BSc Science Communication

UCAS code: CFX0

Awarding Institution: The University of Reading
Teaching Institution: The University of Reading
Relevant QAA subject benchmarking group(s): -
Faculty of Life Sciences
Programme length: 3 years
For students entering Part 1 in 2004
Date of specification: 20 May 2003
Programme Director: Dr Elizabeth Page
Programme Adviser: tba
Board of Studies: Natural Sciences
Accreditation: -

Summary of programme aims

The Science Communication programme aims to produce graduates who have a knowledge and experience of a range of topics in modern science and the links between one and another. It also aims to enhance graduates' skills and experience in communicating and discussing scientific and technological ideas.

Transferable skills

The University's Strategy for Teaching and Learning has identified a number of generic transferable skills which all students are expected to have developed by the end of their degree programme. In following this programme, students will have had the opportunity to enhance their skills relating to career management, communication (both written and oral), information handling, numeracy, problem - solving, team working and use of information technology.

As part of this programme students are expected to have gained experience and show competence in the following transferable skills: IT (word-processing, using standard software packages, scientific programming), scientific writing, oral presentation, team-working, problem-solving, use of library resources, time-management, communication skills and career planning and management.

The design of the programme ensures that students practise laboratory skills at each Part that will inculcate an awareness for Health and Safety issues and further develop problem-solving skills along with the investigative abilities required for the final year project.

Students will be encouraged to develop competence in communication skills, both written and oral, and to think critically about some of the current controversial issues surrounding the technological applications of scientific advances and to discuss the moral and ethical issues involved. The course aims to generate graduates able to act as ambassadors for science and technology in the wider community.

Programme content

The profile which follows states which modules must be taken (the compulsory part), together with one or more lists of modules from which the student must make a selection (the "selected" modules). Students must choose such additional modules as they wish, in consultation with their programme adviser, to make 120 credits in each Part. The number of modules credit for and the level of each module are shown after its title.

Part 1 (three terms)		Credits	Level
Compulsory modules			
NS11A	Communicating Scientific Ideas	20	C

Optional modules
Students must choose a maximum of 40 credits from two of the groups below together with 20 credits from a third group. The choice must include at least one module with a laboratory element (starred).

Group A (Biology)

NS1BI1	Introduction to Biology for Natural Sciences (S)	20	C
NS1BI6	Introduction to Biology for Natural Sciences (P)	40	C
NS1BI7	Cell and Molecular Biology	40	C
NS1BI8	Ecology and Microbiology	40	C
NS1BI9	Biodiversity and Biochemistry	40	C

Group B (Chemistry)

CH1O1	Structure and mechanism in Organic Chemistry *	20	C
CH1I1	Bonding, structure and reactivity in Inorganic Chemistry *	20	C
CH1P1	The Physical World *	20	C
CH1C	Fundamental Chemistry *‡	20	C
NS1CH6	Aspects of Structure and Reactivity *	40	C
NS1CH7	Physical processes and structure and mechanism in Organic Chemistry*	40	C
NS1CH8	Physical processes and bonding, structure and reactivity in Inorganic Chemistry	40	C

‡ leads to NS2CH1 but not to major modules in Chemistry in Part 2

Group C (Geology)

NS1GO1	Earth Structure and History	20	C
NS1GO6	Earth Structure, Geological Fieldwork *	40	C

Group D (Mathematics)

MA111	Mathematics for Scientists †	20	C
NS1MA6	Matrices and Calculus	40	C

Group E (Physics)

PH1001	Concepts in Physics	20	C
NS1PH6	Classical and Contemporary Physics	40	C

Part 2 (three terms)

		Credits	Level
Compulsory modules			
NS21A	History and Philosophy of Science	20	I
NS22A	Effectiveness of Communication in Science and Technology	20	I

Optional modules
Students must choose a total of 80 credits from two or three of the groups B – K (i.e. two 40 credit modules or one 40 credit plus two 20 credit modules). The choice must include at least one module with a laboratory element (starred).

