PROGRAMME SPECIFICATION

Newcastle University

1	Awarding Institution	Newcastle University
2	Teaching Institution	Newcastle University
3	Final Award	BSc
4	Programme Title	Chemistry with Medicinal Chemistry with Industrial Training
5	UCAS/Programme Code	F122
6	Programme Accreditation	N/A
7	QAA Subject Benchmark(s)	Chemistry
8	FHEQ Level	Level 6
9	Date written/revised	January 2009

10	Programme Aims
1	to enthuse students to chemistry and medicinal chemistry by educating them with a thorough understanding of organic, inorganic and medicinal, core physical and essential biological chemistry, including importance and sustainability of the chemical sciences in an industrial, academic, economic, environmental and social context.
2	to demonstrate how chemical principles can be applied to processes and systems.
3	to provide training in problem solving, communication skills, numeracy and information technology.
4	to provide the opportunity for students to apply their skills in an industrial environment
5	to equip students with skills that enable them to pursue careers in chemistry, chemistry-related disciplines or other professions.
6	to develop students' practical skills including assessing risks so they can work in the laboratory safely

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 have a knowledge and understanding of

A1 The three main branches of chemistry (inorganic, physical and organic)
A2 Practical laboratory chemistry
A3 Data analysis and numeracy
A4 Spectroscopy and chemical characterisation
A5 Some aspects of industrial chemistry
A6 Medicinal and biological chemistry
A7 Develop an awareness of issues in chemistry related to other disciplines

Teaching and Learning Methods

Students acquire understanding and knowledge (the complexity of which increases as the course progresses) through lectures, tutorials and workshops (**A1, A6**). At Stage 1, students learn basic, and at Stage 2 more sophisticated, technical procedures by performing carefully designed and tested experiments. In the lab classes and on placement they consolidate the learning started in lectures (**A1**, **A2**, **A4, A6**) and improve on skill **A3**. At Stage 3 the students learn advanced practical methods and specialist theoretical material (**A1 – A4**, **A6**). On placement the students learn **A5**. Throughout the period of the degree 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. They develop **A7** in modules throughout this programme, particularly related to biology, medicine and materials. Specialist aspects related to their placement

Assessment Strategy
Knowledge and understanding is assessed through unseen written examinations and in-course assessments (**A1**, **A3**, **A4**, **A6**), answers to questions in practical reports (**A2**) and oral examinations eg in the stage 3 Advanced Chemistry modules (**A2**), They should gain practical experience in industrial chemistry (**A5**) during their placement.
Intellectual Skills
On completing the programme students should be able to: B1   Critically evaluate data, including using computer software and models B2   Apply learnt knowledge to unseen problems B3   Analyse and interpret data, in terms of current underlying theory B4   Independently plan and undertake a project
Teaching and Learning Methods
Intellectual skills are developed by means of the teaching and learning programme outlined above. Students apply the concepts learnt in lectures to problems in laboratory work, seminars and tutorials. **B2** and **B3** are progressively developed and enable the students to solve challenging problems (Stage 1 in Data Handling, Stage 2 in Group Assignment and Stage 3 Problem Solving modules) which cross the boundaries of the chemistry modules studied earlier. Tutorials facilitate individual and group participation in answering problems. Students develop skills **B1** and **B4** during their Stage 3 practicals within the Advanced Chemistry modules.
Assessment Strategy
Problem solving based examinations and oral responses to either problems or tasks (tutorials) are used to test skills **B1** - **B3**. Laboratory reports assess **B3**. Aspects of Stage 3 laboratories within the Advanced Chemistry modules allow students to demonstrate and be assessed in cognitive skills **B1** - **B4**.
Practical Skills
On completing the programme students should be able to: C1   Work safely and independently in a chemistry laboratory being able to conduct documented laboratory procedures including measurement of chemical properties. C2   Plan and undertake an advanced practical course. C3   Work on a project in an industrial environment.
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**). At Stages 1 and 2 detailed experimental procedures are presented in laboratory manuals. On placement and in Stage 3 the students learn to plan and design the experiments for themselves (**C2, C3**), they work with a greater level of independence and perform more technically demanding procedures.
Assessment Strategy
The skill **C1** is assessed by laboratory write-ups. At Stage 3 the student's practical competence is tested within the Advanced Chemistry modules and is assessed as part of the Stage 3 practical module (**C1** and **C2**). **C3** in the placement in Industry.
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 people's work including numeracy and mathematical skills. D5   Find information from a range of sources D6   Be self-reliant D7   Critically evaluate data to solve chemical problems

