

PROGRAMME SPECIFICATION



1	Awarding Institution	Newcastle University
2	Teaching Institution	Newcastle University
3	Final Award	BSc (Hons)
4	Programme Title	Applied Plant Science Applied Plant Science with Placement Year
5	UCAS/Programme Code	C211 1312U
6	Programme Accreditation	Not applicable
7	QAA Subject Benchmark(s)	Biosciences; Agriculture, Horticulture, Forestry, Food and Consumer Sciences
8	FHEQ Level	Level 6
9	Date written/revised	August 2021

10 Programme Aims

- 1 Develop a thorough knowledge and understanding of plants, and how they interact with microbes, animals and the physical environment;
- 2 Introduce the main disciplines underpinning a full understanding of biology, especially as it applies to plants, including molecular biology, biochemistry, cell biology, physiology, genetics, ecology, evolution and systematics;
- 3 Progressively develop the laboratory and field work skills required for the study of plant science in the context of its application to crop production for food, fibre and pharmaceuticals and in ecological conservation
- 4 Provide a curriculum enhanced by an active research environment that engenders critical thinking;
- 5 Stimulate a wide interest in biological topics, particularly those associated with the application of plant science including an awareness of how current developments may affect the present and future well-being of society and the planet;
- 6 Provide graduate-level training in key skills, including the ability to communicate in a variety of contexts, utilise IT and library resources efficiently, process and interpret quantitative data, manage time effectively, and work both independently and in teams;
- 7 Provide a flexible programme covering all aspects of plant science (with an applied emphasis), incorporating the elements specified in the benchmark statement for Biosciences and that for Agriculture, Horticulture, Forestry, Food and Consumer Sciences issued by the Quality Assurance Agency;
- 8 Provide a curriculum which meets the criteria for B.Sc. Honours Degree level in the Framework for Higher Education Qualifications issued by the Quality Assurance Agency.
In the parallel programme "with placement", to provide students with a period of practical
- 9 experience in research or in the plant science sector and the opportunity to develop their work based skills.

For students on Placement Year Programme:
- 10 Provide students with the experience of seeking and securing a position with an employer.
- 11 Facilitate independent self-management and proactive interaction in a non-university setting.

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| 12 | Provide a period of practical work experience that will benefit current academic study and longer term career plans |
| 13 | Enable students to ethically apply their knowledge and skills in the work place, reflect upon their development and effectively evidence and articulate their learning in relevant future settings. |

11 Learning Outcomes

The programme provides opportunities for students to develop and demonstrate knowledge and understanding, skills and other attributes in the following areas. The programme outcomes are linked to the benchmark statements for Biosciences and Agriculture, Horticulture, Forestry, Food and Consumer Sciences.

Knowledge and Understanding

On completing the programme students should have:

- A1 A knowledge of plant biology from the organism to ecosystem levels.
- A2 An understanding of the functioning of plants, and their interactions with animals and micro-organisms, with particular reference to their role in the processes of the biosphere, especially the provision of ecosystem services underpinning human society.
- A3 A knowledge of the diversity of plants and the principles underlying classification, with an understanding of evolutionary processes.
- A4 An understanding of the relevance and application of plant science within the agricultural industry, forestry, pharmaceuticals and for ecological conservation from local to global levels
- A5 An understanding of genetics at both the population and molecular levels.
- A6 An appreciation of the broader significance and impact of recent advances in plant science on contemporary society and the global challenges it faces.

For students on Placement Year Programme:

- A7 Apply personal and professional development strategies to prioritise, plan, and manage their own skills development and learning.
- A8 Research, select and apply relevant knowledge aimed at enhancing their own skills and effectiveness in specific duties at their placement.
- A9 Demonstrate an understanding of a work environment, how it functions and their contribution to it.
- A10 Relate their work based learning to other areas of personal development, including academic performance.

Teaching and Learning Methods

A1 – A5 are principally imparted through lectures, enhanced and supplemented with co-ordinated practical work or additional learning delivered by means of appropriate tasks, written assignments and seminars. Many of the lecture courses at Stage 3 are crucial in delivering A6 as they provide knowledge and insights at the 'cutting edge'.