Group A (Archaeology)

AR2S1	Archaeological Science	20	I

Group B (Biology) (combine two minor subjects to make a major)

FB2N1	Human Nutrition	20	I
NS2PS1	Plant Sciences	20	I
NS2AM1	Biological Structure and Function	20	I

Group C (Chemistry)

NS2CH1	Spectroscopy and Structure in Organic Chemistry	20	I
NS2CH2	Chemistry of the Elements and Analysis	20	I
NS2CH6	Applied Analytical Chemistry*	40	I

Group D (Geology)

NS1GO2	Fieldwork and Earth Materials	20	C
NS2GO1	Global Change and Sedimentology	20	I
NS2GO2	Environmental Geochemistry 1	20	I
NS2GO6	Geochemistry, Global Change and Sedimentology	40	I

Group E (Mathematics)

MA240	Mathematical Methods and Models†	20	I
MA24B	Differential Equations	20	I
NS2MA6	Applications of Calculus	40	I

† This choice does not lead to Part 3 Mathematics modules other than MA3B7

Group F (Meteorology)

MT11A	Atmospheric Science	20	C
NS2MT6	Meteorology	40	I

Group G (Physics)

PH2002	Quantum Physics	20	I
NS2PH6	Quantum Physics and Electromagnetism	40	I

Group H (Soil Science)

NS2SS6	Introduction to Soil Science and Soil Processes	40	I
NS2SS1	Introduction to Soil Processes	20	I
NS2SS2	Soil Processes and Applications	20	I

Group J (Statistics)

AS1A	Communicating with Statistics	20	I
NS2AS1	Introduction to Statistical Literacy and Practice	20	I
NS2AS6	Introduction to Statistics	40	I

Group K

xx	Language Module	20	C
CS1TQ2	IT (Commercial off the Shelf Software)	20	C

Part 3 (three terms)		Credits	Level
Compulsory modules			
NS31A	Project in Science and Technology Communication	40	H

Optional modules:

Students must choose 40 credits in two distinct, or 40 credits in one and 20 credits in two other subjects from Archaeology, Biology, Chemistry, Food Biosciences, Geology, Mathematics,

Meteorology, Physics, Soil Science or Statistics. There is such a wide range of potential modules that it is not appropriate to list them here.

Progression requirements

Progression from Part 1 to Part 2
To gain a threshold performance at Part 1 a student shall normally be required to achieve an overall average of 40% over 120 credits taken in Part 1, and a mark of at least 30% in individual modules amounting to not less than 100 credits. In order to progress from Part 1 to Part 2, a student shall normally be required to achieve a threshold performance at Part 1 **and**
obtain at least 40% in each of the groups in which 40 credits are taken.

Where part of the material taught is at Foundation level (pass mark 55%) and Part at the C level (pass mark 40%) the mark required to pass Part 1 will be the weighted average of the pass marks for the modules taken in Part 1. That is, if x credits are taken at Foundation level and 120 – x at C level, the pass mark will be $\frac{x \times 55 + (120 - x) \times 40}{120} (= 40 + \frac{x}{8})$.
To gain a threshold performance at Part 1 a student following such a programme shall normally be required to achieve: an overall average of the pass mark over 120 credits taken in Part 1, and a mark of at least 30% in individual modules amounting to not less than 100 credits taken in Part 1. In order to progress from Part 1 to Part 2, a student shall normally be required to achieve a threshold performance at Part 1.

Progression from Part 2 to Part 3 (Bachelor's programme)
To gain a threshold performance at Part 2 a student shall normally be required to achieve:
an overall average of 40% over 120 credits taken in Part 2, and a mark of at least 30% in individual modules amounting to not less than 100 credits. In order to progress from Part 2 to Part 3, a student shall normally be required to achieve a threshold performance at Part 2.

Summary of teaching and assessment
Part 2 contributes one third of the final assessment, and Part 3 the remaining two thirds.

Teaching is organised in modules that typically involve both lectures and problems. The assessment is carried out within the University's degree classification scheme, details of which are in the programme handbooks. The pass mark in each module is 40%. Modules in Part 1 and 2 are assessed by a mixture of coursework and formal examination.

Admission requirements
Entrants to this programme are normally required to have obtained:
Grade C or better in English and Mathematics in GCSE; and achieved
UCAS Tariff: 300 points including at least one A-Level in Science or Mathematics (Biology, Chemistry, Mathematics, Physics)
International Baccalaureat: 32 points with 6 points in at least one science.
Irish Leaving Certificate: BBBBB
Two AS grades are accepted in place of one A-Level

Admissions Tutor: tba

Support for students and their learning
University support 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. Student guidance and welfare support is provided by Personal Tutors, the Careers Advisory Service, the University's Special Needs Advisor, Study Advisors, Hall Wardens and the Students' Union.

Career prospects
The programme provides an excellent background in the sciences, leading to a familiarity with a broad range of scientific ideas and techniques. Careers open to graduates with this background include management, financial services, or science-related positions in industry or local government (e.g. energy, environment or safety). There are opportunities in the 'science and technology communication' sector e.g. museums and science centres, television, newspapers. There are also opportunities for continuing particular areas of study within the programme to MSc or PhD, or to train as a teacher.

Opportunities for study abroad or for placements
There are no formal arrangements.