Teaching and Learning Methods
The laboratory courses require the students to produce regular written work which is submitted to deadlines (**D1**, **D3**). Marked work is discussed with the students to develop their understanding as well as their powers of expression. A key skills module, 'Group Assignment' specifically addresses learning from, and working as part of, a group (**D2**). This module also includes information retrieval from a variety of sources and its evaluation, communication and presentation skills, assignments and reports (**D1, D3, D5**). Peer assessment is introduced in a practical course (Stage 2 Organic) and the Group Assignment (**D4**). Students further develop skills **D1, D3 – D5** and practise skills **D6** and **D7** during the practical component of Stage 3 Advanced Chemistry module. Solving challenging unseen problems at Stage 3 also develops skill **D7**.

Assessment Strategy
Written work and oral examinations are used to assess skill **D1**. Many of the skills are assessed in written examinations by both the answers and the approach to question answering. Key skills **D1, D2, D5** are addressed in the 'Group Assignment' module by peer assessment of individual contributions to the group effort and of a group presentation. The Stage 3 prcticals within the Advanced Chemistry modules evaluates skills **D1** - **D7**. In some modules (Bioactive Natural Products and Chemical Biology) students have to summarize their understanding of aspects of the literature in the form of a poster.

12	Programme Curriculum, Structure and Features

Basic structure of the programme
The degree programme is offered full-time (4 years). Students have to take 120 credits at each stage for a total of 360 credits, except the year in Industry. All students take the compulsory modules outlined in each year. A number of option modules are open for each year of study and are chosen by the student in consultation with their personal tutor.

Key features of the programme (including what makes the programme distinctive)
The large number of option modules at Stage 1 allows students to take subjects that they have not studied before or further study subjects of interest. Selection of certain modules would also allow a student to transfer to, for example, the Chemistry programme at the end of Stage 1. Students may transfer into the BSc with Industrial Training degree at the start of Stage 2, or into a MChem programme at the start of Stage 3 with agreement by the Degree Programme Director. A special feature of the programme is that the students spend a year working in the chemical industry between Stages 2 and 3. The year in Industry is not assessed.

Programme regulations (link to on-line version)
http://www.ncl.ac.uk/regulations/programme/

13	Criteria for admission

Entry qualifications
Entry qualifications The standard offer for this programme is BBB including Chemistry and preferably Mathematics or another science subject at A Level. GCSE Mathematics grade B required if not offered at a higher level. BBBBB at Higher Grade including Chemistry at grade A and preferably Mathematics or another science subject is asked for from applicants with Scottish qualifications. Mathematics required at grade 2 standard grade (or Intermediate 2 equivalent) if not offered at a higher level. Combinations of Highers and Advanced Highers accepted. Applicants taking the International Baccalaureate are usually asked for 32 points with Higher Level Chemistry at grade 6 or above. Mathematics or Mathematical Studies at standard level grade 5 if not offered at Higher Level. *Admissions policy/selection tools* Upon receipt of a UCAS application form offers of places are made to suitably qualified candidates. UK - based applicants are invited to visit Chemistry on an Open Day. During the

day they will have a tour of Chemistry and the City. They also attend an informal interview with a member of academic staff. Applicants not based in the UK are not required to attend for interview.

