

STUDENT HANDBOOK

**BSc (HONS) COMPUTER SCIENCE WITH DIS/DAS
BSc (HONS) COMPUTER SCIENCE (WITH PATHWAYS)
WITH DIS/DAS**

PROGRAMME: 2134

SCHOOL OF COMPUTING AND INTELLIGENT SYSTEMS

FACULTY OF COMPUTING AND ENGINEERING

MAGEE CAMPUS

UNIVERSITY OF ULSTER

COURSES' CO-ORDINATOR: DR HEATHER SAYERS

SEPTEMBER 2009 ENTRY

PROGRAMME AIMS AND OBJECTIVES

Programme Title:

BSc (Hons) Computer Science with/without DIS/DAS

BSc (Hons) Computer Science (with Pathways) with/without DIS/DAS

The overall aim of the Computer Science course at Honours Degree level is to provide an education which will produce graduates who are equipped to follow a productive career as professionals in the computing industry. The first 2 years of the Computer Science (with Pathways) courses are the same as the Computer Science degree, diverging into the specialisms of Intelligent Systems, Mobile Computing, Embedded Computing, Robotics, or Software Systems Development in final year.

Computing is a field of study that has had an impact on society as great as, if not greater than, any other in the last fifty years. Computing now affects the daily lives, either directly or indirectly, of many millions of people throughout the world. The wide, and ever increasing, availability of computers to those without specialist knowledge places a growing mantle of responsibility on those with specialist knowledge to ensure the development of high quality, robust and usable hardware and software systems.

This course seeks to focus on the development of software and hardware for a variety of application areas, whilst at the same time preparing the graduate for the inevitable changes in the field of computing. The inclusion of an industrial placement year prepares candidates for working careers in computing and sets their academic studies into the context of the variety of computer applications.

All graduates from this course will have a high degree of skill in the development of quality software. The "core" of the course, essentially the first two years of study plus the final year project, will have prepared them for careers in software production in a variety of positions, including software houses, data processing and industrial computing. The course will also have prepared them to work at the hardware/software interface, and will provide the potential for hardware design.

The aims of the BSc Degree with Honours are as follows:

- (i) To provide a rigorous study of the theory and principles underlying modern applications of computing;
- (ii) To develop a high degree of expertise in the application, integration and critical evaluation of a range of computing tools and facilities;
- (iii) To develop an ability to use, compare and critically evaluate a range of formal and informal techniques, theories and methods applied to the development of applications of computing;
- (iv) To establish an understanding of the individual, social, organisational and economic implications of the application of computing;
- (v) To provide appropriate experience of working in the computing industry via a one year industrial placement;
- (vi) To develop in students the ability of carry out a programme of work with minimal supervision;
- (vii) To develop in students the ability to communicate effectively;
- (viii) To provide the expertise and understanding required to make a contribution to the future development of practice and theory in the computing industry.

- (ix) To stimulate an interest in computing as an academic discipline with a view to encouraging progression to postgraduate research.
- (x) To provide students with an opportunity to obtain an in-depth knowledge and understanding of selected areas of interest.

At the end of the BSc Honours degree graduates should be able to:

- (i) Demonstrate a sound understanding of the fundamental principles, theories and practices underlying both the computing industry and computing as an academic discipline;
- (ii) Contribute to the building, documentation, testing, management and evaluation of a range of computer applications;
- (iii) Demonstrate a high level of expertise in the use of a range of computer hardware and software systems;
- (iv) Choose and avail of a range of structured and integrated methods in the design and engineering of computer applications;
- (v) Demonstrate an understanding of the principles underlying the design and performance of computer hardware and software systems;
- (vi) Effectively communicate their ideas, proposals and designs to colleagues in the computing industry and to potential computer users with a range of levels of expertise;
- (vii) Function effectively as part of a project team;
- (viii) Carry out and manage a directed programme of work with minimal supervision;
- (ix) Demonstrate an understanding of a range of business, administrative and professional environments within which computers are used and of the implications of their use for individuals, organisations and society;
- (x) Demonstrate an appreciation of the role and responsibilities of the professional in the computing industry;
- (xi) Demonstrate an appreciation of the culture of rapid change and development in the computing industry.
- (xii) Compare and critically evaluate a range of integrated methods currently in use in the development of computer applications;
- (xiii) Use and critically evaluate a range of formal methods in the design and engineering of computer applications;
- (xiv) Demonstrate an appreciation of current research and development in a selected range of aspects of the theory and engineering of computer applications;
- (xv) Demonstrate self-reliance in the use of the subject literature and other relevant sources of information.

COURSE CONTENT

Computer Science is currently undergoing a period of rapid growth both in terms of the range and scope of its applications and in its development as an academic subject through research, development and technology transfer. It is no longer possible, therefore, that a student taking an undergraduate degree programme in computing can acquire an in-depth expertise over the whole range of the subject. While it is essential that students be given a sound foundation in all of the main themes of computing, each individual course must place greater emphasis on some of these subject areas than on others. The flavour of any individual degree programme will depend on which subject areas are chosen as main themes and which are seen as merely supportive. While an essential aspect of the study of computing is the integrated nature of all its aspects and while there may be considerable unavoidable overlap, a number of distinct themes can be identified.