Educational aims of the programme
The Science Communication programme aims to produce graduates who have a knowledge and experience of a range of topics in modern science and the links between one and another. It also aims to enhance graduates' skills and experience in communicating and discussing scientific ideas.
The programme is designed to satisfy the requirements of students wishing to combine a number of sciences, along with an understanding and experience of the communication of science and technology, whilst retaining the flexibility to respond to changing interests and subject strengths. The course will provide a broad education in the sciences in comparison to the more traditional route of a single or combined course. The dedicated modules in Communicating Scientific Ideas (also the History and Philosophy of Science) form a strand running through the course will define the Science Communication degree as a holistic entity, and with knowledge of the broader issues surrounding the study and application of science and the ethical issues associated with many contemporary ideas in science.

The programme aims to produce graduates with a broad base across the sciences with expertise and experience in a number of disciplines along with the vital transferable skills of communication, IT and team working. Whilst the programme structure allows the Science Communication student to visit a variety of different disciplines it also permits a degree of specialisation in many areas (assuming the relevant prerequisites) culminating in the final year project. Such a Science Communication graduate will be well placed to continue their studies by pursuing a higher degree.

Programme Outcomes

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

Knowledge and Understanding

A. Knowledge and understanding of:	**Teaching/learning methods and strategies**
1. the broad development of science and scientific ideas 2. the communication and public understanding of science 3. at least three distinct scientific subjects 4. the use of information technology in a scientific context.	Much of the knowledge is delineated in formal lectures backed up by seminars, tutorials and laboratory classes, but some areas (particular in the science communication and the history and philosophy of science) are best delivered through workshops and seminars. *Assessment* Assessment is varied, including formal examinations, dissertation, oral presentation, essays and laboratory reports, as is most appropriate to the area being studied. The assessment of the communication themes will include variety of formats.

Skills and other attributes

B. Intellectual skills – able to:	**Teaching/learning methods and strategies**
1. think logically 2. analyse and solve problems 3. recognise and use subject-specific theories, paradigms, concepts and principles 4. analyse, synthesise and summarise information critically 5. apply knowledge and understanding to address familiar and unfamiliar problems 6. collect and integrate evidence to formulate and test hypotheses 7. conduct independent study of a chosen topic and report on the results. 8. appreciate moral and ethical issues relating to the sciences. 9. Select a mode of communication for a particular task.	Logic is an essential part of the understanding of science and is embedded throughout the programme. The quality of a solution to a problem is substantially determined by the structure of that response; analysis, synthesis, problem solving, integration of theory and application, and knowledge transfer from one topic to another are intrinsic to high-level performance in the programme. Most modules are designed to develop 1- 5. 4 – 6 are enhanced through the use of coursework assignments, fieldwork and project work. 6, 7, 9 are promoted mainly by project work. 8 is addressed in discussion classes. *Assessment* 1- 4 are assessed indirectly in most parts of science, while 5 contributes to the more successful work. 7 is assessed in the project report. 8 is assessed by a general paper.10 is assessed by a project report

C. Practical skills – able to:

1. plan, conduct, and report on investigations, including the use of secondary data
2. write and defend a report on a chosen topic
3. reference work in an appropriate manner
4. conduct scientific experiments and report reliably on their outcomes
5. produce a communication in an appropriate mode

Teaching/learning methods and strategies

1 is emphasised through guidelines and advice given to students in connection with practical work. 2 and 3 are emphasised through guidelines issued to students in connection with project work. 4 is delivered through the laboratory classes

Assessment

1 and 2 are assessed through the project dissertation and its oral presentation. 4 is assessed through laboratory reports or practical examinations.5 is assessed through a project report.

D. Transferable skills – able to:

1. use IT (word-processing, using standard software packages, scientific programming)
2. communicate scientific ideas
3. give oral presentations
4. interpersonal skills: ability to work independently and with others and share knowledge effectively; recognise and respect the views and opinions of other team members.
5. use library resources
6. use the internet critically as a source of information.
7. apply self management and professional development: study skills, independent learning, time management, identifying and working towards targets for personal, academic and career development.

Teaching/learning methods and strategies

The use of IT is introduced in Part 1 and is common throughout the programme. Team work and career planning are part of one Part 2 module. Communication skills are the focus of one module in Part 2, and these are deployed in the final year project. Time management is essential for the timely and effective completion of the programme. Library resources are required for the final year project, and contribute to the best performances throughout.

Assessment

1 and 2 are assessed through coursework. 5 is enhanced partly through the provision of a Career Management Skills element during Part 2, and partly through a PAR tutorial system. 5 is partly assessed through the project. The other skills are not directly assessed but their effective use will enhance performance in later modules.

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 expect 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 module and programme handbooks.