Non-standard Entry Requirements
Applicants who hold non-standard qualifications will be considered on an individual basis

Additional Requirements
Non applicable

Level of English Language capability
Applicants for whom English is not their first language must provide evidence of a satisfactory command of English by means of an IELTS score of 6.5 or greater.

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.

There is a Welcome Week Programme in Chemistry which includes social events as well as informative presentations about the course, facilities and student support. Each student receives a Welcome Pack, including a book voucher, laboratory coat, safety glasses, Periodic Table, Calculator etc. Returning students also have induction week programmes.

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 Centre (further information is available from the Robinson Library).

Academic Support
The initial point of contact for a student is with a lecturer or module leader, or their tutor (see below) for more generic issues. Thereafter the Degree Programme Director or Head of School may be consulted. Issues relating to the programme may be raised at the Staff-Student Committee, and/or at the Board of Studies.

Pastoral Support
All students are assigned a personal tutor whose responsibility is to monitor the academic performance and overall well-being of their tutees. In addition the University offers a range of support services, including 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 Union Society 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 Service 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 Staff-Student Committee and/or the Board of Studies. New modules and major changes to existing modules are subject to approval by the Faculty Teaching and Learning Committee.

Programme Reviews
The Board of Studies conducts an Annual Monitoring and Review of the degree programme and reports to Faculty Teaching and Learning Committee. The FTLC takes an overview of all programmes within the Faculty and reports any Faculty or institutional issues to the University Teaching and Learning Committee.

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

Student Evaluations
All modules, and the degree programme, are subject to review by student questionnaires. Informal student evaluation is also obtained at the Staff-Student Committee, and the Board of Studies. The National Student Survey is sent out every year to final-year undergraduate students, and consists of a set of questions seeking students' views on the quality of the learning and teaching. 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 Staff-Student Committee and the Board of Studies.

Faculty and University Review Mechanisms
The programme is subject to the University's Internal Subject Review process. Every five years degree programmes in each subject area are subject to periodic review. This involves both the detailed consideration of a range of documentation, and a two-day review visit by a review team which includes an external subject specialist in addition to University and Faculty representatives. Following the review a report is produced, which forms the basis for a decision by University Teaching and Learning Committee on whether the programmes reviewed should be re-approved for a further five year period.

Internal Review Reports
This programme was covered by the Internal Subject Review of Chemistry held on February 2010 and was subsequently approved by Faculty Teaching and Learning Committee and University Teaching and Learning Committee. The team was impressed by the very positive relationships between staff and students – it was abundantly clear that the subject group are very student-focused and this was to their significant credit.

Previous QAA Reports
This programme received a QAA Developmental Engagement in April 2004. The Team reported that: "The DE team has confidence in the academic standards set and achieved for all programmes in the developmental engagement in chemistry at the University of Newcastle upon Tyne"; and "The DE team has confidence in the quality of learning opportunities that support students in achieving the academic standards of the awards for all programmes in the developmental engagement in chemistry at the University of Newcastle upon Tyne.

Accreditation Reports
N/A

Additional Mechanisms
N/A

16	Regulation of Assessment

Pass Mark
The pass mark is 40 (Undergraduate programmes)

Course Requirements
Progression is subject to the University's Undergraduate Progress Regulations and Undergraduate Examination Conventions. In summary, students must pass, or be deemed to have passed, 120 credits at each Stage. Limited compensation up to 40 credits and down to a mark of 35% is possible at each Stage and there are re-assessment opportunities, with certain restrictions.