A modern degree course should seek to give students a sound foundation in each of the main aspects of computing and at the same time should provide opportunities for students to specialise in one or more of the subject areas. Adopting what would be described as a "breadth first" approach, the degree is designed to provide the firm foundation across the full range of the subject. The later stages of the course include directed options; i.e. students may be directed by the local course committee to choose one or more optional modules which consolidate the particular flavour of degree adopted by staff. Specific pathways include Intelligent Systems, Robotics, Mobile Computing, Embedded Computing and Software Systems Development. As well as the directed options students may also choose freely from a range of advanced optional modules which allow them to follow individual interests.

UNIVERSITY OF ULSTER

PROGRAMME SPECIFICATION

COURSE OR HONOURS SUBJECT TITLE:

BSc (Hons) Computer Science with/without Diploma in Industrial Studies (DIS)

BSc (Hons) Computer Science with/without Diploma in Area Studies (DAS)

BSc (Hons) Computer Science (Intelligent Systems) with/without DIS/DAS

BSc (Hons) Computer Science (Software Systems Development) with/without DIS/DAS

BSc (Hons) Computer Science (Mobile Computing) with/without DIS/DAS

BSc (Hons) Computer Science (Embedded Computing) with/without DIS/DAS

BSc (Hons) Computer Science (Robotics) with/without DIS/DAS

PLEASE NOTE: This specification provides a concise summary of the main features of the BSc Hons Computer Science (DIS) course and the BSc Hons Computer Science (with pathways) courses, 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 online at <http://scis.ulster.ac.uk> and in the Student Handbook.

AWARD INSTITUTION/BODY:

UNIVERSITY OF ULSTER

TEACHING INSTITUTION:

UNIVERSITY OF ULSTER

LOCATION:

MAGEE

ACCREDITED BY:

BRITISH COMPUTER SOCIETY

FINAL AWARD:

BSc (Hons) Computer Science with/without Diploma in Industrial Studies/Diploma in Area Studies

BSc (Hons) Computer Science (Intelligent Systems) with/without Diploma in Industrial Studies/Diploma in Area Studies

BSc (Hons) Computer Science (Robotics) with/without Diploma in Industrial Studies/Diploma in Area Studies

BSc (Hons) Computer Science (Mobile Computing) with/without Diploma in Industrial Studies/Diploma in Area Studies

BSc (Hons) Computer Science (Embedded Computing) with/without Diploma in Industrial Studies/Diploma in Area Studies

BSc (Hons) Computer Science (Software Systems Development) with/without Diploma in Industrial Studies/Diploma in Area Studies

MODE OF ATTENDANCE:

Full-time and Part-time

SPECIALISMS:

Computing

COURSE/UCAS CODES:

ULS U20 G401 M BSc/CompSc

GG4R M BSc/ComSIS

GH46 M BSc/CSRob

G421 M BSc/CSMob

G491 M BSc/CSEC

G601 M BSc/CSSD

DATE WRITTEN/REVISED:

2008/09

10. EDUCATIONAL AIMS AND OBJECTIVES OF THE COURSE

The overall aim of the course is to provide a broadly-based education in computer 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 (DIS version only)
- to develop key skills and enterprise competencies to support the student's progression into a career in the software industry or further academic study.

11 MAIN LEARNING OUTCOMES

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

- The QAA Computing subject benchmark statement (2000) (B);
- The British Computer Society Guidelines on Course Exemption and Accreditation (2001) (P);
- The University Qualifications and Credit framework;
- Computing Curricula 2005 (ACM/IEEE Computer Society);
- Current research and scholarship carried out by academic staff.

11.1 BSc Hons Computer Science with/without DIS/DAS; BSc Hons Computer Science (with pathways) with/without DIS/DAS

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

11.1K KNOWLEDGE AND UNDERSTANDING OF THE SUBJECT

Demonstrate knowledge and understanding of:

- K1** Programming fundamentals, data structures and algorithms, databases, human-computer interaction and software engineering (B,P).
- K2** Computer architecture, computer networks, operating systems 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 selection of advanced software techniques, technologies and applications (including Intelligent Systems, Robotics, Mobile Computing, Embedded Computing and Software Systems Development) (B,P).

Learning and Teaching Methods: Lectures, tutorials, seminars and practical sessions.

Assessment Methods: Coursework and written unseen examinations.

11.1I 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 computer science fundamentals to the comprehension and evaluation of advanced hardware and software technologies (including Intelligent Systems, Robotics, Mobile Computing, Embedded Computing and Software Systems Development) (P).

Learning and Teaching Methods: Lectures, tutorials, seminars and practical sessions.

Assessment Methods: Coursework related to case studies and projects, written unseen examinations, workbooks, presentations, project reports and dissertation.

11.1P 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 as member of a team, recognising the different roles within a team and the different ways of organising teams (B,P).
- P4 Communicate 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 (DIS only).

Learning and Teaching Methods: Lectures, tutorials, seminars and practical sessions.

Assessment Methods: Placement report assessment (DIS/DAS only), problem-based coursework, workbooks, project reports and dissertation.

11.1T TRANSFERABLE/KEY 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).

Learning and Teaching Methods: Lectures, tutorials, seminars and practical sessions.

Assessment Methods: Placement report assessment (DIS/DAS only), workbooks, project vivas, reports and dissertation.

11.1 PROGRAMME LEARNING OUTCOMES MAP – BSc Hons Computer Science with/without DIS/DAS; BSc Hons Computer Science (with Pathways) with/without DIS/DAS

Please note: The matrix displays only the measurable programme outcomes and where these are developed and assessed within the modules offered in the programme.

