

BSc Hons Computing Science (*with specialism*) (DPP/DIAS)

BSc Hons Computing Science (Artificial Intelligence) (DPP/DIAS)

BSc Hons Computing Science (Healthcare Technologies) (DPP/DIAS)

BSc Hons Computing Science (Mobile Technologies) (DPP/DIAS)

BSc Hons Computing Science (Network Technologies) (DPP/DIAS)

Programme Information

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The latest information and guidance can be found on the Course Notice Board
<http://scm.ulster.ac.uk/comp/>

Programme Aims & Objectives

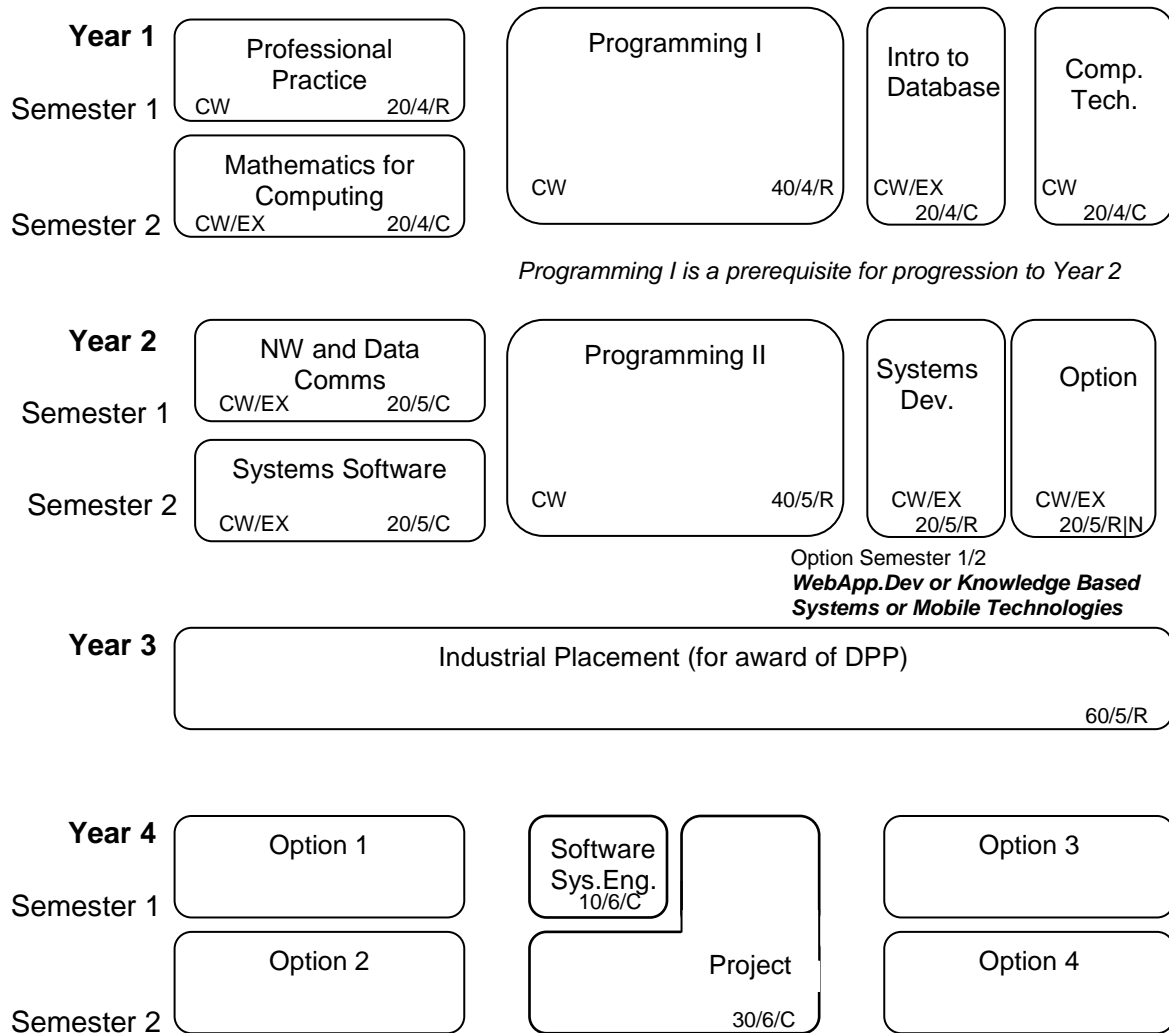
The discipline of computing science has underpinned recent technological advances in areas such as software engineering, telecommunications, advanced manufacturing and electronic commerce. The BSc Hons Computing Science, BSc Hons Computing Science (*with specialism*) and BEng Hons Software Engineering courses are closely related programmes of study designed to produce graduates equipped to work as software professionals in the computing industry.

The overall aim of the courses is to provide a broadly-based education in computing science and software engineering which will produce graduates equipped to apply best practice in software engineering to the development of a wide range of information systems in organizations.

In support of this, the courses have the following objectives:

- Provide a systematic study of the theory and principles of programming and software engineering, computer hardware and software technologies, and the role of computing systems in organizations.
- Develop an ability to analyze computing problems and formulate practical solutions to these problems, coupled with the ability to critically evaluate the approach and techniques used.
- Provide opportunities for the development of practical skills in software development in a business/industrial context.
- Develop key skills and enterprise competencies to support the student's progression into a career in the software industry or further academic study.

Programme Structure



Year 4 Options - All modules 20 points at Level 6.

Artificial Intelligence:

- Intelligent Systems (S1, C)
- Natural Language Processing (S2, C)

Mobile Technologies

- Mobile Computing (S1, C)
- Interactive Web Computing (S1, C) *or*
- Advanced Computer Networks (S2, C) *or*
- Concurrent & Distributed Systems (S2, C)

Healthcare Technologies

- Health Informatics (S1, C)
- Emerging Healthcare Technologies (S2, C)

Network Technologies:

- Advanced Computer Networks (S2, C)
- Concurrent & Distributed Systems (S2, C)

Software Engineering (compulsory BEng):

- Formal Requirements Specification (S1, C)
- Software Engineering Management (S2, C)

Project

- BSc Hons CS – CS Project (S1&2, C)
- BEng Hons SE – SE Project (S1&2, C)

Teaching and Learning Support Charter

This Charter outlines the University's commitments to students and their responsibilities in relation to teaching and learning. A copy is available at:

<http://www.ulster.ac.uk/quality/qmau/t&l/supportcharter.pdf>

Programme Specification

COURSE TITLE: BSc Hons Computing Science (*with specialism*) DPP/DIAS

BSc Hons Computing Science (Artificial Intelligence) DPP/DIAS

BSc Hons Computing Science (Healthcare Technologies)
DPP/DIAS

BSc Hons Computing Science (Mobile Technologies) DPP/DIAS

BSc Hons Computing Science (Network Technologies) DPP/DIAS

PLEASE NOTE: This specification provides a concise summary of the main features of the BSc Honours Computing Science (*with specialism*) (DPP/DIAS) and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he or she takes full advantage of the learning opportunities provided. More detailed information on the specific learning outcomes, content and the teaching, learning and assessment methods of each module can be found in the module handbooks and online via the course notice board at <http://scm.ulster.ac.uk/comp/>.

1. **AWARD INSTITUTION/BODY:** UNIVERSITY OF ULSTER
2. **TEACHING INSTITUTION:** UNIVERSITY OF ULSTER
3. **LOCATION:** Jordanstown
4. **ACCREDITED BY:** British Computer Society
5. **FINAL AWARD:**
BSc Hons in Computing Science (Artificial Intelligence) with Diploma in Professional Practice / Diploma in International Academic Studies OR
BSc Hons in Computing Science (Healthcare Technologies) with Diploma in Professional Practice / Diploma in International Academic Studies OR
BSc Hons in Computing Science (Mobile Technologies) with Diploma in Professional Practice / Diploma in International Academic Studies OR

BSc Hons in Computing Science (Network Technologies) with Diploma in Professional Practice / Diploma in International Academic Studies

- 6. MODE OF ATTENDANCE:** Full-time
- 7. SPECIALISMS:** Computing
- 8. COURSE/UCAS CODE:** 6177 / GG47 (Artificial Intelligence)
6179 / GG4M (Healthcare Technologies)
6628 / G422 (Mobile Technologies)
6181 / G490 (Network Technologies)
- 9. DATE WRITTEN/REVISED** September 2011

10. EDUCATIONAL AIMS OF THE COURSE

The overall aim of the course is to provide a broadly-based education in computing science which will produce graduates equipped to apply best practice in software engineering to the development of a wide range of information systems in organisations.

In support of this, the course has the following objectives:

- to provide a systematic study of the theory and principles of programming and software engineering, computer hardware and software technologies, and the role of computing systems in organisations.
- to develop an ability to analyse computing problems and formulate practical solutions to these problems, coupled with the ability to critically evaluate the approach and techniques used.
- to provide opportunities for the development of practical skills in software development in a business/industrial context.
- to provide opportunities for the study at an advanced level of a range of computing techniques, technologies and applications.
- to develop key skills and competencies to support the student's progression into a career in the software industry or further academic study.

