHY8828, INU8001*
D2. Work in a group environment	**CHY8811, CHY8811**
D3. Manage time and complete work to deadlines	**CHY8811**, **CHY8820**, **CHY8821**, **CHY8824***, CHY8828, INU8001*
D4. Assess and form an opinion of other people's work	**CHY8810, CHY8811**
D5. Find information from a range of sources	**CHY8810**, **CHY8811**, **CHY8820**, **CHY8821**, **CHY8824,** *CHY8828*
D6. Be self-reliant	**CHY8810, CHY8811**, **CHY8820**, **CHY8821**, **CHY8823***, **CHY8824**
D7. Critically evaluate data and use when required	**CHY8810**, **CHY8811, CHY8820**, **CHY8821, CHY8824**