

PROGRAMME SPECIFICATION

1	Awarding Institution	Newcastle University
2	Teaching Institution	Newcastle University
3	Final Award	B. Sc. (Hons)
4	Programme Title	Environmental Science
5	UCAS/Programme Code	F850
6	Programme Accreditation	N/A
7	QAA Subject Benchmark(s)	Earth Sciences, Environmental Sciences and Environmental Studies
8	FHEQ Level	Honours
9	Date written/revised	July 2007

10 Programme Aims	
1	To recruit students from a varied educational background who wish to study a breadth of natural and social science subjects in an integrated way within a holistic frame.
2	To produce graduates with: <ol style="list-style-type: none"> i) an ability to apply understanding of a range of natural and social sciences pertinent to the study, understanding and management of environmental systems; ii) an ability to carry out scientific research investigations and an ability to handle information flexibly from a variety of disciplines in an integrated manner; iii) the necessary key skills and knowledge to gain employment as an environmental scientist or in other fields requiring good investigative and problem-solving skills.
3	To provide a flexible programme of study which meets the FHEQ at Honours level and which takes appropriate account of the Quality Assurance Agency Benchmark Statement for 'Earth Sciences, Environmental Sciences and Environmental Studies'.

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.	
Knowledge and Understanding	
On completing the programme students should have gained and be able to apply their knowledge of:	
A1	Fundamental physical and biological processes within global ecosystems and their complexity and inter-relationships
A2	The political, social and economic implications of human interaction with the environment
A3	Human responses to environmental problems at local to global scales including environmental impact assessment and the implications of paradigms of sustainability and sustainable development.
A4	An understanding of legislative and policy frameworks concerned with human interaction with the environment
A5	Measures of biodiversity and strategies for its maintenance at a range of temporal and spatial scales
Teaching and Learning Methods	
The primary mechanism for teaching knowledge and understanding is via lectures supported by case studies. The integrated nature of the global environment (A1, A5) and the structures shaping human interactions with the environment (A2-A4) are introduced in a range of modules at Stage 1. The application of this knowledge is further developed through fieldwork and site visits. The global focus and issues of sustainable resource use are taken forward in 'Climatic and Environmental Change' at Stage 2 and 'Tropical Environments, Ecology and Land Use' at Stage 3. Biodiversity and environmental management (A4-A5) are addressed by specific modules at all Stages. The practice of environmental science and environmental impact assessment (A3) is introduced in 'Environmental Science Issues' at Stage 1. The themes are further developed in	

'Environmental Practice' and 'Environmental Assessment and Design' at Stage 2 and in 'Sustainability in theory and practice' at Stage 3. These subjects are also developed through fieldwork and case studies and given currency by the use of outside speakers and other practitioners.

Students are encouraged to engage in independent reading to support information delivered in lectures and seminars; they are provided with reading lists to guide them. In many Modules, tutorials follow-up on material covered in lectures and support student-student interaction. Students are encouraged to ask questions during lectures. Role-playing, case-studies and discussion, are used to consolidate less objective elements (A2-A3) and encourage reflection on personal values. Field observation, the writing of reports and reflection on collated data and case studies aid the development of understanding. By Stage 3 students are expected to take responsibility for their own learning and that of the class with an increased proportion of student-led seminars.

Assessment Strategy

Most modules are assessed by a combination of in-course assessment and a written examination taken at the end of the semester in which the module finishes. A variety of assessment methods are used including assessment of précis, essays, case studies and research reports, oral presentations and posters, unseen examinations and open book examinations. Most work is produced individually but some is team-based. Peer assessment is used both to moderate team marks and to encourage critical appraisal of work and a better understanding of assessment criteria. The methods of assessment, their relative weighting, their links to learning outcomes and their timing appear in every module description.

Intellectual Skills

On completing the programme students should be able to:

- B1 Handle data from a variety of disciplines and integrate information to provide interdisciplinary insights
- B2 Select and apply a range of methods to solve problems and produce reasoned solutions.
- B3 Develop appropriate search strategies and critically appraise primary and secondary data, information and viewpoints to produce a reasoned evaluation.
- B4 Relate investigations to prior work and the state-of-the-art in the field and reference sources appropriately
- B5 Interpret and effectively communicate using both quantitative and qualitative data.