MAIN LEARNING OUTCOMES

The following reference points were used to inform the development of the programme and its learning outcomes:

- The University's vision and core strategic aims, teaching and learning strategy

and policies;

- Current research and scholarship carried out by academic staff;
- The QAA Computing subject benchmark statement (2007) (B);
- The British Computer Society Guidelines on Course Exemption and Accreditation (2007)(P);
- The University Qualifications and Credit framework;
- Computing Curricula 2005 (ACM/IEEE Computer Society)

11.1 BSc Hons Computing Science (*with specialism*) DPP/DIAS

The course provides opportunities for students to achieve and demonstrate the following learning outcomes.

KNOWLEDGE AND UNDERSTANDING OF SUBJECT

- K1** Programming fundamentals, data structures and algorithms, databases, human-computer interaction and software engineering (B, P)
- K2** Computer architecture, computer networks, systems software and web-based computing (B, P)
- K3** An engineering approach to the development of information systems in organisations (B, P)
- K4** Professional issues in information systems engineering (B, P)
- K5** Current developments in a range of advanced computing techniques, technologies and applications (B, P)

INTELLECTUAL QUALITIES

The ability to:

- I1** Abstract and model data and facts pertaining to the requirements of an information system for the purposes of comprehension, analysis, specification and communication (B, P)
- I2** Formulate design specifications for constructing information systems and apply problem solving skills in their specification and implementation (B, P)
- I3** Analyse and evaluate the extent to which an information system meets the criteria defined for its current use and future development (B, P)
- I4** Relate professional, legal, moral and ethical issues to the engineering and use of information systems (B, P)

- I5 Justify and communicate the technical and organisational rationale for a particular software solution (B)
- I6 Apply computing science fundamentals to the comprehension and evaluation of advanced hardware and software technologies (P)

PROFESSIONAL/PRACTICAL SKILLS

The ability to:

- P1 Specify, design, construct and test computer-based information systems (B, P)
- P2 Deploy best practice engineering processes, techniques and tools for the development and documentation of information systems (B, P)
- P3 Work collaboratively with others, recognising the different roles within a team and the different ways of organising teams (B, P)
- P4 Communicate effectively technical information to technical, management, user, and academic audiences (B, P)
- P5 Operate computing equipment effectively, based on an understanding of its hardware and software elements (B)
- P6 Solve computing problems in a business/industrial context.

TRANSFERABLE SKILLS

The ability to:

- T1 Learn in both familiar and unfamiliar situations making effective use of information retrieval skills and learning resources (B)
- T2 Communicate effectively using various media and with a variety of audiences (B)
- T3 Apply numeracy in both understanding and presenting cases involving a quantitative aspect (B)
- T4 Effectively use general information technology facilities (B)
- T5 Manage one's own learning and development including time management, organizational skills and awareness of entrepreneurship issues (B, P)
- T6 Appreciate the need for continuing professional development in recognition of the need for life long learning (B, P)

PROGRAMME LEARNING OUTCOMES MAP - BSc Hons Computing Science (*with specialism*) DPP/DIAS

Please note: The matrix displays only the measurable programme outcomes and where these are developed and assessed within the modules offered in the programme. There may be other outcomes detailed in the module descriptions (eg attitudes and behaviours) which are not assessed.

Modules	Outcomes																									
		TITLE	CODE	K1	K2	K3	K4	K5	I1	I2	I3	I4	I5	I6	P1	P2	P3	P4	P5	P6	T1	T2	T3	T4	T5	T6
<i>Year 1</i>																										
Programming I	COM180	Y		Y			Y	Y						Y	Y			Y					Y	Y		
Professional Practice	COM163			Y	Y		Y	Y	Y	Y				Y	Y	Y	Y			Y			Y	Y	Y	Y
Computer Technologies	COM140		Y		Y					Y			Y					Y	Y			Y	Y	Y		
Introduction to Databases	COM147	Y	Y	Y	Y		Y	Y						Y	Y			Y	Y				Y	Y		
Mathematics for Computing	COM137	Y		Y			Y	Y						Y	Y								Y			
<i>Year 2</i>																										
Programming II	COM323	Y		Y			Y	Y	Y			Y	Y	Y	Y			Y					Y	Y		
Networks and Data Communications	COM319		Y					Y		Y				Y		Y		Y		Y	Y	Y	Y	Y		
Systems Development	COM333	Y		Y			Y	Y	Y		Y			Y	Y	Y	Y			Y			Y			
Systems Software	COM332		Y							Y			Y	Y		Y		Y					Y	Y		
<i>Year 2 options</i>																										
Web Application Development	COM409	Y	Y	Y			Y	Y	Y	Y				Y	Y	Y		Y						Y		
Mobile Technologies	COM337	Y	Y	Y			Y	Y	Y	Y				Y	Y	Y		Y						Y		
Knowledge Based Systems	COM340	Y		Y			Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y				Y				
<i>Year 3</i>																										
Industrial Placement	COM367						Y			Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y	Y		Y	Y	Y
<i>Final Year</i>																										
Software Systems Engineering	COM606	Y		Y		Y	Y	Y	Y		Y			Y	Y			Y			Y					
Computing Science Project	COM562	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
<i>Final Year Options</i>																										

Modules

Outcomes

TITLE	CODE	K1	K2	K3	K4	K5	I1	I2	I3	I4	I5	I6	P1	P2	P3	P4	P5	P6	T1	T2	T3	T4	T5	T6
Formal Requirements Specification*	COM583	Y		Y		Y	Y	Y	Y		Y	Y	Y	Y	Y				Y		Y			
Health Informatics	COM510		Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y			Y	
Intelligent Systems	COM527	Y		Y		Y	Y	Y	Y		Y	Y	Y	Y					Y		Y			
Interactive Web Computing	COM554	Y	Y	Y		Y		Y	Y		Y	Y	Y	Y		Y			Y					
Mobile Computing	COM528	Y	Y		Y	Y	Y			Y		Y	Y	Y	Y	Y	Y		Y	Y		Y	Y	Y
Advanced Computer Networks	COM548		Y	Y		Y	Y	Y	Y		Y	Y	Y	Y		Y	Y		Y		Y	Y		
Concurrent and Distributed Systems	COM577	Y	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y			Y		Y					
Natural Language Processing	COM578	Y	Y	Y		Y	Y	Y	Y		Y	Y	Y	Y			Y		Y		Y	Y		
Software Engineering Management*	COM582	Y		Y	Y	Y	Y	Y	Y	Y		Y		Y		Y	Y		Y		Y			
Emerging Healthcare Technologies	COM641	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y				Y	Y	Y		Y	

* Compulsory BEng Hons Software Engineering

11.2 Certificate of Higher Education in Computing (Exit Award)

The course provides opportunities for students to achieve and demonstrate the following learning outcomes.

11.2K KNOWLEDGE AND UNDERSTANDING OF SUBJECT

- K1** Programming fundamentals, elementary data structures and algorithms, databases and the software life cycle. (B,P)
- K2** Computer architecture (B,P)
- K3** An engineering approach to the development of information systems in organisations (B, P)

Teaching and Learning Methods

Lectures will be used present and illustrate basic theory and fundamental principles. Tutorials will be used to elaborate lecture content, provide problem solving opportunities and examine problem solutions in greater detail. Laboratory classes will enable hands-on experience of the practical application of theoretical concepts. Class work will supplemented by directed private study and may include access to online tutorial and study material.

Assessment Methods

A wide variety of assessment methods will be used including class tests, collaborative coursework assignments and online assessments. Assessment of the knowledge base is principally through written examinations and submitted coursework assignments.

11.2I INTELLECTUAL QUALITIES

The ability to:

- I1** Abstract and model data and facts pertaining to the requirements of an information system for the purposes of comprehension, analysis, specification and communication (B, P)
- I2** Formulate design specifications for constructing software and apply problem solving skills in its specification and implementation (B, P)
- I3** Analyse and the extent to which an information system meets the criteria defined for its use. (B, P)
- I4** Communicate the technical and organisational rationale for a particular software solution (B)

Teaching and Learning Methods

Intellectual qualities will be developed mainly through application of theory in laboratory practical classes, individual and collaborative coursework assignments, directed private study.

Assessment Methods

Class tests, coursework assignments and written examinations.

11.2P PROFESSIONAL/PRACTICAL SKILLS

The ability to:

- P1** Analyse computer-based information systems (B, P)
- P2** Deploy best practice engineering processes, techniques and tools for the development and documentation of information systems (B, P)
- P3** Communicate technical information to technical, management, user, and academic audiences (B, P)
- P4** Operate computing equipment effectively, based on an understanding of its hardware and software elements (B)

Teaching and Learning Methods

Skills will be developed through tutorials, laboratory practical classes, coursework, directed private study.

Assessment Methods

Skills will be assessed by class-tests, coursework assignments.

11.2T TRANSFERABLE SKILLS

The ability to:

- T1** Apply numeracy in both understanding and presenting cases involving a quantitative aspect (B)
- T2** Effectively use general information technology facilities (B)

Teaching and Learning Methods

Development of transferable skills operates across the programme in lectures and tutorials, laboratory practical classes, directed private study and coursework.

Assessment Methods

Assessment is through class-tests, coursework assignments, coursework.

11.2 PROGRAMME LEARNING OUTCOMES MAP - Certificate of Higher Education in Computing (Exit Award)

Please note: The matrix displays only the measurable programme outcomes and where these are developed and assessed within the modules offered in the programme. There may be other outcomes detailed in the module descriptions (eg attitudes and behaviours) which are not assessed.