TITLES	CODE	OUTCOMES																							
		K1	K2	K3	K4	K5	I1	I2	I3	I4	I5	I6	P1	P2	P3	P4	P5	P6	T1	T2	T3	T4	T5	T6	
Level 3																									
Introduction to Internet and Multimedia Technology	COM008	√		√					√				√	√		√			√	√				√	
Introduction to Programming	COM009	√		√			√	√	√				√	√		√				√				√	
Introduction to Mathematics for Computing	COM010	√					√	√	√				√	√								√		√	
Introduction to Electronics	COM011	√		√			√	√	√				√			√			√		√			√	
Introduction to Computer Systems	COM012	√		√			√	√	√				√	√		√			√	√				√	
Level 4																									
Business Information Systems	COM112	√		√				√	√				√	√		√			√	√				√	
Algorithmic Programming I	COM136	√		√			√	√					√	√			√				√	√			
Mathematics 1	COM121	√		√			√	√					√	√			√		√		√	√			
Systems Analysis and Data Management	COM178	√	√	√			√	√			√		√	√	√	√	√			√			√	√	
Computer Hardware and Organisation	COM167	√	√	√			√		√			√		√	√	√	√		√		√	√			
Algorithmic Programming II	COM139	√	√	√			√	√					√	√			√				√	√			
Internet and Multimedia Technology	COM134	√	√	√			√	√						√	√	√			√	√		√	√		
Level 5																									
Object Oriented Programming	COM326	√	√	√	√		√	√		√				√	√	√			√			√		√	
Professional Issues	COM417				√					√									√			√	√	√	√
Informatics Entrepreneurship	COM418				√					√						√				√			√	√	√
Object-oriented Systems Development	COM419	√		√	√	√	√				√		√	√	√				√			√		√	
Human-Computer Interaction	COM350	√										√	√		√		√			√		√	√	√	
Computer Networks and Operating Systems	COM320		√			√	√	√	√						√	√	√			√		√	√	√	
Algorithms and Data Structures	COM328	√		√	√	√	√		√		√	√	√	√	√		√			√	√	√			
Level 5 (DIS version only)*																									
Industrial Placement	COM367			√	√		√		√	√	√		√	√	√	√	√	√		√				√	√

TITLES	CODE	K1	K2	K3	K4	K5	I1	I2	I3	I4	I5	I6	P1	P2	P3	P4	P5	P6	T1	T2	T3	T4	T5	T6
Level 6 Core/Compulsory																								
Final Year Project (Core)	EEE521	√	√	√	√	√	√	√	√	√	√	√	√	√		√	√		√	√		√	√	√
Visual Programming (Compulsory)	COM622	√	√	√			√	√					√	√								√	√	
Options for Computer Science**																								
Software Engineering (SSD)	COM565	√	√	√	√				√		√		√	√	√				√	√		√		√
Intelligent Systems (IS, ROB)	COM623	√	√	√							√	√	√	√							√	√		
Network Games Development	COM588		√	√		√	√	√	√			√	√	√	√		√			√		√	√	
Natural Language Processing	COM566	√		√	√	√	√	√		√			√	√			√			√		√	√	
Database Systems (IS, MC, SSD)	COM620	√	√		√	√	√	√	√		√	√	√	√	√	√	√		√	√		√	√	√
Intelligent Multimedia (IS)	COM556	√	√	√			√		√			√	√	√	√	√	√		√	√		√	√	√
Concurrent and Distributed Systems (MC, SSD, EC)	COM561	√	√	√			√	√	√		√	√	√						√	√		√	√	
Wireless Communication Systems (MC)	COM586	√	√	√		√					√		√	√						√	√	√		
Computer Graphics (SSD)	COM523	√	√	√		√	√					√	√	√			√		√	√		√	√	
Compulsory Pathway modules:																								
Programmable Logic Systems (ROB, EC)	EEE540	√		√		√	√			√	√	√	√	√			√		√	√	√	√	√	
Mobile Computing (MC, EC)	COM594	√	√	√		√	√	√			√	√	√	√	√	√	√			√		√	√	
AI Techniques (IS)	COM595	√	√	√		√	√	√	√			√	√	√	√	√	√		√	√		√	√	
Mobile Robotics (ROB)	COM596	√		√	√		√	√	√	√		√	√	√			√		√			√		
Embedded Systems Design (ROB, EC)	EEE502		√	√	√	√	√	√	√			√		√	√	√	√				√	√	√	

*NOTE: The Diploma in Area Studies (DAS) module is organised at University level

**Where indicated in brackets, the Computer Science optional modules are compulsory on the following Computer Science pathways:

IS: Intelligent Systems
EC: Embedded Computing
MC: Mobile Computing
ROB: Robotics
SSD: Software Systems Development

11.2 Associate Bachelor in Computer Science with DIS/DAS Associate Bachelor Computer Science (Exit Awards)

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

11.2K KNOWLEDGE AND UNDERSTANDING OF THE SUBJECT

Demonstrate knowledge and understanding of:

- K1** Programming fundamentals, data structures and algorithms, databases, human-computer interaction and software engineering (B,P).
- K2** Computer architecture, computer networks, operating systems 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).

Learning and Teaching Methods: Lectures, tutorials, seminars and practical sessions.

Assessment Methods: Coursework, written unseen examinations.

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 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 (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).

Learning and Teaching Methods: Lectures, tutorials, seminars and practical sessions.

Assessment Methods: Coursework related to case studies, written unseen examinations, workbooks, presentations.

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** Work as member of a team, recognising the different roles within a team and the different ways of organising teams (B,P).
- P4** Communicate 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 (DIS version only).

Learning and Teaching Methods: Lectures, tutorials, seminars and practical sessions.