Teaching and Learning Methods

Encouraging students to consider data in a critical manner and justify their interpretation develops cognitive skills. This is done during tutorials, fieldwork and lectures. Students learn through problem-solving, handling data, and discussion. 'The Global Environmental System' and 'Environmental Science Issues' focus on understanding rather than learning facts, from early in Stage 1, with an emphasis on problem-solving (B2, B3). This approach, and an emphasis on integrating materials across disciplines (B1), continues particularly at Stage 2 in 'Environmental Assessment and Design' and the field classes. Subsequently in case studies and their research project students practice production of reasoned arguments. For the student-led seminars in "Sustainability in theory and practice" they are required not only to present a reasoned argument to introduce the topic but also to develop materials to support further class discussion. Information literacy is integrated, developed and assessed throughout the course with the support of the library and information centre support staff with a 'golden thread' running from 'Environmental Science Issues' through 'Environmental Practice' to the 'Environmental Science Research Project' (B3, B4). The ability to handle, interpret and communicate quantitative and qualitative data (B5) is developed progressively with specific practice at Stage 1 in 'The Global Environmental System' 'Statistical Methods' and 'Environmental Issues' through to increasingly independent handling of data in 'Environmental Practice' and the research project.

Assessment Strategy

Intellectual skills are assessed by means of examinations, essays, oral presentations and contributions to discussion, case studies, laboratory and field reports and the written and oral reports for the Stage 3 project. The ability of students to support their answers with reasoned argument, application and critical analysis and reference to previous studies is a key marking criteria for assessed work at all Stages.

Practical Skills

On completing the programme students should be able to:

- C1 Collect and record environmental data in the field and laboratory. This will require the application of a range of skills including: planning, organisation, observation and recording.
- C2 Select and use appropriate laboratory and field equipment competently and safely within an appropriate risk management framework.

C3	Design research investigations to address clearly stated objectives and to allow formal testing of hypotheses where appropriate.
C4	Collate data, apply statistical analysis and interpret data appropriately to address defined objectives
Teaching and Learning Methods	
<p>Data collection and taxonomic skills (C1, C2) are developed through laboratory based practicals, field visits and field classes. These also reinforce the data handling and experimental design principles (C3, C4) first introduced in lectures.</p> <p>Students acquire skills (C1-C4) through hands-on practical experience, problem exercises and their Stage 3 Environmental Science Research Project. Fieldwork becomes progressively less structured beginning with field visits in 'Environment and Land Resources Field Class', through student led project planning in the Environmental Science Field Classes 2 and 3, and requiring student led design and management of the research project in Stage 3.</p>	
Assessment Strategy	
<p>Assessment is mostly through reports, practical write-ups and the research project (C1-C4). Reports have an element of reporting on process as well as results at Stage 1 and 2. As part of the final report for the Environmental Science Field Class 2, students are required to detail their process of scoping and then designing a short field-based project. Laboratory skills are assessed by means of a laboratory reports (in 'Soils in the Terrestrial Environment' and a number of other Modules).</p>	
Transferable/Key Skills	
<p>A successful student will be able to:</p> <p>D1 Summarise and communicate in writing and orally in a manner appropriate to the target audience.</p> <p>D2 Work effectively both independently and as a member of a team.</p> <p>D3 Plan work and handle logistical constraints,</p> <p>D4 Reflect on learning experiences, take responsibility for personal learning and professional development.</p> <p>D5 Use computing and information technology effectively.</p>	
Teaching and Learning Methods	
<p>Students are encouraged and supported to develop and enhance their key skills at all stages of the programme. Communication skills (D1) are developed through tutorials and student-led seminars (which require both written and oral contributions). Team-based exercises are used throughout the course and the development of team-working skills supported by reflective tutorials, within 'Environmental Issues' at Stage 1 and "Sustainability in theory and practice" at Stage 3 (D2). In parallel, effective independent working (D2, D3) is encouraged and supported through the development of individual areas of interest in 'Environmental Issues' and through supported independent working in many other Modules throughout the programme. C&IT skills (D5) are developed through 'Environmental Science Issues' and 'Environmental Science Practice' and the Stage 3 project report. Varied requirements for assessments reinforce this and give the opportunity to practice directed report writing skills for a range of work-relevant contexts. The 'Blackboard' managed learning environment is used for several modules.</p> <p>Emphasis is placed on effective study habits and time management at the very beginning of the programme with 'Environmental Science Issues' serving to encourage and monitor good practice. Students are encouraged to consider the key skills required of environmental science professionals as part of "Environmental Science Practice" and to put into place their own development strategy to enable them to deliver such skills before seeking formal employment. At Stage 2 all students are required to take at least 10 credits from the NCL-coded modules which have been particularly designed to facilitate the development of key skills in work-relevant contexts.</p>	
Assessment Strategy	
<p>Key skills are assessed through the production of coursework, case studies and the Stage 3 project ('Environmental Science Research Project'). Oral and poster presentations, reports and précis test the ability to communicate in a variety of media and in a manner appropriate to the target audience (D1). The effective use of information sources (D4) is assessed throughout the programme using essays and case studies and, at Stage 3, through the literature review required in the 'Environmental Science Research Project'. Teamwork Skills (D2) are assessed formatively through tutorial debriefs; peer-assessment forms one element of summative assessment and students are required to evaluate team performance with reference to literature models in the summative assessment for "Sustainability in theory and practice". Planning Skills (D3) are summatively assessed in the investigative project with formative assessment earlier in feedback on core studies and fieldwork. C&IT skills (D5) are assessed in coursework exercises in 'Environmental Science</p>	