Modules		Outcomes																							
TITLE	CODE	K1	K2	K3			I1	I2	I3	I4			P1	P2	P3	P4			T1	T2					
<i>Year 1</i>																									
Programming I	COM180	Y		Y			Y						Y			Y			Y	Y					
Professional Practice	COM163	Y		Y			Y	Y	Y	Y			Y	Y	Y				Y	Y					
Computer Technologies	COM140		Y						Y						Y	Y			Y	Y					
Introduction to Databases	COM147	Y	Y	Y			Y	Y					Y	Y	Y	Y			Y	Y					
Mathematics for Computing	COM137	Y		Y			Y	Y					Y	Y					Y						

11.3 Associate Bachelor's Degree in Computing Science DPP/DIAS (Exit Award)

The course provides opportunities for students to achieve and demonstrate the following learning outcomes.

11.3K KNOWLEDGE AND UNDERSTANDING OF SUBJECT

- K1** Programming fundamentals, data structures and algorithms, databases, human-computer interaction and software engineering (B,P)
- K2** Computer architecture, computer networks, systems software and web-based computing (B,P)
- K3** An engineering approach to the development of information systems in organisations (B, P)
- K4** Professional issues in information systems engineering (B, P)

Teaching and Learning Methods

Lectures will be used present and illustrate basic theory and fundamental principles. Tutorials will be used to elaborate lecture content, provide problem solving opportunities and examine problem solutions in greater detail. Laboratory classes will enable hands-on experience of the practical application of theoretical concepts and allow elements of collaborative work. Class work will supplemented by directed private study and may include access to online tutorial and study material.

Assessment Methods

A wide variety of assessment methods will be used including class tests, collaborative coursework assignments and online assessments. Assessment of the knowledge base is principally through written examinations and submitted coursework assignments.

11.3I INTELLECTUAL QUALITIES

The ability to:

- I1** Abstract and model data and facts pertaining to the requirements of an information system for the purposes of comprehension, analysis, specification and communication (B, P)
- I2** Formulate design specifications for constructing information systems and apply problem solving skills in their specification and implementation (B, P)
- I3** Analyse and evaluate the extent to which an information system meets the criteria defined for its current use and future development (B, P)
- I4** Relate professional, legal, moral and ethical issues to the engineering and use of information systems (B, P)

- I5** Justify and communicate the technical and organisational rationale for a particular software solution (B)

Teaching and Learning Methods

Intellectual qualities will be developed mainly through application of theory in laboratory practical classes, individual and collaborative coursework assignments, directed private study, professional work experience.

Assessment Methods

Class tests, individual and collaborative coursework assignments and written examinations.

11.3P PROFESSIONAL/PRACTICAL SKILLS

The ability to:

- P1** Specify, design, construct and test computer-based information systems (B, P)
- P2** Deploy best practice engineering processes, techniques and tools for the development and documentation of information systems (B, P)
- P3** Work collaboratively with others, recognising the different roles within a team and the different ways of organising teams (B, P)
- P4** Communicate effectively technical information to technical, management, user, and academic audiences (B, P)
- P5** Operate computing equipment effectively, based on an understanding of its hardware and software elements (B)
- P6** Solve software problems in a business/industrial context.

Teaching and Learning Methods

Skills will be developed through tutorials, laboratory practical classes, individual and collaborative coursework, directed private study, industrial placement (DPP version only), written reports.

Assessment Methods

Skills will be assessed by class-tests, individual and collaborative coursework assignments, placement reports from students and supervisors (DPP version only).

11.3T TRANSFERABLE SKILLS

The ability to:

- T1** Learn in both familiar and unfamiliar situations making effective use of information retrieval skills and learning resources (B)
- T2** Communicate effectively using various media and with a variety of audiences (B)
- T3** Apply numeracy in both understanding and presenting cases involving a quantitative aspect (B)
- T4** Effectively use general information technology facilities (B)
- T5** Manage one's own learning and development including time management, organisational skills and awareness of entrepreneurship issues (B, P)
- T6** Appreciate the need for continuing professional development in recognition of the need for life long learning (B, P)

Teaching and Learning Methods

Development of transferable skills operates across the programme in lectures and tutorials, laboratory practical classes, directed private study, individual and collaborative coursework and preparation for and experience in industrial placement (DPP version only).

Assessment Methods

Assessment is through class-tests, coursework assignments, collaborative coursework, placement reports from students and supervisors (DPP version only).

11.3 PROGRAMME LEARNING OUTCOMES MAP - Associate Bachelor's Degree in Computing Science DPP/DIAS (Exit Award)

Please note: The matrix displays only the measurable programme outcomes and where these are developed and assessed within the modules offered in the programme. There may be other outcomes detailed in the module descriptions (eg attitudes and behaviours) which are not assessed.

Modules		Outcomes																						
TITLE	CODE	K1	K2	K3	K4	I1	I2	I3	I4	I5		P1	P2	P3	P4	P5	P6	T1	T2	T3	T4	T5	T6	
<i>Year 1</i>																								
Programming I	COM180	Y		Y		Y						Y				Y					Y	Y		
Professional Practice	COM163	Y		Y	Y	Y	Y	Y		Y		Y	Y		Y						Y	Y		
Computer Technologies	COM140		Y		Y			Y							Y	Y				Y	Y	Y		
Introduction to Databases	COM147	Y	Y	Y	Y	Y	Y					Y	Y		Y	Y					Y	Y		
Mathematics for Computing	COM137	Y		Y		Y	Y					Y	Y								Y			
<i>Year 2</i>																								
Programming II	COM323	Y		Y		Y	Y	Y		Y	Y	Y	Y			Y					Y	Y		
Networks and Data Communications	COM319		Y				Y		Y			Y		Y		Y		Y	Y	Y	Y			
Systems Development	COM333	Y		Y		Y	Y	Y		Y		Y	Y	Y	Y			Y				Y		
Systems Software	COM332		Y					Y			Y	Y		Y		Y					Y	Y		
<i>Year 2 options</i>																								
Web Application Development	COM409	Y	Y	Y		Y	Y	Y	Y			Y	Y	Y		Y						Y		
Mobile Technologies	COM337	Y	Y	Y		Y	Y	Y	Y			Y	Y	Y		Y						Y		
Knowledge Based Systems	COM340	Y		Y		Y	Y	Y		Y	Y	Y	Y	Y	Y				Y					
With DPP/DIAS																								
<i>Year 3</i>																								
Industrial Placement	COM367					Y		Y	Y	Y		Y	Y	Y	Y	Y	Y	Y	Y			Y	Y	Y

12. STRUCTURE AND REQUIREMENTS FOR THE AWARD

The course is of four years duration. Years 1, 2 and 4 are spent at university and year 3 is a period of industrial placement.

The course structure is centred on three broad themes: programming and software engineering, hardware and software technologies, and computing in organisations. Years 1 and 2 consist of a set of modules addressing these themes, enabling students to achieve the basic competencies in software development and equipping them for a period of industrial placement. Year 1 consists of 120 points at Level 4. Year 2 consists of 120 points at Level 5.

All students normally spend year 3 on placement, working in some aspect of the software industry for a minimum period of 30 weeks. On satisfactory completion of the placement period the student is eligible for the award of Diploma in Professional Practice or for placements outside UK or Ireland the award of Diploma in Professional Practice (International). A student who satisfactorily completes year 3 in study abroad is eligible for the award of Diploma in International Academic Studies.

Year 4 consists of two compulsory modules and four optional modules, all at Level 6. The compulsory modules (Software Systems Engineering and Computing Science Project) reflect the core theme of the course at an advanced level. A range of optional modules is offered. Students may elect to do a broad range of topics or specialise in a designated theme, such as computer networks, healthcare technologies, enterprise technologies or artificial intelligence.

To be eligible to graduate with a specialism requires:

- Successful completion of **two** optional modules from the appropriate specialism strand
- Successful completion of a **final year project** in the specialism strand

Satisfactory completion of each pre-final year of the course is normally a prerequisite for progression to the subsequent year. Satisfactory completion of year 4 leads to the award of the degree with Honours. Pass requirements and honours classifications are detailed in section 16 below.

The language of instruction is English.