Assessment Methods: Placement report assessment (D)

11.2T TRANSFERABLE/KEY SKILLS

The ability to:

- T1** Make 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).

Learning and Teaching Methods: Lectures, tutorials, seminars and practical sessions.

Assessment Methods: Placement report assessment (DIS/DAS only), workbooks.

11.2 PROGRAMME LEARNING OUTCOMES MAP – Associate Bachelor in Computer Science with DIS/DAS; Associate Bachelor in Computer Science (Exit Awards)

Please note: The matrix displays only the measurable programme outcomes and where these are developed and assessed within the modules offered in the programme.

TITLES	CODE	K1	K2	K3	K4	I1	I2	I3	I4	I5	P1	P2	P3	P4	P5	P6	T1	T2	T3	T4	T5
Level 3																					
Introduction to Internet and Multimedia Technology	COM008	√		√				√				√	√		√		√	√			√
Introduction to Programming	COM009	√		√		√	√	√				√	√		√			√			√
Introduction to Mathematics for Computing	COM010	√				√	√	√				√	√						√		√
Introduction to Electronics	COM011	√		√		√	√	√				√			√		√		√		√
Introduction to Computer Systems	COM012	√		√		√	√	√				√	√		√		√	√			√
Level 4																					
Business Information Systems	COM112	√		√			√	√				√	√		√		√	√			√
Algorithmic Programming I	COM136	√		√		√	√				√	√			√				√	√	
Mathematics 1	COM121	√		√		√	√				√	√			√		√		√	√	
Systems Analysis and Data Management	COM178	√	√	√		√	√			√	√	√	√	√	√			√		√	√
Computer Hardware and Organisation	COM167	√	√	√		√		√				√	√	√	√		√		√	√	
Algorithmic Programming II	COM139	√	√	√		√	√				√	√			√				√	√	
Internet and Multimedia Technology	COM134	√	√	√		√	√					√	√	√			√	√		√	√
Level 5																					
Object Oriented Programming	COM326	√	√	√	√	√	√		√			√	√	√			√				√
Professional Issues	COM417				√				√								√			√	√
Informatics Entrepreneurship	COM418				√				√				√					√			√
Object-oriented Systems Development	COM419	√		√	√	√				√	√	√	√				√			√	√
Human-Computer Interaction	COM350	√									√		√		√			√		√	√
Computer Networks and Operating Systems	COM320		√			√	√	√					√	√	√			√		√	√
Algorithms and Data Structures	COM328	√		√	√	√		√		√	√	√	√		√			√	√	√	
Level 5 (DIS version only)*																					
Industrial Placement	COM367			√	√	√		√	√	√	√	√	√	√	√	√		√			√

*NOTE: The Diploma in Area Studies (DAS) module is organised at University level.

11.3 Diploma in Computer Systems (Exit Award)

11.3 MAIN LEARNING OUTCOMES

Level A provides opportunities for students to achieve and demonstrate the following learning outcomes. Successful students will be able to:

11.3K KNOWLEDGE AND UNDERSTANDING OF SUBJECT

- K1** Demonstrate knowledge and understanding of basic facts, concepts, principles, and practices underlying computer and electronics systems;
- K2** Use such knowledge and understanding in the design and development of electronics and software solutions for the purposes of comprehension, and the understanding of trade-offs;
- K3** Evaluate the extent to which an existing solution meets a defined need and understand how an electronics or software solution could be applied to enhance it;

Teaching and Learning Methods: Lectures, tutorials, seminars and practical sessions.

Assessment Methods: Coursework, written unseen examinations, technical presentations.

11.3I INTELLECTUAL QUALITIES

- I1** Demonstrate the ability to specify, design and construct simple electronics and software solutions;
- I2** Use this ability to evaluate such systems with respect to general quality and possible trade-offs within the parameters of the problem;
- I3** Demonstrate the ability to recognise the implications or risks involved in the operation of computing equipment within an ergonomic context;
- I4** Demonstrate the ability to generate and evaluate the results of tests which investigate the effective operation of an electronics and software solution.

Teaching and Learning Methods: Lectures, tutor-directed tutorials, supervised practical sessions and self-directed learning.

Assessment Methods: Coursework related to case studies and mini-projects, written unseen examinations, presentations.

11.3P PROFESSIONAL/PRACTICAL SKILLS

- P1** Select and apply simple design methodologies to a given problem domain;
- P2** Employ effectively the tools used for the construction and documentation of electronics and software solutions;
- P3** Prepare and deliver presentations and written reports.

Teaching and Learning Methods: Lectures, tutorials, problem-based seminars and practical sessions, and mini-projects.

Assessment Methods: Problem-based coursework, workbooks, and reports.

11.3T TRANSFERABLE SKILLS

- T1** Learn in both familiar and unfamiliar situations making effective use of information-retrieval skills and of learning resources;
- T2** Communicate effectively using various media and with a variety of audiences, using rational and reasoned arguments either orally, written or electronically;
- T3** Apply numeracy in presenting cases involving a quantitative aspect;
- T4** Manage one's own learning and development including time management and organisational skills.

Teaching and Learning Methods: Lectures, tutorials, seminars, practical sessions, and mini-projects.

Assessment Methods: Workbooks, presentations and reports.