Issues', subsequently in the production of case studies (e.g. in 'Soils in the Terrestrial Environment' at Stage 2 and in 'Tropical Environments, Ecology and Land Use' at Stage 3, and especially in the production of project reports at Stage 3).

12 Programme Curriculum, Structure and Features

Basic structure of the programme

This is a three-year full-time modular programme consisting of 120 credits/year for three years. 10 credits are equivalent to 100 hours of study time (including both contact time and private study). Modules vary in valency from 10 to 20 credits.

Stage 1 is common to all students, ensuring a firm foundation across the full spectrum of disciplines necessary to practise environmental science. This includes laboratory and fieldwork, individual and team problem-solving and the study of contemporary issues in environmental management. There is an emphasis on good study practice, with particular modules focusing very much on developing understanding rather than just facts, and the development of C&IT and literature search skills.

From Stage 2 onwards there is a common spine of compulsory modules with a range of optional modules available to all students so that they can develop individual specialisms. Students may opt to take a placement year between Stages 2 and 3; students are responsible for finding appropriate placement opportunities, however, support is given by programme staff and the careers service.

Stage 3 includes a substantial literature review and project, demanding high level organisational, communication and problem-solving skills.

Progression through to Stages 2 and 3 is dependent on obtaining an overall mark of at least 40 at the preceding stage. Compensation of lower marks is possible. Two resit attempts are allowed.

Key features of the programme (including what makes the programme distinctive)

Particular features of the programme are:

- modules unique to the programme at each Stage
- field work modules at each Stage.
- the opportunity to study terrestrial, aquatic (freshwater and marine) and atmospheric environments
- a focus on the rural environment and the interaction of agriculture, ecology and ecosystem services
- the opportunity to study environmental law, policy and management
- the opportunity to engage with local organisations involved in environmental management
- the opportunity to study tropical environments and development
- the opportunity to undertake an individual research project in a department active in environmental research.

Programme regulations (link to on-line version)

<http://www.ncl.ac.uk/regulations/programme/2007-2008/programme/f850.php>

13 Criteria for admission

Admissions policy/selection tools

Students apply to the programme from a range of backgrounds with diverse qualifications. We consider each applicant on an individual basis taking into account information provided on the UCAS application including experience, past academic performance and potential. Students are encouraged to contact us to discuss their position if they require any further details or clarification.

Entry qualifications

A levels: ABB/BBB preferably including two science subjects (one of which may include Geography). GCSE Mathematics (minimum grade C) required if not offered at a higher level.

Scottish qualifications: AABBB/BBBBB including at least two sciences (which may include Geography). Mathematics required at grade 2 Standard Grade (or Intermediate 2 equivalent) if not offered at Higher Grade. Combinations of Highers and Advanced Highers accepted.

International Baccalaureate: 30 points with a science subject at Higher Level grade 5 or above. Mathematics

should be offered at Standard Level grade 5 or above if not offered at Higher Level.

Non-standard Entry Requirements

We welcome students with qualifications other than those listed above, including Irish Leaving Certificate, BTEC and Access to HE Courses with an appropriate level of science/ maths qualification.

Students with combinations of other qualifications may be invited to visit the University before an offer is made. We are pleased to advise anyone interested with regard to choosing an appropriate preparatory course of study.

Students completing the biology foundation year programme at Newcastle University successfully can progress to Stage 1 of the Environmental Science programme.

Level of English Language capability

A score of at least IELTS 6.5 or equivalent is needed if students are not native English speakers.

14 Support for Student Learning

Induction

During the first week of the first semester students attend an induction programme. New students are given a general introduction to University life and the University's principal support services and general information about the School and their programme, as described in the Degree Programme Handbook. New and continuing students meet their personal tutors in individual meetings and also are enabled to mix and discuss issues arising for them as groups and individuals. Detailed programme information and the timetable of lectures/practicals/labs/ tutorials/etc is provided during the induction programme.