Module Title	Credit Level	Credit Points	Module Status	Sem.
Year 1				
Professional Practice	4	20	compulsory	1
^Programming I	4	40	compulsory	1/2
Introduction to Databases	4	20	compulsory	1/2
Computer Technologies	4	20	compulsory	1/2
Mathematics for Computing	4	20	compulsory	2
Exit Award: Certificate of Higher Education (CertHE) in Computing				

Year 2				
Networks & Data Communications	5	20	compulsory	1
Programming II	5	40	compulsory	1/2
Systems Development	5	20	compulsory	1/2
Web Application Development	5	20	optional	1/2
Mobile Computing	5	20	optional	1/2
Systems Software	5	20	compulsory	2
Knowledge Based Systems	5	20	optional	2
Exit Award: Associate Bachelor's Degree (AB) in Computing Science				

Year 3				
Placement	5	60	compulsory	1/2/3
DIAS	5	120		1/2/3
Exit Award: Associate Bachelor's Degree (AB) in Computing Science with DPP/DIAS				

Year 4					
Software Systems Engineering	6	10	compulsory	1	1/12
Computing Science Project	6	30	compulsory	1/2	1/4
Formal Reqs Specification *	6	20	optional	1	1/6
Intelligent Systems	6	20	optional	1	1/6
Interactive Web Computing	6	20	optional	1	1/6
Health Informatics	6	20	optional	1	1/6
Mobile Computing	6	20	optional	1	1/6
Advanced Computer Networks	6	20	optional	2	1/6
Concurrent & Distributed Systems	6	20	optional	2	1/6
Natural Language Processing	6	20	optional	2	1/6
Software Engineering Mgt *	6	20	optional	2	1/6
Emerging Healthcare Tech.	6	20	optional	2	1/6
Award: BSc Hons Degree in Computing Science with DPP/DIAS					

^ Programming I is a prerequisite for Programming II and hence progression to Year 2

* Compulsory BEng Hons Software Engineering

Award:

- BSc Hons Computing Science (*with specialism*) DPP/DIAS
- BSc Hons Computing Science (Artificial Intelligence) DPP/DIAS
- BSc Hons Computing Science (Healthcare Technologies) DPP/DIAS
- BSc Hons Computing Science (Mobile Technologies) DPP/DIAS
- BSc Hons Computing Science (Network Technologies) DPP/DIAS

To be eligible to graduate with a specialism requires:

- Successful completion of **two** optional modules from the appropriate specialism strand

- Successful completion of a **final year project** in the specialism strand

The Optional modules are classified as follows:

Artificial Intelligence

Intelligent Systems (S1)

Natural Language Processing (S2)

Healthcare Technologies

Health Informatics (S1)

Emerging Healthcare Technologies (S2)

Mobile Technologies

Mobile Computing (S1)

Plus

Interactive Web Computing (S1) **OR**

Advanced Computer Networks (S2) **OR**

Concurrent & Distributed Systems (S2)

Network Technologies

Advanced Computer Networks (S2)

Concurrent & Distributed Systems (S2)

13. SUPPORT FOR STUDENTS AND THEIR LEARNING

Students and their learning are supported in a number of ways:

- An extended *Induction Programme* that introduces all aspects of the course, including course management, PC laboratory facilities and usage rules, basic study skills, introduction to student support services, library services and the examinations process. In addition support and guidance on issues such as the transition to University life, study skills, requirements for submitting coursework, understanding plagiarism, plus general student support is provided.

For final year, week 1 induction talks to help readjustment to academic study following placement and then subsequently through the provision of online tutorial material and a repository of programming tools in support of project work.

- The same *course director* manages each of the three related courses (BSc Hons Computing Science, BEng Hons Software Engineering and BSc Hons Information and Communication Technologies) and thus has oversight of interactions between the courses (such as module sharing or student transfers) as well as their internal operation.
- *Adviser of Studies* provides a single first point of reference for both new and continuing students. The advisor of studies is an experienced member of staff with the responsibility of assisting students in their personal and career development.
- *Personal Development Planning* begins with introductory tutorials in year one, leading to year two placement preparation sessions (CV writing, interview technique, etc.) which are dedicated to preparing students for placement and providing support in finding placement opportunities. The Faculty online placement support system (OPUS) is directly integrated with the University online Professional and Career Enhancement System (PACE).
- The *Career Development Centre*, in addition to its standard career support, provides specific career development talks to computing students and arranges visits by a variety of firms in the computing industry. Close cooperation with the courses ensures that all careers events are well publicised to students by email and/or the course online notice board. See <http://careers.ulster.ac.uk/> for more information.
- The University's *Information Services Department* supports centralised computing facilities such as student e-mail accounts and access to the Internet. In addition computing students benefit from a wide range of specialised computing science resources provided in dedicated computer laboratories managed by the Faculty's own Computing Officers.
- The *course web site* (<http://scm.ulster.ac.uk/comp/>) is continuously maintained and so provides a focal point for access to any course

related information such as recent announcements, timetables, links to module or other relevant University web sites, etc.

- Course handbook and module booklets
- Extensive library and other learning resources
- Intranet containing learning support material
- Academic staff visit students during placement
- Direct contact with academic staff facilitated via email

14. **CRITERIA FOR ADMISSION**

Applicants must satisfy the University's general entry requirements as set out in the prospectus or demonstrate their ability to undertake the course through the accreditation of prior experiential learning (APEL). The initial offer standard may vary from year to year. See prospectus entry.

Specific requirements for admission are detailed below:

Year 1

- Typical GCE/AVCE 'A' Level requirements: A minimum of 300 UCAS Tariff points to include grades BB. GCSE passes at Grade C in English and at Grade B or above in Mathematics or equivalent.
- Typical Irish Leaving Certificate (Highers) requirements: A minimum of 300 UCAS Tariff points to include Higher grades B1B2B2B2B3 (Typical Profile). Minimum of Mathematics Higher D3 or Ordinary B3 and English Higher D3 or Ordinary C3 also required.
- BTEC National Diploma: successful completion of National Diploma with DDM profile.
- Higher National Diploma: HND in Computing or Software Engineering. Successful completion of HND with 3D, 2M, 1P OR 2D, 4M for Year 2 entry. Successful completion of any other subject for Year 1 entry.
- Successful completion of Integrated Foundation Year for BSc Honours Computing Science.
- APEL: Normally GCSE passes of at least grade C in English and grade B in Mathematics are required.

Year 2

Direct entry to year 2 for suitably qualified candidates.

15. **EVALUATING AND IMPROVING THE QUALITY AND STANDARD OF TEACHING AND LEARNING**

Quality and standards are evaluated and improved by the following means:

Mechanisms for the review and evaluation of teaching, learning, assessment, the curriculum and outcome standards:

- University processes for periodic re-approval of courses and annual subject monitoring
- Module reviews (include student input)
- Review of external examiner views expressed in assessment moderation, during Examination Board visits and in annual reports
- Annual course review prepared by the course committee
- Peer teaching observations and feedback
- Annual staff reviews
- Review of employer views expressed through annual feedback surveys of employers of placement students and at meetings of the Faculty Industrial Liaison Panel

Committees with responsibility for monitoring and evaluating quality:

- Staff Student Consultative Committee
- Course committee
- Board of Examiners
- Faculty Academic Affairs Committee (includes student members)
- University Academic Affairs Committee (includes student members)

Mechanisms for gaining student feedback on the quality of their learning experience:

- Student-Staff Consultative Committee
- Student representatives on Faculty committees
- Student questionnaires on each lecturer
- Placement reports

Staff development includes:

- Updating in the subject through research and scholarship
- Membership of the Higher Education Academy
- Consultancy
- Technology transfer
- University Staff Development programme
- Staff activity in the School of Computing hosted Higher Education Academy Subject Centre for Information and Computer Sciences.

In addition, there are University and Faculty strategies for teaching and learning.

16. REGULATION OF STANDARDS

Assessment rules

The pass mark for each module in years 1, 2 and 4 is 40%. Where a module is assessed by a combination of coursework and examination a minimum mark of 35% shall be achieved in each element.

For the Certificate of Higher Education in Computing, all year 1 (Level 4) modules contribute to the award according to their points weighting and the following percentages are used for determining candidates' overall grading:

60% Pass with Commendation

40% Pass

For the Associate Bachelor's Degree in Computing, all year 2 (Level 5) modules contribute to the award according to their points weighting and the following percentages are used for determining candidates' overall grading:

60% Pass with Commendation

40% Pass

In year 3 Industrial Placement, the following rules apply:

At least 70% award DPP/DIAS with commendation

At least 50% and less than 70% award DPP/DIAS

At least 40% pass year 3 and progress to final year.

The following percentages are used for determining candidates' overall gradings of Honours degree courses:

Class I	At least 70%
Class II (division i) (Ili)	At least 60% and less than 70%
Class II (division ii) (Ilii)	At least 50% and less than 60%
Class III	At least 40% and less than 50%

Only year 4 level 6 modules contribute to the honours classification. All modules contribute equally according to their points weighting (20 point modules contribute one sixth, 10 point modules one twelfth and 30 point modules one quarter.)

External Examiners

There is one external examiner for the course. External examiners are academic subject or professional experts appointed from outside the University. Their key functions are to contribute to the assurance of the standards of the award and the fair treatment of students. They are involved in the moderation and approval of assessments and the moderation of the marking undertaken by internal examiners.

17. INDICATORS OF QUALITY RELATING TO TEACHING AND LEARNING

- The outcome of the QAA Institutional Audit (2010) to which the Computing Discipline Audit Trail was a major contributor: judgement of broad confidence.
- The Faculty was given a satisfactory rating by the QAA subject review process for its provision of Computing Science Teaching (1994) and attained 22 in the QAA Subject Review of Mathematics, Statistics and Operational Research (2000).
- Some teaching staff are members of the Higher Education Academy.
- A number of the current Faculty staff have received the University's Distinguished Teaching Award.
- Research Assessment Exercise rating of 4 (2001).
- External funding for learning and teaching initiatives.
- New staff and some existing staff have attained the Postgraduate Certificate in University Teaching.
- Selected courses have been accredited by The British Computer Society.

