

1 Awarding institution/body	University of Newcastle upon Tyne
2 Teaching institution	University of Newcastle upon Tyne
3 Programme accredited by	
4 Final award	BSc (Joint Honours)
5 Programme	Chemistry with Mathematics
6 UCAS code	FG11
7 Relevant QAA subject benchmarking group(s)	Chemistry
8 Date of production/revision	March 2002

9 Programme Aims

The degree programme aims to educate students with an understanding of the essential principles and applications of organic, inorganic and physical chemistry and to equip students with skills that enable them to pursue careers in science-related disciplines and commerce. To educate the student in the use of simple and more advanced chemical laboratory techniques and the application of these techniques to problems in contemporary science.

10 Intended Learning Outcomes for Chemistry

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, qualities, skills in the following areas:

A Knowledge and understanding

- 1 The three main branches of chemistry (inorganic, physical & organic)
- 2 Practical laboratory chemistry
- 3 Data analysis and numeracy
- 4 Spectroscopy and chemical characterisation

Teaching and learning methods and strategies

The acquisition of understanding and knowledge is by way of a combination of lectures, tutorials and workshops. Hand-on experience of chemistry is through practical classes consisting of carefully designed and tested experiments. Practical classes in Years 1 and 2 will introduce and allow the student to practice a variety of basic and sophisticated practical techniques. The experiments complement the material being taught in the lectures.

Assessment methods and strategies

The testing of knowledge is through a combination of unseen written examinations (**1,3-4**) and oral examinations (**2**).

B Practical Skills – able to

- 1 Work safely in a chemistry laboratory
- 2 Plan and undertake a practical or literature or non-laboratory based IT project

Teaching and learning methods and strategies

For skill **1** all students receive close supervision from a demonstrator or member of staff in the laboratory when performing experiments. A series of experiments are presented in the laboratory manual which outline safety issues, laboratory codes of practice and gives a detailed plan of operation. Students present results from their experiments in the form of a report. For skill **2** most students complete a practical project in an area of chemistry. They contribute to the planning and direction of the experimental work. They improve on their experimental technique and experience.

Assessment methods and strategies

The skills **1** are assessed by means of laboratory write-ups and oral examinations.

C Cognitive skills - able to

- 1 Critically evaluate data
- 2 Apply learnt knowledge to unseen problems
- 3 Analyse and interpret data

Teaching and learning methods and strategies

Intellectual skills are developed by means of the teaching and learning programme outlined above. All courses are designed to promote discussion of key topics and facilitate self-assessment. Courses encourage application of concepts within a laboratory framework. Tutorials and seminars back-up lecture material and facilitate small group participation in answering problems.

Assessment methods and strategies

Problem solving based examinations and oral responses to either problems or tasks (tutorials) are used to test skills **1** to **3**. Write up of independent projects also allows students to demonstrate cognitive skills

D Key skills - able to

- 1 Communicate and express clearly ideas both orally and in writing
- 2 Work in a group environment
- 3 Manage time and complete work to deadlines
- 4 Assess and form an opinion of other peoples work
- 5 Find information from a range of sources
- 6 Be self-reliant
- 7 Critically evaluate data and use when required.

Teaching and learning methods and strategies

All laboratory courses require regular written work and the use of search libraries, the Internet and extensive bookwork. After marking practical write-ups and tutorial work the work is discussed with the students to develop their understanding as well as their powers of expression. Skills (**2** and **3**) are learnt from working in group environments (groups vary in size from 2 to 6 depending on the courses), and handing in reports to set deadlines. Skills **4** and **5** are obtained from detailed literature searches. Skills **2** and **4** stem from small group tutorials and oral presentations to a peer audience. Solving of unseen problems helps develop skill **7**.

Assessment methods and strategies

Oral examinations are used to assess a student's ability, both at one-to-one level and in a peer-reviewed atmosphere. Many of the outlined skills are assessed in written examinations by both the answers and the approach to question answering. Laboratory work in a research environment critically evaluates skills **2-7**.

11 Programme Features, Curriculum and Structure

The degree programme is offered full-time (3 years). The entry and progression points are indicated by arrows. All students must take the compulsory courses outlined in each year. A number of option courses are open for study and are chosen by the student with consultation with their personal tutor.

All modules are to the value of 10 credits unless specified.

Stage 3

Compulsory Modules

60 credits of Chemistry
Modules to be chosen from
Stage 2 modules not previously
attended, or Option Modules
from Stage 3.

Options Modules

CHY315 Organic synthesis and
the periodic table
CHY326 Molecular machines
CHY335 Molecules and
materials
CHY398 Project (30)
CHY330 Advanced Inorganic
Chem (20)
CHY320 Advanced Physical
Chemistry (20)

BSc (Joint Honours) Degree

Degree classification is
determined by the averaging
method and is based on stage 2
and 3 marks (1:2). The
Common Scale applies.

Outcomes developed and
assessed: B1,2; C1-4; D1-7

Knowledge outcomes
developed as indicated by
module titles

Stage 2

Compulsory Modules

At least two from:

CHY220 Physical Chemistry (20)
CHY230 Inorganic Chemistry
(20)
CHY210 Organic Chemistry (20)
CHY240 Structural Chemistry
(20)

Options Modules

CHY265 Technology and
Business Awareness
CHY208 Introduction to
Biological Chemistry
CHY275 Landmarks in Inorganic
Chemistry
CHY235 Reaction Mechanisms

Progression requirements

240 Credits (total)

Outcomes developed and
assessed:
B1; C2,3; D1-5

Knowledge outcomes
developed as indicated by
module titles

Stage 1

Compulsory Modules

CHY110 Basic Organic
Chemistry (20)
CHY120 Elements of Physical
Chemistry (20)
CHY130 Structural and Inorganic
Chemistry (20)

Option Modules

None

Progression requirements

120 Credits (total)

Outcomes developed and
assessed:
B1; C2,3; D1, 3

Knowledge outcomes
developed as indicated by
module titles