11.3 PROGRAMME LEARNING OUTCOMES MAP Diploma in Computer Systems (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.

MODULE TITLES	OUTCOMES														
	CODE	K1	K2	K3	I1	I2	I3	I4	P1	P2	P3	T1	T2	T3	T4
Level 3															
Introduction to Internet and Multimedia Technology	COM008	√	√	√			√		√	√	√	√	√		√
Introduction to Programming	COM009	√	√	√	√	√	√	√	√	√	√		√		√
Introduction to Mathematics for Computing	COM010	√			√	√	√	√	√	√				√	√
Introduction to Electronics	COM011	√	√	√	√	√	√	√	√			√		√	√
Introduction to Computer Systems	COM012	√	√	√	√	√	√		√	√	√	√	√		√
Level 4															
Business Information Systems	COM112	√	√	√		√	√		√	√	√	√	√		√

The course is of four/five years' duration depending on point of entry (Level 3: 5; Level 4: 4). Entry is normally into Level 4. Entry is permitted into Level 5 in exceptional circumstances. Years A, 1, 2 and 4 are spent at the university and Year 3 is a period of industrial placement.

The course structure is centred on three broad themes: programming and software engineering, computer systems (hardware and software technologies), and computing in organisations.

The main aim of Level 3 entry is to widen access to honours degree level courses in computing and electronics. Level 3 therefore aims to provide introductory knowledge in computer systems and electronics, and thus prepare students to proceed onto the normal (Level 4) programme of study for the honours degree course. Additionally, it also aims to equip those students who decide to finish their studies at Diploma level with fundamental knowledge and skills that enable them to pursue a productive professional career in the computing or electronics industries. Level 3 consists of 120 points.

Levels 4 and 5 consist of a set of compulsory modules addressing the three themes, enabling students to achieve the basic competencies in software development and equipping them for a period of industrial placement. Level 4 consists of 120 points and Level 5 consists of 120 points.

All students normally spend one year on placement, having completed Years 1 and 2, working in some aspect of the software industry for a minimum period of 26 weeks. On satisfactory completion of the placement period the student is eligible for the award of Diploma in Industrial Studies. In exceptional circumstances, at the discretion of the Dean, students may be allowed to proceed to Level 6 without completing placement. Those students would not receive the award of DIS. A student who satisfactorily completes Year 3 in study abroad is eligible for the award of Diploma in Area Studies (DAS).

The final year of the course consists of one compulsory 30 point project module, one compulsory 10 point module and four optional modules, all at Level 3. The compulsory module (Project) enables the student to engage in a substantive piece of work comprising both theoretical and practical elements at an advanced level. A range of optional modules are offered. Students may elect to do a broad range of topics or specialise in 1 of 5 pathways: Intelligent Systems; Robotics; Mobile Computing; Embedded Computing; or Software Systems Development.

Satisfactory completion of each Level of the course is normally a pre-requisite for progression to the subsequent Level. 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.

Students who, for whatever reason/s, are unable to satisfy the University requirements for a Level 6 qualification, but who have passed all elements at Level 5 and optionally the DIS year, will have fulfilled the learning outcomes commensurate with the intermediate level Associate Bachelor award (either the AB in Computer Science or the AB in Computer Science with Diploma in Industrial Studies).

BSc Hons Computer Science with/without DIS/DAS
BSc Hons Computer Science (with pathways) with/without DIS/DAS

Level 3 All modules are compulsory	20	COM008 Introduction to Internet and Multimedia Technology	20	COM009 Introduction to Programming	20	COM010 Introduction to Mathematics for Computing
	20	COM011 Introduction to Electronics	20	COM012 Introduction to Computer Systems	20 (*Level 4)	COM112 Business Information Systems
Level 4 All modules are compulsory	20	COM121 Mathematics I	20	COM178 Systems Analysis & Data Management	20	COM136 Algorithmic Programming I
	20	COM134 Internet & Multimedia Technology	20	COM167 Computer Hardware & Organisation	20	COM139 Algorithmic Programming II
Level 5 All modules are compulsory	20	COM326 Object Oriented Programming	10	COM417 Professional Issues	20	COM419 Object Oriented Systems Development
			10	COM418 Informatics Entrepreneurship		
	20	COM328 Algorithms and Data Structures	20	COM320 Computer Networks and Operating Systems	20	COM350 Human Computer Interaction
60 Level 5 (DIS/DAS only)	COM367 DIS Placement OR DAS Placement (organised at University level)					

L E V E L	20 Optional	20 Optional	20 Optional	10 Compulsory
	COM588 Network Games Development	COM565 Software Engineering	COM620 Database Systems	COM622 Visual Programming
SEMESTER 1				
6	20 Compulsory	20 Optional		
	COM594 Mobile Computing	COM623 Intelligent systems		
L E V E L	20 Optional	20 Optional	20 Optional	20 Optional
	COM566 Natural Language Processing	COM596 Mobile Robotics	COM586 Wireless Communication Systems	COM561 Concurrent and Distributed Systems
SEMESTER 2				
6	30 Core	20 Optional	20 Optional	
	EEE521 Final Year Project**	COM523 Computer Graphics	COM556 Intelligent Multimedia	

The CAT value is shown in the top left corner of each module. Modules in final year (Level 6) are indicated as COMPULSORY or OPTIONAL. Students must choose modules to a total of 60 CAT points in each Semester in the Final Year.