Attendance Monitoring

The regulations for all courses at Ulster include a section on attendance requirements which indicates:

- Students are expected to attend all classes associated with the course and be punctual and regular in attendance.
- A student who has not been in attendance for more than three days through illness or other cause must notify immediately the Course/Subject Director. The student shall state the reasons for the absence and whether it is likely to be prolonged. Where the absence is for a period of more than five working days, and is caused by illness which may affect their studies, the student shall provide appropriate medical certification in accordance with the General Regulations for Students.
- Students who are absent without good cause for a substantial proportion of classes may be required to discontinue studies, in accordance with the General Regulations for Students.

Attendance will therefore be monitored on all modules across all years of study (undergraduate and postgraduate). Typically this will take the form of a sign-in sheet at each class (although other methods such as login records etc may also be used, particularly on online modules). This sheet will then be returned to the School Office where each student's attendance will be recorded electronically. Staff will then be able to periodically review a summary of each student's attendance and take any necessary action, such as interviewing a student to discuss their attendance.

Attendance at meetings with advisors of study or other staff will also be recorded.

It is acknowledged that there may be times that due to personal circumstances, attendance is not possible. However, it is important that in such circumstances you advise your Course Director as soon as practical, preferably in advance using an NA1 form.

Should you be contacted in relation to your attendance, it is important that you respond immediately and fully engage with the procedures. The School views the monitoring of attendance as a mechanism to help you maximise the benefit from your studies – it is not a “punishment”.

Higher Education Achievement Report

The University of Ulster is committed to implementing the new Higher Education Achievement Report (HEAR) for all undergraduate students in accordance with national developments. This will be developed from the time you arrive at the University, and is intended to capture more fully your performance. It will also enable you, when you become a final year student and graduate to present a wider range of achievements to employers and postgraduate tutors, thereby potentially enhancing your employability or opportunities for further study.

The HEAR will sit alongside the degree certificate and contain:

- A detailed academic record of modules undertaken and marks obtained.
- A record of additional achievements, such as in volunteering or representative roles, particular additional University awards, and/or academic or professional prizes.

Module Overview

CDDP Modules

A small set of additional modules, based outside of the Programme, have been introduced to assist students making applications to companies as part of their sandwich placement as it is often their first experience of the world of work. By visiting students currently on placement this will give them a better insight and therefore allow them to prepare themselves better for the complete placement process. As well as acquiring knowledge in the taught modules students need to see first-hand how this relates to the industrial setting. It will make students more aware of how organisations function on a day-to-day basis and not just through the formal interview process and guided tours typically offered as part of the interview.

As fledgling I.T. professionals students should reflect upon their own experiences, learning, performance and/or achievements and start to plan for their personal, educational and career development from the start of their degree.

Year 1

COM137 (33413) - Mathematics for Computing : Dr Alexander Grigorash

An introduction to topics in discrete mathematics commonly encountered in computer science. A variety of mathematical structures are introduced and their notation, properties and uses are discussed. The analytic skills and conceptual thinking required for sound performance in areas such as computer programming, software specification, and systems design are developed in this module. These skills are developed through examples and practical applications.

COM140 (33416) - Computer Technologies : Pat Sweeney

This module introduces students to the basic hardware components from which a computer system is constructed and the organisation of these components. The components of the computer system that are involved in the execution of a software program will be discussed. Students will also gain an understanding of how computers communicate, both in general, and when used in local and wide area networks.

COM147 (33425) - Introduction to Databases : Ian Young

This module is devoted to the study of the design, construction and use of computerised databases. Both theory and practice are covered. Practical work with a commercial database management system is included.

COM180 (40301) - Programming I : Dr David Glass

Computer programming is a fundamental skill expected of computer graduates. This module will expose students to the foundational concepts that will be used as building blocks in future programming modules and throughout the course. Students will also develop and enhance their problem solving skills as an integral part of the module. *Programming I is a prerequisite for Programming II and hence progression to Year 2.*

COM163 (40295) – Professional Practice: Dr Nicola Ayre & William Blackburn

It is highly desirable that computing students develop an understanding of the professional working environment. They aspire to work as and with professionals and will need to be aware of the various kinds of obligations and responsibilities that this status implies. The module is designed to enable students to become aware of the nature of the professional computing work environment, gain skills in selected procedures and practices, and to enhance their communication abilities. In addition students are challenged to foster entrepreneurial awareness.

Year Two

Mandatory

COM323 (40302) Programming II: Dr Mark Donnelly

The implementation phase of software development requires practical competence in program construction and knowledge of the performance characteristics and the theoretical limits of algorithms. In Year I students are introduced to algorithmic and object oriented programming and gain experience of algorithm development. In this module, this experience is developed by considering component specification, the use of classical abstract data types and algorithms that operate on abstract data types, the analysis of algorithm performance, developing Graphical User Interfaces, animation and event-driven programming.

COM319 (33513) - Networks and Data Communications – Pat Sweeney

This module provides a more advanced study of computer communications and networks with an understanding of security which will be developed at level 3(6) of the programme.

COM332 (33520) - System Software : Dr Kenny Adamson

The principal aim of this module is to provide an understanding of the underlying systems which support the applications software. The theoretical concepts covered are illustrated by considering their practical application in modern operating systems.

COM333 (41379) – Systems Development : Professor Maurice Mulvenna

Delivering effective information systems requires a structured and systematic approach to software development. This module provides an introduction to software engineering, emphasizing the role of design in delivering usable and maintainable systems. The practical nature of the subject material is supported through group work on a mini-software engineering problem, and reinforces technical skills taught elsewhere on the course.

Optional

COM409 (41378) - Web Application Development : Dr Giuseppe Trombino

This module will introduce students to the principles and techniques necessary for developing software systems to be deployed over the World Wide Web. Students will also be introduced to important design considerations for web applications.

COM337 (41377) - Mobile Technologies : Dr David Glass

Mobile computing devices are becoming ubiquitous and form a rapidly growing segment of the ICT industry. There is a need for graduates to have a firm understanding of the latest technologies and thinking in this as well an initial understanding of how to design and develop applications for mobile platforms.

COM340 (33523) – Knowledge Based Systems: Dr Yaxin Bi

This module provides an introduction to knowledge-based systems and their applications in business, industry and medicine. Topics covered include the principles of knowledge representation and reasoning, knowledge-based system architectures, explanation of reasoning, management of uncertainty, roles of meta-knowledge, generic problem- solving

methods and knowledge elicitation. Appropriate emphasis is placed on programming and implementation issues

Year Three

Mandatory

COM367 (33544) - Industrial Placement - Computing : Dr Edwin Curran

Students are placed in employment through the standard procedures of application and interview. Arrangements leading up to an interview and a contract of employment are monitored by the Placement Tutor. The Placement Tutor is a member of the Computing Placement Coordination Team chaired by the Director of Work Based Learning for the Faculty. This group seeks to ensure close collaboration in the work of individual course placement tutors.

Year Four

Mandatory Modules

COM606 (33687) - Software Systems Engineering : Dr Don McFall

Developing computer software is a challenging and creative experience, motivated by the desire to solve problems. As system engineering problems and solutions become more complex, it is becoming much more difficult to describe them and to understand the descriptions. Systems engineers require a combination of requirements management and modelling to improve the systems engineering process. This module on software systems engineering presents ways of creating effective solutions to problems and managing the technical complexity of the resulting developments.

COM562 (33656) - Project : Dr Stephen Hagan

Students are required to undertake a software development project during the final year of the course. The project module allows a selected problem area and software solution to be investigated in depth. Within the project, the student is expected to integrate and apply material from other modules in the course.

Optional Modules

Semester 1

COM583 (33672) Formal Requirements Specification (MANDATORY – BEng) : Dr Jun Liu

The content of this module provides an in-depth treatment of formal requirements specification and studies the role of these activities in a range of software development models. The module underpins student project work and software development in a student's future career.

COM510 (39260) Health Informatics : Dr Dorothy Monekosso

This module is designed to introduce and provide a fundamental understanding of the use of technology in healthcare. Emphasis is placed upon the use of technology to develop basic solutions for healthcare delivery and management. This shall be realised through understanding how technology is used in domains commonly referred to as medical informatics, biomedical engineering, ehealth, telecare and telemedicine. The module shall provide a framework to facilitate the design and development of robust solutions to meet current healthcare needs.

COM527 (33639) Intelligent Systems : Dr Yaxin Bi

Artificial Intelligence (AI) is an important field closely related to computing science. AI has contributed to the development of many other fields of computing science. Successful intelligent systems have been developed in various application areas. This module is offered for final year students who wish to (a) acquire knowledge of Artificial Intelligence that is useful itself for computing researchers and practitioners; (b) develop a better understanding of AI techniques and their practical applications.

COM554 (33652) Interactive Web Computing : Professor Terry Anderson

Interactive computing underpins most web-based and standalone applications. This module aims to equip students with a theoretical understanding and the practical skills necessary to develop modern interactive software. It places a significant, though not exclusive, emphasis on web and mobile user interfaces, reflecting the increasing prevalence of browser-based applications. Topics include GUI event handling, web browser architecture, XML, Ajax, XSLT, SVG, RSS, and usability issues.

COM528 (39583) Mobile Computing : Dr Dewar Finlay & Dr George Moore

Mobile computing devices are becoming ubiquitous and form a rapidly growing segment of the ICT industry. There is a need for graduates to have a firm understanding of and skills in application development for mobile devices, the models that surround their development and deployment as well as the particular challenges faced in developing for mobile devices.