Throughout the taught component of the course, students are encouraged and expected to engage in independent study, and are supported in this by the provision of reading lists, including text books and peer-reviewed journal papers, hand-outs and direction to many library and web-based resources.

Assessment Strategy*Assessment Strategy*

Assessment is partly by unseen written examinations (essays, short answers, data interpretation, missing words, multiple choice) but also via coursework. Most modules at Stages 1 and 2 include some coursework, thus ensuring, that elements of formative, as well as summative assessment and a variety of assessment methods are employed. At Stage 3 the distribution of exam- and assignment-assessed work is more polarised between modules, although as at Stages 1 and 2, each form a major part of the whole stage 3 assessment.

The level of academic achievement required under these strategic objectives is consistent with the award of a B.Sc. Honours Degree according to the FHEQ guidelines.

Intellectual Skills

On completing the programme students should have acquired:

- B1 The ability to use the scientific method by formulating and testing hypotheses, designing experiments or other investigations and identifying key data which allow such tests to be made.
- B2 The ability to interpret and effectively summarise quantitative data to test hypotheses, including statistical analysis and interpretation.
- B3 The ability to critically analyse, synthesise and summarise information from a variety of sources, assess the value and limitations of this existing information

Teaching and Learning Methods	
Scientific (cognitive, numerical and analytical) skills (B1, B2, B3) are introduced in targeted sessions (seminars/ practicals) at Stage 1, these skills are further developed at Stage 2 and reinforced through application to laboratory reports, essays and other coursework. During Stage 3, student projects, whether carried out individually or in groups, require students to design their own investigations and experiments (B1), analyse data yielded (B2), and appraised the quality of the data collected (B3) with reference to the literature. B1-3 are all practiced and students are encouraged to continue to develop these skills to address their own needs through feedback on coursework.	
Assessment Strategy	
All intellectual skills are assessed by means of coursework reports and/or small team outputs such as posters or talks in Stages 1 and 2. At Stage 3 some or all of B1-3 (depending on topic) are also examined by means of the larger projects. The level of academic achievement required under these strategic objectives is consistent with the award of a B.Sc. Honours Degree according to the FHEQ guidelines.	
Practical Skills	
On completing the programme students should have acquired: C1 Laboratory experimental and analytical skills, including the use of key equipment, instrument calibration, and recording measurements with appropriate precision and paying due diligence to health and safety issues. C2 The ability to use keys and field guides to identify plants and animals. C3 Appropriate field skills: how to observe, record, and sample plants in a responsible, sensitive and safe manner with regard to risk assessment and ethical issues.	
Teaching and Learning Methods	
Laboratory skills (C1) are introduced in Stage 1 and then developed more widely in practical components of subject specific modules at Stage 2. The analytical and statistical aspects of B1 are addressed through a specialised modules in Stages 1 and 2 and via the many laboratory and field classes in Stage 2 and Stage 3. The ability to develop identification (C2) and field skills (C3) are developed particularly by the field course modules. Students are encouraged to acquire practical laboratory and field investigation skills (C1, C3) by attendance at all laboratory and field classes in Stages 1 and 2. Students can further develop their practical and statistical skills through their application to a specific area of interest in Stage 3 research projects.	
Assessment Strategy	
All practical skills are assessed by means of coursework reports and/or small team outputs such as posters or talks in Stages 1 and 2. At Stage 3 some or all of C1-3 (depending on topic) are also examined by means of the project reports. The level of academic achievement required under these strategic objectives is consistent with the award of a B.Sc. Honours Degree according to the FHEQ guidelines.	
Transferable/Key Skills	
On completing the programme students should be able to: D1 Communicate technical information by means of clear written and spoken presentations, following the accepted conventions for scientific interchange. D2 Use library and IT sources efficiently and critically showing effective information and digital literacy skills. D3 Plan and prioritise work activities in order to meet deadlines. D4 Work independently with initiative, and also play an effective role in teams.	