The International Office offers an additional induction programme for overseas students (see

<http://www.ncl.ac.uk/international/arrival/jan/index.phtml>

Study skills support

Students learn a range of Personal Transferable Skills within the timetabled programme, including Study Skills, as outlined in the learning outcomes above. Students are given support to develop appropriate approaches to both group and individual projects.

Numeracy support is available through Maths Aid. Further details are available at:

http://www.ncl.ac.uk/library/news_details.php?news_id=159

Help with academic writing is available from the Writing Centre. Details can be obtained from

Alicia.Cresswell@ncl.ac.uk

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. Details of the personal tutor system can be found at

<http://www.ncl.ac.uk/undergraduate/support/tutor.phtml>

In addition the University offers a range of support services, including the Student Advice Centre, the Counselling and Wellbeing team, the Mature Student Support Officer, and a Childcare Support Officer, see

<http://www.ncl.ac.uk/undergraduate/support/welfare/index.phtml>

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. For further details see <http://www.ncl.ac.uk/disability-support/>

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, see <http://www.ncl.ac.uk/undergraduate/degrees/facilities/index.phtml>

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-session 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. See <http://ncl.ac.uk/langcen/index.htm>

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

Module reviews

All modules are subject to review by student questionnaires which are considered by the Board of Studies. Changes to, or the introduction of new, modules are considered at the School Teaching and Learning Committee and at the Board of Studies. 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.

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 the students' views on the quality of the learning and teaching in their HEIs. Further information is at www.thestudentsurvey.com/ With reference to the outcomes of the NSS and institutional student satisfaction surveys actions are taken at all appropriate levels by the institution.

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, see http://www.ncl.ac.uk/agss/gsh/internal_subject_review/index.php

16 Regulation of assessment

Pass mark

The pass mark is 40 for all Undergraduate programmes.

Course requirements

Progression is subject to the University's Undergraduate Progress Regulations (<http://www.ncl.ac.uk/calendar/university.regs/ugcont.pdf>) and Undergraduate Examination Conventions (<http://www.ncl.ac.uk/calendar/university.regs/ugexamconv.pdf>). 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 resit opportunities, with certain restrictions.

Weighting of stages

The marks from Stages 2 and 3 will contribute to the final classification of the degree
The weighting of marks contributing to the degree is 1:3 for Stage 2 and 3 respectively

Common Marking Scheme

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

Modules used for

Modules not used for

	degree classification (DC)	degree classification
<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, after recommendation from the Board of Studies. The External Examiner is expected to:

- See and approve examination papers
- Moderate examination and coursework marking
- Attend the Board of Examiners
- Report to the University on the standards of the programme

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

The University Prospectus (see <http://www.ncl.ac.uk/undergraduate/>)

The School Brochure (contact enquiries@ncl.ac.uk)

The University Regulations (see <http://www.ncl.ac.uk/calendar/university.regs/>)

The Degree Programme Handbook (see <http://www.ncl.ac.uk/afrd/undergrad/degrees/envsci.htm>)

The School website (see <http://www.ncl.ac.uk/afrd/>)

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.

ANNEX

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)