Semester 2

COM548 (33649) Advanced Computer Networks : Dr Paul McCullagh

Most computers exist in a distributed environment requiring exchange of information with other computers. In addition to ubiquitous LANs and WANs, applications range from personal area networks to high performance GRIDs. GUIs and multi-media consume bandwidth and faster communications are demanded. There is an increasing demand for mobile computing. This module advances underlying communication and networking theory by investigating the latest wireless networking architectures and protocols, using authoritative sources complemented by lab based simulation to provide practical scenarios. Security of networks and protocols is discussed throughout.

COM577 (33668) Concurrent Distributed Systems : Dr Piyush Ojha

Most modern computer systems are now distributed in nature and concurrent by necessity. This course presents the fundamental concepts of such systems, and the various techniques that can be used to program them. It provides students with the foundations for using the technology in real world applications.

COM641 (33713) Emerging Healthcare Technologies : Prof Chris Nugent & Dr Mark Donnelly

This module provides an understanding of the use of technology in healthcare. Particular emphasis is placed on new and emerging applications of technology in this domain. This shall be realised through analysis of technologies which are currently pervasive in healthcare provision and through the investigation of new and emerging technologies. The module shall provide a framework to facilitate the development and understanding of technology and service provision for healthcare using a range of technologies new and old from both theoretical and practical perspectives.

COM578 (33669) Natural Language Processing : Dr Juan Carlos Augusto

Natural language processing (NLP) is an application area of growing importance within computing, particularly when combined with speech technology. This module is offered for final year students who wish to acquire a detailed knowledge of spoken language technology and its applications.

COM582 (33671) Software Engineering Mgt (MANDATORY – BEng) : Dr Ian McChesney

The careful planning and control of project activities is essential to the delivery of successful software systems. The unique nature of software engineering projects requires a blend of generic project management skills and software specific project management and quality assurance capabilities. This module seeks to extend the student's knowledge of software engineering by introducing techniques and methods for the management of industrial software engineering projects.

Year 4 options may vary from time to time.

Timetable & Academic Calendar

The course timetable will be distributed at induction and can also be viewed on the course noticeboard. These timetables are provisional and may be modified by module co-ordinators as required.

DATES OF ATTENDANCE/EXAMINATIONS/VACATIONS : 2011/12

Semester 1 (Autumn)	Monday 26 September 2011	Teaching begins
	Friday 16 December 2011	Teaching ends
	Monday 19 December 2011	Christmas Vacation begins
	Monday 26 December 2011 to Monday 2 January 2012	University Closed (Christmas)
	Friday 6 January 2012	Christmas Vacation ends
	Monday 9 January to Saturday 21 January 2012	Examination Period
	Friday 27 January 2012	Autumn Semester ends
Semester 2 (Spring)	Monday 30 January 2012	Teaching begins
	Monday 19 March 2012	University Closed (St Patrick's Day)
	Monday 2 April 2012	Easter Vacation begins
	Monday 9 April to Friday 13 April 2012	University Closed
	Friday 13 April 2012	Easter Vacation ends
	Monday 7 May 2012	University Closed (May Day)
	Tuesday 8 May to Friday 11 May 2012	Revision week (non-teaching)
	Monday 14 May to Saturday 26 May 2012 (with possible extension to 29 May if required for first sit examinations)	Examination period
	Friday 1 June 2012	Spring semester ends
	Monday 2 to Tuesday 10 July 2012	Summer Graduation Ceremonies
Resit Period Wednesday 15 August to Thursday 23 August 2012	Supplementary Examinations	

Programme Management - Course Committee Membership

Dr Paul Hanna	Head of School, Computing & Mathematics
Dr Nicola Ayre	Course Director
Dr Kenny Adamson	Reader
Professor Terry Anderson	Professor
Dr Juan Carlos Augusto	Lecturer
Dr Yaxin Bi	Lecturer
William Blackburn	Lecturer
Dr Edwin Curran	Lecturer (Placement Co-ordinator)
Dr Mark Donnelly	Lecturer
Dr David Glass	Lecturer
Dr Alexander Grigorash	Lecturer
Simon Fraser	Teaching Fellow
Dr Stephen Hagan	Senior Lecturer (Project Co-ordinator)
Dr Jun Liu	Lecturer
Dr Ian McChesney	Senior Lecturer
Dr Paul McCullagh	Senior Lecturer
Dr Don McFall	Lecturer
Dr Dorothy Monekosso	Senior Lecturer
Prof. Maurice Mulvenna	Professor
Dr George Moore	Lecturer
Professor Chris Nugent	Professor
Dr Piyush Ojha	Lecturer
Pat Sweeney	Senior Lecturer
Dr Giuseppe Trombino	Teaching Fellow
Dr Haiying Wang	Lecturer
Ian Young	Lecturer

Programme Management

Overall responsibility for the management of the programme of study lies with the *Course Committee* and the *Course Director* has responsibility for the day-to-day running of the course.

The *Course Committee* is a committee formed by those members of academic staff who have teaching responsibilities on the Course as well as the nominated studies advisors. This committee oversees all changes to the Course and has overall responsibility for its design and effective delivery. The Course Director is the Chairman of the Course Committee.

The *Staff-Student Consultative Committee* assists in informing the Course Committee. Class representatives are elected for each year of the course and these representatives are expected to bring forward any issues raised by the student group they represent.

The Course Committee reports, through School Board, to the Faculty's *Teaching and Learning Committee*, which in turn reports to *Faculty Board*. This is the normal route for all of the Faculty's Course Committee meeting minutes.

An *External Examiner* will be appointed by the University Council on the recommendation of Senate, to oversee and monitor standards etc. on the Course, after consideration of nominations from the Faculty Teaching and Learning Committee.

Student progression is the responsibility of the *Board of Examiners*, whose membership includes the Course Committee and the External Examiner.

A member of the course committee, known as the *Project Co-ordinator*, takes responsibility for organising the final year projects on the course. The role of the Project Co-ordinator involves collating project topics from academic staff and allocating students to projects and project supervisors. The Project Co-ordinator also organises all aspects of project assessment and collates the marks from various sources into an overall project mark.

A member of the course committee acts as a *Placement Tutor* who, liaising with the Faculty Placement Co-ordinator, manages all aspects of the placement process from placement preparation through to assessment and collating of placement marks.

Student Support and Guidance

Students and their learning are supported in a number of ways:

- An extended *Induction Programme* that introduces all aspects of the course, including course management, PC laboratory facilities and usage rules, basic study skills, introduction to student support services, library services and the examinations process. In addition support and guidance on issues such as the transition to University life, study skills, requirements for submitting coursework, understanding plagiarism, plus general student support is provided.
- Support for *Personal Development Planning (PDP)* to help students get the most from their time at University. Through a structured approach, it helps students organize and reflect upon the knowledge and skills they are developing. The PACE system supports the recording of PDP activity.
- Provision of a *Faculty Student Handbook* that contains essential information for students studying within the Faculty of Engineering. This handbook provides details of all of the key issues in relation to the faculty including academic structures, student support, study requirements, career and further study options etc.
- Provision of a *programme specific Student Handbook* that contains the essential information for students enrolled on this particular programme. This handbook provides details of all of the key issues in relation to the programme including learning outcomes, assessment strategy, rules and regulations etc.
- Each module is supported by the provision of a *Module Handbook* upon commencement of the module. The handbook provides details of all of the key issue relevant to the module such as learning outcomes, assessment schedule, reading material etc.
- Each student is allocated a *Studies Advisor* who has the responsibility of assisting students in their personal and career development. Studies Advisors are charged with assisting their students in adapting to the requirements of a University environment and are required to meet with their students on a regular basis so that any problems can be identified at an early stage and corrective action taken. Where problems are of a more serious nature or require more specialist advice, students may be directed to other senior teaching staff, the Course Director, University Counselling Service or Medical Services.
- The University's centralised *Department of Student Support* is available to help students achieve the maximum benefit from their University life. Students encounter personal challenges in learning and in living within the university environment. The purpose of the Department of Student Support is to assist students, not only in relation to academic achievement, but also in their social and personal development. There are a number of areas that are of particular use to students and these include Accommodation Services, Health Services, Nursery Care, Students Union and Student Development (which includes Counselling & Guidance).
- The University's *Careers Service* provides a comprehensive careers information, guidance and job search advisory service for students during their course and beyond graduation. In the final year of the course, weekly sessions are run by the Careers Services for students on this course, advising students on job searching, employment opportunities, CV preparation, and interview skills. See <http://careers.ulster.ac.uk/> for more information.

Regulations

In the interests of clarity Programme Regulation components pertaining to the Integrated Foundation Year have been colour coded.