**The project module runs over both semesters: 10 points in Semester 1 and 20 points in semester 2.

**BSc Hons Computer Science (Intelligent Systems) with/without DIS/DAS
Level 6 Pathway Structure**

L E V E L	20 Compulsory	10 Compulsory	20 Compulsory
	COM620 Database Systems	COM622 Visual Programming	COM623 Intelligent systems
6	30 Core	20 Compulsory	20 Compulsory
	EEE521 Final Year Project**	COM595 AI Techniques	COM556 Intelligent Multimedia

**BSc Hons Computer Science (Robotics) with/without DIS/DAS
Level 6 Pathway Structure**

L E V E L 6	20 Compulsory	10 Compulsory	20 Compulsory
	EEE540 Programmable Logic Systems	COM622 Visual Programming	COM623 Intelligent systems
	30 Core	20 Compulsory	20 Compulsory
	EEE521 Final Year Project**	EEE502 Embedded Systems Design	COM596 Mobile Robotics

**BSc Hons Computer Science (Mobile Computing) with/without DIS/DAS
Level 3 Pathway Structure**

L E V E L 6	20 Compulsory	20 Compulsory	10 Compulsory
	COM620 Database Systems	COM594 Mobile Computing	COM622 Visual Programming
	30 Core	20 Compulsory	20 Compulsory
	EEE521 Final Year Project**	COM561 Concurrent and Distributed Systems	COM586 Wireless Communication Systems

**BSc Hons Computer Science (Embedded Computing) with/without DIS/DAS
Level 3 Pathway Structure**

L E V E L 6	20 Compulsory	20 Compulsory	10 Compulsory
	EEE540 Programmable Logic Systems	COM594 Mobile Computing	COM622 Visual Programming
	30 Core	20 Compulsory	20 Compulsory
	EEE521 Final Year Project**	EEE502 Embedded Systems Design	COM561 Concurrent and Distributed Systems

**BSc Hons Computer Science (Software Systems Development) with/without DIS/DAS
Level 3 Pathway Structure**

L E V E L 6	20 Compulsory COM565 Software Engineering	20 Compulsory COM620 Database Systems	10 Compulsory COM622 Visual Programming
	30 Core EEE521 Final Year Project**	20 Compulsory COM523 Computer Graphics	20 Compulsory COM561 Concurrent and Distributed Systems

The CAT value is shown in the top left corner of each module. Modules in final year (Level 3) are indicated as COMPULSORY or OPTIONAL. Students must choose modules to a total of 60 CAT points in each Semester in the Final Year.

**The project module runs over both semesters: 10 points in Semester 1 and 20 points in semester 2.

Associate Bachelor in Computer Science / Associate Bachelor in Computer Science with DIS/DAS (Exit Awards)

Level 3 All modules are compulsory	20	COM008 Introduction to Internet and Multimedia Technology	20	COM009 Introduction to Programming	20	COM010 Introduction to Mathematics for Computing
	20	COM011 Introduction to Electronics	20	COM012 Introduction to Computer Systems	20 (*Level 4)	COM112 Business Information Systems
Year 1 (Level 4) All modules are compulsory	20	COM121 Mathematics I	20	COM178 Systems Analysis & Data Management	20	COM136 Algorithmic Programming I
	20	COM134 Internet & Multimedia Technology	20	COM167 Computer Hardware & Organisation	20	COM139 Algorithmic Programming II
Year 2 (Level 5) All modules are compulsory	20	COM326 Object Oriented Programming	10	COM417 Professional Issues	20	COM419 Object Oriented Systems Development
			10	COM418 Informatics Entrepreneurship		
	20	COM328 Algorithms & Data Structures	20	COM320 Computer Networks and Operating Systems	20	COM350 Human Computer Interaction
Year 3 (Level 5) (DIS/DAS only)	60	COM367 DIS Placement OR DAS Placement (organised at University level)				

The CAT value/level is shown in the top left corner of each module.

Diploma in Computer Systems (Exit Award)

Level 3 All modules are compulsory	20	COM008 Introduction to Internet and Multimedia Technology	20	COM009 Introduction to Programming	20	COM010 Introduction to Mathematics for Computing
	20	COM011 Introduction to Electronics	20	COM012 Introduction to Computer Systems	20 (*Level 4)	COM112 Business Information Systems

The following support is provided for students and their learning:

- An Induction Programme for new students (all years) is held throughout the first weeks of each semester. This Induction Programme includes talks by the Courses' Coordinator, the PDP Coordinator, the Placement Tutor, and includes tours of the Learning Resource Centre (LRC) given by LRC staff.
- The Courses' Coordinator is available at specified hours for advice.
- A Course website provides an electronic version of the Student Handbook (including this document), an electronic notice board with daily notices and links to other on-line resources (Academic Affairs, Careers, Library, timetables etc).
- Students are supported by extensive library and other learning resources.
- The School of Computing and Intelligent Systems is resourced by a number of state-of-the-art computer laboratories with a wide range of software. New software is introduced as required per semester.
- All modules have an associated website with on-line learning support material (module specification, lecture notes, useful web links etc).
- Every student is allocated an email account and has full (24hours, 7 days a week) access to the computing laboratories and the Internet.
- Each student is allocated a personal Studies Advisor who is available for academic and academic-related advice.
- Placement units are dedicated to preparing students for placements and finding placement opportunities for students.
- Students are visited on placement by academic staff.
- Advertised availability hours for academic staff.
- Course notice board.
- Every student receives a hard copy of the Student Handbook (incorporating this document) which contains details of the following university services:
- Career Development Centre
- Information Services Department
- Student Support Department
- Sport and Recreation Department
- International Office (for international students)
- Students' Union
- Chaplaincy

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.

Year 2 Entry: Direct entry to Year 2 is only possible for suitably qualified candidates. Entry to the part-time course is at Level 5 (Year 2) only.