- D5 Apply reflective approaches to skills development and review their own performance critically
- For students on Placement Year Programme:
- D6 Reflect on and manage own learning and development within the workplace.
- D7 Use existing and new knowledge to enhance personal performance in a workplace environment, evaluate the impact and communicate this process.
- D8 Use graduate skills in a professional manner in a workplace environment, evaluate the impact and communicate the personal development that has taken place

Teaching and Learning Methods

Management of workload in order to meet deadlines (D3) is promoted by means of a clear coursework timetable. All key skills (D1-4) are formally introduced in skills development modules embedded in the programme at Stage 1 and 2. Team-working skills (D4) are developed through supervised group exercises in the laboratory and field at all stages of the programme with students developing more autonomy as they proceed through the programme.

Student learning is largely through supported practice with feedback, together with formative and summative assessment, and is embedded in the curriculum at all Stages and in the great majority of modules. There are also specific modules at each Stage that give explicit opportunities for the development of the full range of professional and academic skills and to develop a reflective approach to skills in the context of career development (D5).

Assessment Strategy

D1 and D2 are assessed repeatedly by means of coursework (laboratory and field work reports) at all three Stages. The ability to critically assess and review existing information is specifically tested in essays and D2-D4 are explicitly tested in the final year research projects. D5 is tested through the use of reflective logs and skills development portfolios.

The level of academic achievement required under these strategic objectives is consistent with the award of a B.Sc. Honours Degree according to the FHEQ guidelines.

12 Programme Curriculum, Structure and Features

Basic structure of the programme

The following principles have been followed within this degree programme with respect to its overall structure:

- **Stage 1** modules are broad in scope and non-overlapping in subject area. They are chosen so that all Stage 1 students receive the same solid grounding in all fundamental areas underpinning plant science, regardless of entry qualifications. Study and reading patterns are quite strongly directed. The curriculum consists of compulsory modules (100 credits) and optional modules (20 credits) to offer choice of subject areas of interest.
- **Stage 2** modules are more specialised, relating more closely to the specifics of the subject. As such, they are shared with fewer other degree programmes. In general, study is more self-driven than at Stage 1, and students are encouraged to develop a more individual and original approach to reading and report writing. Some modules are based around techniques, so that at the end of Stage 2, students should be competent to carry out basic plant identification, physiological and ecological analyses and make simple recommendations for crop/ecosystem management. Students will also have had some experience of critically reviewing research literature, experimental design and data analysis, and the presentation of written and spoken reports resulting from their own work. The curriculum consists of compulsory modules (90 credits) and optional modules (30 credits) allowing students to start to explore a more focussed set of topics/skills.

Students on the Placement Year programme will be on placement year between Stages 2 and 3 of their programme.

- All placements will be undertaken in line with the University's placement policy http://www.ncl.ac.uk/ltds/assets/documents/qsh-workplacement-pol.pdf Stage 3 modules are yet more specialised and research led. Much time is taken up with individual research work in the laboratory, library or field. Students are expected to apply the techniques and knowledge that have been learnt in earlier Stages to specific tasks. Work should be highly self-directed, and revolve around the study of recent research-based literature. High quality work at this level should combine all the knowledge and skills objectives gained across the programme as a whole. The curriculum consists compulsory modules totalling 70 credits and optional modules (50 credits) chosen to give students a thorough background in plant science and the skills to apply this to practical management situations.
Key features of the programme (including what makes the programme distinctive) This Applied Plant Science Programme, as well as giving a sound background in biology, focuses on how plant species interact, both physiologically and ecologically, with each other, as well as with animal species and their environment. Students can select options with a cellular and molecular emphasis underpinning fundamental understanding of plant physiology. Students may take optional modules dealing with a range of applied or associated topics to provide them with the knowledge and insights needed for example to manage crops in agricultural systems, conservation grassland, woodlands, or to develop new approaches and products to control pests and diseases.
Programme regulations (link to on-line version) C211 1312U Regulations 2021-22

13 Support for Student Learning
Generic information regarding University provision is available at the following link. https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf

14 Methods for evaluating and improving the quality and standards of teaching and learning
Generic information regarding University provision is available at the following link. https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf <i>Accreditation reports</i> <i>Additional mechanisms</i>

15 Regulation of assessment

Generic information regarding University provision is available at the following link.

https://www.ncl.ac.uk/ltds/assets/documents/qsh_progspec_generic_info.pdf

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

The University Prospectus: <http://www.ncl.ac.uk/undergraduate/degrees/#subject>

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

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 opportunities provided.