UNIVERSITY OF ULSTER

1	COURSE TITLE	COURSE CODE
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	BSc Honours Computing Science (DPP/DIAS) including Integrated Foundation Year	2143
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	BSc Honours Computing Science (DPP/DIAS)	2132
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	BSc Honours Computing Science (Artificial Intelligence) (DPP/DIAS)	6177
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	BSc Honours Computing Science (Healthcare Technologies) (DPP/DIAS)	6179
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	BSc Honours Computing Science (Mobile Technologies) (DPP/DIAS)	6628
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	BSc Honours Computing Science (Network Technologies) (DPP/DIAS)	6181
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	BEng Honours Software Engineering (DPP/DIAS)	2076
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2	MODE OF ATTENDANCE
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	Full-Time
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3	DURATION
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	FULL-TIME SANDWICH: Normally 5 years (8 semesters of study including Foundation year and Placement year)
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	FULL-TIME INTERCALARY: Normally 5 years (10 semesters of study including Foundation year and a year of Study Abroad)
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BSc Honours Computing Science (DPP/DIAS)
BSc Honours Computing Science (Artificial Intelligence) (DPP/DIAS)
BSc Honours Computing Science (Healthcare Technologies) (DPP/DIAS)
BSc Honours Computing Science (Mobile Technologies) (DPP/DIAS)
BSc Honours Computing Science (Network Technologies) (DPP/DIAS)
BEng Honours Software Engineering (DPP/DIAS)

FULL-TIME SANDWICH: Normally 4 years (6 semesters of study and Placement year)

FULL-TIME INTERCALARY: Normally 4 years (8 semesters of study including year of Study Abroad)

4 LOCATION

Jordanstown

5 FACULTY

Faculty of Computing and Engineering

6 ADMISSION REQUIREMENTS

6.1 Applicants must:

(a) satisfy the University's general entry requirements; and
normally have qualifications equivalent to GCE A-Level passes in three subjects with grades BBC; and normally have GCSE pass of grade B in Mathematics.

or

(b) provide evidence of their ability to undertake the programme through the accreditation of prior experiential learning.

6.2 *Applicants may be admitted directly to Year 2 from an approved Foundation Degree in Computing. Upon successful completion of year 2, these candidates may proceed directly to final year.*

7 EXEMPTIONS

7.1 Studies pursued and examinations passed in respect of other qualifications awarded by the University or by another university or other educational institution may be accepted as exempting candidates from part of an approved course provided that they shall register as students of the University for modules amounting to at least the final third of the credit value of the award at the highest level.

7.2 [There is no advance standing for the Integrated Foundation Year.](#)

8 PLACEMENT/STUDY ABROAD

- 8.1 Candidates shall undertake a period of industrial placement or study abroad after successful completion of Year 2 and before commencing Year 4 of the course. The placement/study period shall normally last for at least 25 weeks.
- 8.2 In order to progress to final year a candidate must satisfactorily complete or be exempt from industrial placement and normally successfully complete all outstanding Year II course modules.
- 8.3 Candidates who can provide documentary evidence of satisfactory work experience in computing may be exempt from Year 3 (Industrial Placement). (Such students would not be entitled to the award of DPP).
- 8.4 During the placement period students will be assessed as described in the Placement module specification.
- 8.5 Unplaced Students
- (i) A student who is unable to obtain placement may, at the discretion of the Board of Examiners, exceptionally be permitted to proceed directly to final year of the BSc Hons Computing Science without DPP.
 - (ii) A student who is unable to obtain placement and who, in the opinion of the Board of Examiners, has not shown sufficient effort in obtaining placement may be required to withdraw from the course.
 - (iii) A student who is unable to obtain placement may, at the discretion of the Board of Examiners, be permitted to obtain leave of absence in order to continue seeking a suitable placement.
- A student who has taken such leave of absence and who has not obtained a placement by the start of the final year may be permitted to proceed directly to final year of the BSc Hons Computing Science without DPP.

9 ATTENDANCE REQUIREMENTS

- 9.1 Students are expected to attend all classes associated with the programme and be punctual and regular in attendance.
- 9.2 A student who has not been in attendance for more than three days through illness or other cause must notify immediately the Course Director. The student shall state the reasons for the absence and whether it is likely to be prolonged. Where the absence is for a period of more than five working days, and is caused by illness which may affect their studies, the student shall provide appropriate medical certification in accordance with the General Regulations for Students.
- 9.3 Students who are absent without good cause for a substantial proportion of classes may be required to discontinue studies, in accordance with the General Regulations for Students.

10. RULES GOVERNING STUDENT CHOICE

- 10.1 Modules are offered as indicated in the attached tables (See Section 17). Revisions may be made in accordance with the University's quality assurance procedures. Module availability may vary and may depend on a maximum or minimum limit set for the number of students taking the module.

11. EXAMINATION AND ASSESSMENT

- 11.1 The performance of candidates shall be assessed by the Board of Examiners in accordance with the Regulations Governing Examinations in Programme of Study.
- 11.2 Candidates shall be assessed in the modules for which they have enrolled in each year of study. At the discretion of the Board of Examiners candidates may be required to attend a viva voce examination.
- 11.3 Within each module candidates shall be assessed by a combination of coursework and examination in accordance with the attached table.
- 11.4 The pass mark for the module shall be 40%. Where a module is assessed by a combination of coursework and examination a minimum mark of 35% shall be received in each element.
- 11.5 The pass mark for the placement/intercalary year is 50%; a mark of 40% is sufficient for progression to the next stage of the programme.

12. SUBMISSION OF COURSEWORK

- 12.1 Coursework shall be submitted by the dates specified by the course committee.
- 12.2 Students may seek prior consent from the course committee to submit coursework after the official deadline; such requests must be accompanied by a satisfactory explanation, and in the case of illness by a medical certificate. This application shall be made to the Course Director.
- 12.3 Coursework submitted without consent after the deadline shall not normally be accepted.

13. PROGRESS

- 13.1 Subject to 14 hereof, candidates are required to pass all modules in each year of study in order to proceed to the next. Progress from semester 1 to semester 2 is automatic.

14. CONSEQUENCES OF FAILURE

- 14.1 Candidates who fail to satisfy the Board of Examiners in assessment may be permitted at the discretion of the Board to re-present themselves as specified in 14.2 for one or more supplementary examination and repeat such coursework or other assessment requirements as shall be prescribed by the Board. Such candidates may be exempted at the discretion of the Board from the normal attendance requirements. Where candidates are required to repeat coursework or to take a supplementary examination the original mark in the failed element shall be replaced by a mark of 40% or the repeat mark whichever is the lower for the purpose of calculating the module result, except in the DPP/DIAS year where the maximum mark allowed shall be 50%.
- 14.2 In each year, other than the final year, the consequences of failure shall normally be as follows:

BSc Honours Computing Science (DPP/DIAS) inc Integrated Foundation Year

BSc Honours Computing Science (DPP/DIAS)

BSc Honours Computing Science (Artificial Intelligence) (DPP/DIAS)

BSc Honours Computing Science (Healthcare Technologies) (DPP/DIAS)

BSc Honours Computing Science (Mobile Technologies) (DPP/DIAS)

BSc Honours Computing Science (Network Technologies) (DPP/DIAS)

BEng Honours Software Engineering (DPP/DIAS)

Failure at the First Attempt

Failure in modules with an overall value up to and including 60 credit points

Repeat specified examinations and/or coursework in the failed modules (examinations August).

Failure in modules with an overall value of between 60 and 80 credit points

Repeat specified examinations and/or coursework in the failed first semester module(s) (examinations January) and of specified examinations and/or coursework in the second semester modules (examinations May) with or without attendance.

Failure in modules with an overall value of more than 80 credit points

Withdraw from the programme.

Failure by candidates in year 2 of sandwich courses

Exceptionally second year students on sandwich courses may be permitted to commence the placement period, pending a requirement to represent themselves for supplementary written examinations or to repeat coursework.

Failure at the Second Attempt

Failure in modules with an overall value up to and including 20 credit points

Provided that the module(s) are not prerequisite(s) which must be passed, proceed to next year and repeat *once only* specified examination(s) and/or coursework in the failed module(s) at the next examination period (January or May). [For the purpose of progression to Year 1 Honours all IFY modules are considered to be prerequisite.](#)

Failure in modules with an overall value up to and including 40 credit points (except as above)	Repeat <i>once only</i> specified examination(s) and/or coursework in the failed module(s) at the next examination period (January or May or August if semester already repeated) with or without attendance (progress to next year not permitted).
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Failure in modules with an overall value of more than 40 credit points	Withdraw from the programme.
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Consequences of failure in Placement Year (DPP)

Failure at the First Attempt

Failure in project	Resubmit project by a date specified by the Course Committee. (Maximum mark not to exceed 50%).
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Failure in placement	Repeat <i>once only</i> all or part of placement.
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Failure at the Second Attempt

Failure in project	Repeat <i>once only</i> the project. (Maximum mark not to exceed 50%).
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Failure in placement	Withdraw from the programme.
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Consequences of failure in Intercalary Year (DIAS)

<u>Failure at the First Attempt</u>	Repeat <i>once only</i> the study period in whole or in part OR take specified examinations and/or coursework. (Maximum mark not to exceed 50%.)
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<u>Failure at the Second Attempt</u>	Withdraw from the programme OR repeat <i>once only</i> specified examinations and/or coursework. (Maximum mark not to exceed 50%.)
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14.3 Failure in the Final Year (Honours degree)

In the final year the consequences of failure shall normally be as follows:

Failure in modules with an overall value up to and including 40 credit points	Repeat <i>once only</i> specified examination(s) and / or coursework in the failed module(s) in consideration for Honours classification (examinations August).
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Failure in modules with an overall value of more than 40 credit points	Withdraw from the programme.
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15. CLASSIFICATION OF FINAL RESULT

BSc Honours Computing Science (DPP/DIAS)

BSc Honours Computing Science (Artificial Intelligence) (DPP/DIAS)

BSc Honours Computing Science (Healthcare Technologies) (DPP/DIAS)

BSc Honours Computing Science (Mobile Technologies) (DPP/DIAS)

BSc Honours Computing Science (Network Technologies) (DPP/DIAS)

BEng Honours Software Engineering (DPP/DIAS)

15.1 The overall Honours classification of successful candidates shall be based on the assessment results from all Level 6 modules. The weighting of each module's contribution to the overall mark shall be determined by the module credit value.