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

- Initial validation and regular revalidation exercises.
- Module reviews (including student input).
- Annual staff reviews.
- Regular Course Committee reviews.
- Course accreditation by external bodies.
- Annual Subject Monitoring report prepared by the Courses' Coordinator.
- Review of external examiner views expressed in assessment moderation, during Examination Board visits and in annual reports.
- Peer teaching observations and feedback.
- Review of employer views expressed through annual feedback surveys of employers of placement students and at meetings of the Faculty Industrial Liaison Panel.
- The National Student Survey.
- Student performance data and career progression.

Committees with responsibility for monitoring and evaluating quality:

- Staff Student Consultative Committee.
- Course Committee.
- Board of Examiners.
- School Board (includes student members).
- Faculty Academic Affairs Committee (includes student members).
- University Teaching and Learning Committee.

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

- Staff-Student Consultative Committee.
- Student representatives on School and Faculty boards.
- Student Questionnaires.
- Placement reports.

Staff development includes:

- Updating in the subject through research and scholarship.
- Membership of professional bodies.
- University Staff Development Programme.
- Membership of the Higher Education Academy.
- Consultancy.
- Research and Knowledge Transfer.
- Representation on external working groups and committees.

16 REGULATION OF STANDARDS

Assessment rules

- The pass mark for the course, modules, and individual assessments is 40%
- Degree classifications:
 - 1st class: Overall mark of 70% or above
 - 2:1: Overall mark of 60% and <70%
 - 2:2: Overall mark of 50% and <60%
 - 3rd class: Overall mark of 40% and <50%
- Honours classification derives 100% from Level 6
- The award of DIS/DAS requires a minimum mark of 50% in the placement year. DIS/DAS with Commendation is awarded for marks $\geq 70\%$.

External examiners

The course has one external examiner. His/her role is to consult, through the Courses' Co-ordinator, with the internal examiners on the approval and moderation of examination papers and other forms of assessment. The external examiner approves the coursework and examination papers for Level 3 and Level 6, and reviews all the assessment marking and results for Levels 4 and 5. In addition, the external examiner ensures comparability with similar courses at other institutions as regards course content and the standard of marking of examination papers and other forms of assessment. The external examiner provides valuable feedback to the Course Committee by submitting annual reports outlining any strengths or weaknesses of the course and the assessment procedures. The external examiner may assist the Course Committee in reaching decisions on borderline candidates, and may subject such candidates to viva-voce examination.

17 INDICATORS OF QUALITY RELATING TO TEACHING AND LEARNING

- The course is accredited by the British Computer Society.
- A large number of staff are members of the Higher Education Academy.
- All Computing courses were subject to a Faculty Subject Review during 2002, and participated in a Discipline Audit Trail (DAT) during an Institutional audit in 2005.
- In the 2001 Research Assessment Exercise the Faculty of Informatics (subsequently Engineering) achieved a grade 4 in Unit of Assessment 25 (Computer Science).
- All staff hold (or if not, are required to achieve) a postgraduate certificate in university teaching (PGCUT/PGCHET).
- The School has attracted external funding for teaching and learning initiatives, including the Wireless Broadband project (2003-2006).

Placement and Career Opportunities

Students spend Year 3 in relevant and supervised employment referred to as industrial placement. The first two years of the Programme are designed to provide the students with the knowledge and expertise they will need to extract maximum benefit from the placement experience.

Preparation for Placement/Employment

In addition to exploring the various aspects of the placement year and its relationship with other elements of the Programme, students are prepared for the application and selection procedures associated with placement and ultimately, employment. This includes advice on researching the market, completion of application forms, and preparation for interview. Much of this preparation takes place in Year 2 during a 'Placement Preparation' module (not formally timetabled). However, all Year 1 and 2 modules contribute to the desired portfolio of skills and in particular, the teamwork aspects will help to develop important inter-personal and group skills that are of increasing importance within the commercial environment.

There is a wide range of placement opportunities in Northern Ireland, Great Britain and the Republic of Ireland, and from time to time some placements overseas. We will find several employers willing to consider you for placement. Selection is by competitive interview by the employer concerned. They will pay your interview expenses. There is no maintenance grant or loan during the placement year; instead you will receive a proper salary. The placement lasts for about 48 weeks. Students have reported in glowing terms on the value of the placement experience, and their placement employers have offered several eventual permanent positions. Similarly placement employers have reported very favourably on our students.

For the student, placement should ideally provide appropriate training and work based in a well organised team with a significant element of computing. It must provide a genuine opportunity for the student to develop towards professional competence. The Faculty of Computing and Engineering has built up contacts with many employing organisations that are in a position to provide suitable placements. While the precise nature of placements will vary from employer to employer, it is intended that students are initially given close supervision and guidance and are progressively given more responsibility as the placement proceeds. Before the end of placement students should be contributing as a full employee of the company. During placement each student is supervised by an industrial supervisor from the employing company and an academic supervisor from the Faculty of Computing and Engineering.

Normally, each student will receive at least two visits from an academic supervisor. However, special arrangements such as telephone, e-mail or video conferencing may be used to contact those students who are placed in geographically distant locations. These media may also be used to supplement the formal academic visits to other students if necessary.

The experience gained and the associated personal developments are subsequently drawn on during the final year of the BSc Programme. In some cases the final year project may stem directly from projects that have been identified during the placement year. Successful completion of the industrial placement is recognised by the award of the Diploma in Industrial Studies. Placements also help the Faculty to provide graduates with the qualities that employers require. The visits of academic supervisors to students on placement provide an ideal opportunity to obtain a view of the Programmes from an industrial perspective. The links with industry, which placement promotes, also help the Course Committee to keep abreast of changing industrial requirements and often lead to other joint ventures such as custom-built training Programmes, Knowledge Transfer Partnerships and other collaborative research.