Weighting of Stages
Modules taken at Stages 2 and 3 are Honours modules and the two stages contribute to the award of the final degree in the ratio *<2:1>*

Common Marking Scheme
The University employs a common marking scheme, which is specified in the Undergraduate Examination Conventions, namely

	Honours	**Non-honours**
<40	Fail	Failing
40-49	Third Class	Basic
50-59	Second Class, Second Division	Good
60-69	Second Class, First Division	Very Good
70+	First Class	Excellent

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

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

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

The School Brochure (email: es@ncl.ac.uk)

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

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

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)

A1.	Inorganic, Organic, Physical Chemistry	**CHY1101, CHY1201, CHY1202, CHY1301, CHY1401, CHY2001**, **CHY2101, CHY2102, CHY2103, CHY2201, CHY2301, CHY2401, CHY3007, CHY3108, CHY3306**
A2.	Practical laboratory chemistry	**CHY1101, CHY1102, CHY1201, CHY1301, CHY2101, CHY2201, CHY2301, CHY3108, CHY3109, CHY3306**
A3.	Data analysis and numeracy	**CHY1101, CHY1201, CHY1202, CHY1301, CHY1401, CHY2101, CHY2102, CHY2201, CHY2301, CHY2401, CHY3007, CHY3108, CHY3109, CHY3306**
A4.	Spectroscopy and chemical characterisation	**CHY1201, CHY1202**, **CHY1301, CHY2001**, **CHY2101, CHY2201, CHY2301, CHY2401, CHY3007, CHY3108, CHY3109, CHY3306**
A5.	Some aspects of industrial chemistry	**Placement in Industry**
A6.	Medicinal and biological chemistry	**CHY2103, CHY3007, CHY3108, CHY3109**
A7.	Awareness of related disciplines	**CHY1101, CHY1102, CHY1201, CHY1301, CHY2003, CHY2101, CHY2102, CHY2201, CHY2301, CHY3108, CHY3109, CHY3306, CHY3401, CHY3402**
B1.	Critically evaluate data	**CHY3007, CHY3108, CHY3109, CHY3306**
B2.	Apply learnt knowledge to unseen problems	**CHY1101, CHY1102, CHY1201, CHY1202, CHY1301, CHY1401, CHY2001, CHY2101, CHY2102, CHY2103, CHY2201, CHY2301, CHY2401, CHY3007, CHY3108, CHY3109, CHY3306, CHY3401**
B3.	Analyse and interpret data	**CHY1102, CHY1201, CHY1202, CHY1301, CHY1401, CHY2001**, **CHY2101, CHY2102, CHY2103, CHY2201, CHY2301, CHY2401, CHY3007, CHY3108, CHY3109, CHY3306**
B4.	Independently plan and undertake a project	**CHY2001**, **CHY3108, CHY3109, CHY3306**
C1.	Work safely and independently in a laboratory	**CHY1101, CHY1102, CHY1201, CHY1301, CHY2101, CHY2201, CHY2301, CHY3108, CHY3109, CHY3306**
C2.	Plan and undertake an advanced practical course or non-lab project	**CHY3108, CHY3109, CHY3306**
C3.	Work on a project in an industrial environment	**Placement in Industry**
D1.	Communicate and express ideas orally and in writing	**CHY1101, CHY1102, CHY1201, CHY1202, CHY1301, CHY1401, CHY2001, CHY2101, CHY2102, CHY2103, CHY2201, CHY2301, CHY2401**, **CHY3108, CHY3109, CHY3306**
D2.	Work in a group environment	**CHY2001, CHY3401**
D3.	Manage time and complete work to deadlines	**CHY1101, CHY1201, CHY1301, CHY1401, CHY2001**, **CHY2102, CHY2101, CHY2201, CHY2301, CHY2401, CHY3108, CHY3109, CHY3306, CHY3401**
D4.	Assess and form an opinion of other people's work	**CHY2001, CHY2101**, **CHY3108, CHY3109, CHY3306**
D5.	Find information from a range of sources	**CHY2001**, **CHY2102, CHY3009, CHY3007, CHY3108, CHY3109, CHY3306**
D6.	Be self-reliant	**CHY3108, CHY3109, CHY3306**
D7.	Critically evaluate data and use when required	**CHY3108, CHY3109, CHY3306**