		Stage 1	Stage 2	Stage 3
A1	Fundamental physical and biological processes within global ecosystems and their complexity and inter-relationships	ACE1008, ACE1009, BIO1003, BIO1006, GSC1101, GSC1102, MST1007.	ACE2015, ACE2016, ACE2032, BIO2002, ACE2023, <i>GEO2030, GSC2101, MST2004</i>	ACE3020, ACE3021, ACE3018, ACE3019, ACE3035, <i>BIO3002, BIO3003, BIO3007, BIO3012, GEO3069</i>
A2	The political, social and economic implications of human interaction with the environment	ACE1009, ACE1010, GSC1101, MST1007	ACE2032, BIO2002, ACE2003, ACE1003, ACE2023, <i>MST2003</i>	ACE3042, BIO3010, ACE3019, ACE3026, ACE3035, <i>GEO3069</i>
A3	Human responses to environmental problems at local to global scales including environmental impact assessment and the implications of paradigms of sustainability and sustainable development.	ACE1009, BIO1006, SVY1002	ACE2014, ACE2017, BIO2002, ACE2003	ACE3020, ACE3042, ACE3018, ACE3026, ACE3035, <i>BIO3007, BIO3012, ACE3013, GEO3069</i>
A4	An understanding of legislative and policy frameworks concerned with human interaction with the environment	ACE1009	ACE2017, LAW2053, ACE2023, <i>GEO2030</i>	BIO3010, ACE3026, ACE3013, ACE3016, ACE3017
A5	Measures of biodiversity and strategies for its maintenance at a range of temporal and spatial scales	BIO1006	ACE2032, BIO2002, <i>BIO2017</i>	ACE3020, ACE3021, BIO3010, ACE3019, <i>BIO3012</i>
B1.	Handle data from a variety of disciplines and integrate information to provide interdisciplinary insights.	ACE1009, ACE1010, GSC1101, MAS1401	ACE2014, ACE2016, ACE2017, ACE2032, ACE2023, <i>MST2003, GEO2030</i>	ACE3020, ACE3042, ACE3019, ACE3017, <i>BIO3007, GEO3064</i>
B2.	Select and apply a range of methods to solve problems and produce reasoned solutions.	ACE1010, GSC1101, SVY1002	ACE2014, ACE2015, ACE2003, <i>BIO2017, GSC2101, NCL2001/2002, NCL2201/2202</i>	ACE3021, ACE3042, ACE3095, BIO3010, BIO3022, <i>BIO3003</i>
B3.	Develop appropriate search strategies and critically appraise primary and secondary data, information and viewpoints to produce a reasoned evaluation.	ACE1008, ACE1010, ACE1009, GSC1102, MST1007	ACE2015, ACE2017, ACE2032, <i>GEO2030, GSC2101, MST2003, MST2004, NCL2001/2002, NCL2201/2202</i>	ACE3020, ACE3021, BIO3010, BIO3022, ACE3018
B4.	Relate investigations to prior work and the state-of-the-art in the field and reference sources appropriately	ACE1008, ACE1010, GSC1102	ACE2014, ACE2032, ACE2023	All, in particular ACE3020, ACE3095, ACE3042, BIO3022

B5.	Interpret and effectively communicate using both quantitative and qualitative data.	GSC1101, ACE1010, BIO1006, MAS182, SVY1002	ACE2015, ACE2016, BNS232, BIO2017, MST2004	ACE3021, ACE3095, ACE3042, BIO3002, BIO3003, GEO3064
C1	Collect and record environmental data in the field and laboratory. This will require the application of a range of skills including: planning, organisation, observation and recording.	ACE1008, ACE1010, BIO1003, BIO1006, GSC1102	ACE2015, ACE2016, ACE2017, ACE2023, BIO2017, MST2003	ACE3021, ACE3020, ACE3095, BIO3022, ACE3019, GEO3064
C2	Select and use appropriate laboratory and field equipment competently and safely within an appropriate risk management framework.	ACE1010	ACE2015	ACE3021, ACE3095, BIO3022, GEO3064
C3	Design research investigations to address clearly stated objectives and to allow formal testing of hypotheses where appropriate.	---	ACE2014, ACE2015	ACE3021, ACE3095, BIO3022, GEO3064
C4	Collate data, apply statistical analysis and interpret data appropriately to address defined objectives	MAS1401	ACE2014, ACE2015, ACE2017, BIO2017, MST2004	ACE3021, ACE3095, BIO3010, BIO3003
D1	Summarise and communicate in writing and orally in a manner appropriate to the target audience.	ACE1009, ACE1010, GSC1102	ACE2014, ACE2015, ACE2016, ACE2017, ACE2023, BIO2017, MST2003, NCL2001/2002, NCL2201/2202	ACE3020, ACE3021, ACE3095, BIO3022, ACE3018
D2.	Work effectively both independently and as a member of a team.	ACE1010, BIO1006	ACE2015, ACE2016, ACE2017, ACE2003, NCL2001/2002/2201/2202.	ACE3020, ACE3021, BIO3010, ACE3095, BIO3022, GEO3064
D3.	Plan work and handle logistical constraints.	ACE1009, ACE1010, GSC1101	ACE2015, ACE2017, LAW2053, BIO2017, MST2003, MST2004, NCL2001/2002, NCL2201/2202	ACE3020, ACE3021, ACE3095, BIO3022, GEO3064
D4.	Reflect on learning experiences, take responsibility for personal learning and professional development.	ACE1009	ACE2014, ACE2015, NCL2001/2002, NCL2201/2202	ACE3042, ACE3095
D7.	Use computing and information technology effectively.	ACE1009, SVY1002	ACE2015, ACE2023	ACE3021, ACE3095, BIO3003