The tables at section 17 indicate the contribution of each module to the final award.

Classification of Final Result (Honours degree)

The following percentages shall be used to determine candidates' overall gradings:

Class I	At least 70%
Class II (division i) (Ili)	At least 60% and less than 70%
Class II (division ii) (Ilii)	At least 50% and less than 60%
Class III	At least 40% and less than 50%

15.2 Award of Diploma in Professional Practice or Diploma in International Academic Studies

The threshold for progression to the final year of the associated degree programme shall be 40%. To be eligible for the award of DPP/DIAS candidates must have achieved an overall mark of at least 50% in the assessment requirements for the placement year/year of study abroad and have successfully completed the associated degree. The results of candidates shall be graded by order of merit as Pass with Commendation and Pass. The following shall be the minimum percentages used in determining the overall gradings of candidates in the Diploma.

Pass with Commendation	70%
Pass	50%

Diploma in Computing (Integrated Foundation Year Exit Award)

15.3 All modules contribute to the final result. Table 5 indicates the contribution of each module to the final award. Each module contributes equally to the overall mark.

15.4 Classification of Final Result

Candidates who successfully complete the year will normally proceed to Year 1 of BSc Honours Computing Science (DPP/DIAS). Candidates who wish to discontinue their studies may leave with a Diploma in Computing.

Where candidates chose to take the Exit Award the following shall be the minimum percentages acceptable in determining the overall gradings of candidates.

Pass with Commendation 60%

Pass 40%

The Board of Examiners shall recommend the award of a Pass with Commendation to a candidate who achieves an overall mark of at least 60%, provided that a module mark of at least 60% has been achieved in modules amounting to 60 credit points.

Certificate of Higher Education in Computing (Exit Award)

15.5 Year 1 modules as specified in Section 17 contribute to the final award. The weighting of each module's contribution to the overall mark shall be determined by its credit value.

15.6 Classification of Final Result

The following shall be the minimum percentages acceptable in determining the overall gradings of candidates for the exit award.

Pass with Commendation 60%

Pass 40%

The Board of Examiners shall recommend the award of a Pass with Commendation to a candidate who achieves an overall mark of at least 60%, provided that a module mark of at least 60% has been achieved in modules amounting to 60 credit points.

Associate Bachelor's Degree in Computing Science DPP/DIAS (Exit Award)

15.7 Year 2 modules as specified in Section 17 contribute to the final award. The weighting of each module's contribution to the overall mark shall be determined by its credit value.

15.8 Classification of Final Result

The following shall be the minimum percentages acceptable in determining the overall gradings of candidates for the exit award.

Pass with Commendation 60%

Pass 40%

The Board of Examiners shall recommend the award of a Pass with Commendation to a candidate who achieves an overall mark of at least 60%, provided that a module mark of at least 60% has been achieved in modules amounting to 60 credit points.

16. ILLNESS AND OTHER EXTENUATING CIRCUMSTANCES

16.1 In any year other than final year:

The Board of Examiners may in the case of candidates who are prevented by illness or other sufficient cause from taking or completing the whole or part of the assessment during the programme, or whose results are substantially affected by illness or other sufficient cause, permit the candidates to complete, take, or repeat the assessment in one or more modules at an approved subsequent date.

16.2 Final year (Honours Degree):

The Board of Examiners may in the case of candidates who are prevented by illness or other sufficient cause from taking or completing the whole or part of the final stage assessment or whose results are substantially affected by illness or other sufficient cause:

- (a) permit the candidate to complete, take, or repeat as candidates for the Honours degree, the assessment in one or more modules at an approved subsequent date **or**
- (b) deem the candidate to have passed and recommend the award of an Aegrotat Honours Degree.

16.3 Before an Aegrotat award is recommended a candidate must have signified that he or she is willing to accept the award.

17. REVISIONS TO REGULATIONS

These regulations may be revised during the student's period of registration in accordance with the procedures approved by Senate.

Regulation Tables

Yr	Sem	Level	Module Title	Code	Credit Value	Status	Assessment Methods		Contribution to the Overall Mark of the Award
							% Examination	% Coursework	
1	1	3	Principles of Computing: Hardware Technologies	COM050	20	C	-	100	1/6
1	1	3	Principles of Computing: Software Technologies	COM051	20	C	-	100	1/6
1	1 & 2	3	Professional Skills in Computing	COM052	20	C	-	100	1/6
1	1 & 2	3	Mathematical Skills for Computing	COM053	20	C	-	100	1/6
1	2	3	Principles of Computing: Information Networks	COM054	20	C	50	50	1/6
1	2	3	Computing in Business and Society	COM055	20	C	50	50	1/6

Table 5 – Integrated Foundation Year Modules

Key:

C = Compulsory

Y = Yes

Year/Level	Sem.	Module Title	Code	Credit Value	Status	Asst. Methods %EX	Asst. Methods %CW	Contribution to the overall mark of the Final Award
1/4	1	Programming I	COM180	40	C	-	100	-
1/4	1	Professional Practice	COM163	20	C	-	100	-
1/4	2	Mathematics for Computing	COM137	20	C	75	25	-
1/4	1,2	Introduction to Databases	COM147	20	C	50	50	-
1/4	1,2	Computer Technologies	COM140	20	C	-	100	-
2/5	1	Networks and Data Communications	COM347	20	C	75	25	-
2/5	1,2	Programming II	COM323	40	C	-	100	-
2/5	1,2	Mobile Technologies	COM337	20	O	-	100	-
2/5	1,2	Web Application Development	COM409	20	O	50	50	-
2/5	2	Systems Development	COM333	20	C	-	100	-
2/5	2	Systems Software	COM332	20	C	60	40	-
2/5	2	Knowledge Based Systems	COM340	20	C	75	25	-
3/5	1,2,3	Industrial Placement	COM367	60	M	-	100	(DPP/DIAS)
4/6	1,2	Computing Science Project*	COM562	30	C	-	100	1/4
4/6	1,2	Software Engineering Project	COM516	30	C	-	100	1/4
4/6	1	Software Systems Engineering	COM606	10	C	75	25	1/12
4/6	1	Formal Requirements Specification	COM583	20	#C/O	75	25	1/6
4/6	1	Intelligent Systems	COM542	20	O (artificial intelligence option)	75	25	1/6
4/6	1	Interactive Web Computing	COM554	20	O (mobile technologies option)	50	50	1/6

Year/Level	Sem.	Module Title	Code	Credit Value	Status	Asst. Methods %EX	Asst. Methods %CW	Contribution to the overall mark of the Final Award
4/6	1	Mobile Computing	COM528	20	O (mobile technologies option)	-	100	1/6
4/6	1	Health Informatics	COM510	20	O (healthcare technologies option)	50	50	1/6
4/6	2	Advanced Computer Networks	COM548	20	O (network technologies & mobile technologies option)	75	25	1/6
4/6	2	Concurrent and Distributed Systems	COM577	20	O (network technologies & mobile technologies option)	75	25	1/6
4/6	2	Natural Language Processing	COM578	20	O (artificial intelligence option)	50	50	1/6
4/6	2	Software Engineering Management	COM582	20	#C/O	75	25	1/6
4/6	2	Emerging Healthcare Technologies	COM641	20	O (healthcare technologies option)	50	50	1/6

Key:

Table 6 - Honours Degree Modules

C = Compulsory

O = Optional

M = Mandatory

= Compulsory for BEng

* = Students studying a CS specialism must complete an approved Computing Science Project in that specialism.

BSc Hons Computing Science students have a free choice from the options available.

BSc Hons Computing Science (Artificial Intelligence) students must study at least 2 artificial intelligence options.

BSc Hons Computing Science (Healthcare Technologies) students must study at least 2 healthcare technologies options.

BSc Hons Computing Science (Mobile Technologies) students must study at least 2 mobile technologies options.

BSc Hons Computing Science (Network Technologies) students must study at least 2 network technologies options.

Student Prizes & Awards

The following is an indicative list of the prizes likely to be available in 2011/12:

Alumni Fund Awards

Academic excellence shown by Year 1 students.

Asidua Ltd

Best overall student on first year BSc Hons Computing Science.

BCS Medal and Prize

Most outstanding student in final year (nominations from all Honours courses in Computing Science).

Consillium Technologies Award

Awarded to Best Project BEng Hons Software Engineering.

Kainos Prize

Best and most innovative final year project in BSc Hons Computing Science.

Kainos Prize

Best overall performance in BSc Hons Computing Science and BEng Hons Software Engineering.

Liberty Prize

Best module performance in COM180 – Programming I BSc Hons Computing Science.

Best module performance in COM180 – Programming I BEng Hons Software Engineering.

McCrea Leebody

Nominations from all full-time first degree and HND courses in Engineering for best overall performance in year 1.

SLA Prize

Best second year student from BEng Hons Software Engineering, BSc Hons Computing Science and BSc Information & Communication Technologies on COM347, Networks & Data Communications.