Placement offers an opportunity to use and enhance the skills developed during the first two years of the Programme in a work-based context. Each student's placement experience will be different depending on the employer but each placement is vetted by the University to ensure it offers a worthwhile experience. Within the Faculty, there have been many instances of students taking up a full-time post with their placement employer after graduation.

In addition to developing 'computing' skills, placement often provides opportunities for students to acquire other transferable skills such as working as part of a team, interacting with clients, business awareness etc.

“Key skills” are qualities of graduates that are greatly desired by today’s employers. They include the ability to write written reports or give oral presentations. Opportunities are provided throughout the Programme to develop these important qualities, in particular through group assignment work included in several modules and the opportunities offered through placement. Often assignments will include marking criteria that assess a student’s ability in one or more key skills, for example, by awarding a mark for the effectiveness of the individual as part of a group project.

The Placement Tutor

The BSc Programme has a member of academic staff known as a Placement Tutor who is responsible for:

- Establishing and maintaining good relations with placement providers;
- Finding new placements as required;
- Preparing students for the placement experience;
- Administering the process whereby students are placed;
- Collating the assessment returns at the end of the placement year;
- Making recommendation regarding each student’s overall performance and progress.
- The Programme Placement Tutor is a member of a Faculty of Computing and Engineering Placement Group chaired by a Faculty Placement Co-ordinator. This group seeks to ensure close collaboration in the work of various Programme placement tutors.

Career Opportunities

Students from this Programme may enter a broad range of possible careers. For example, they may go on to become technical software developers, Web application designers, HCI consultants or systems analysts. Further study routes are also possible through MRes, MPhil and PhD Programmes for those wishing to conduct detailed research into specific aspects of computer science.

Careers advice is formally provided by the Careers Service. See <http://www.ulst.ac.uk/careers/> for more information.

THE PROGRAMME TIMETABLE AND WEBSITE

The Programme timetable will be distributed at enrolment or induction and can also be viewed via the School of Computing and Intelligent System’s website at: <http://scis.ulster.ac.uk>. This website provides a repository of information for all the undergraduate courses at Magee and links to all the relevant on-line resources.

DATES OF ATTENDANCE/EXAMINATIONS/VACATIONS : 2009/10

Semester 1

Monday 21 September 2009	Teaching begins (Autumn)
Friday 11 December 2009	Teaching ends
Monday 14 December 2009	Christmas Vacation begins
Friday 25 December 2009 to Friday 1 January 2010	University Closed (Christmas)
Friday 4 January 2010	Christmas Vacation ends
Tuesday 5 January to Saturday 16 January 2010	Examination Period
Friday 22 January 2010	Autumn Semester ends
Friday 5 February 2010	Last date for meetings of Course/Subject Committees (Semester One Progress review)

Semester 2

Monday 25 January 2010	Teaching begins (Spring)
Wednesday 17 March 2010	University Closed (St Patrick's Day)
Monday 29 March 2010	Easter Vacation begins
Monday 5 April to Friday 9 2010	University Closed
Friday 9 April 2010	Easter Vacation ends
Monday 3 May 2010	University Closed (May Day)
Tuesday 4 May to Friday 7 May 2010	Revision week (non-teaching)
Monday 10 May to Saturday 22 May 2010 (with possible extension to 25 May if required for first sit examinations)	Examination period
Friday 28 May 2010	Spring semester ends
Thursday 10 June 2010	Last date for meetings of Boards of Examiners
Monday 28 June – Tuesday 6 July 2010	Summer Graduation Ceremonies
Resit Period Wednesday 11 August to Thursday 19 August 2010	Supplementary Examinations
Monday 23 August to Friday 27 August 2010	Meetings of Boards of Examiners
Semester 3 Monday 19 July 2010	Teaching begins (Summer)
Monday 30 August to Friday	Examination Period

3 September 2010

Friday 10 September 2010

Monday 13 September to Friday
17 September 2010

Summer Semester ends

Meetings of Boards of Examiners

PROGRAMME MANAGEMENT

Courses' Co-ordinator (Course Director for all Undergraduate Courses)

Name	Office	Email	Telephone	Comments
Dr Heather Sayers	MG121C	hm.sayers@ulster.ac.uk	75148	Senior Lecturer & Courses' Coordinator

The Teaching Team consists of:

Name	Office	Email	Telephone	Comments
Professor Liam Maguire	MS127	lp.maguire@ulster.ac.uk	75605	Head of School
Professor Paul McKeivitt	MS112	p.mckeivitt@ulster.ac.uk	75433	Professor of Digital Multimedia
Professor Ulrich Nehmzow	MS205	u.nehmzow@ulster.ac.uk	75059	Professor of Cognitive Robotics
Dr Laxmidhar Behera	MS107	l.behera@ulster.ac.uk	75276	Reader
Dr Shyam Chakraborty	MS135	ss.chakraborty@ulster.ac.uk	75126	Reader
Dr Girijesh Prasad	MS137	g.prasad@ulster.ac.uk	75645	Reader
Dr Kevin Curran	MS130	kj.curran@ulster.ac.uk	75565	Senior Lecturer
Dr Tom Lunney	MG121D	tf.lunney@ulster.ac.uk	75388	Senior Lecturer
Dr Liam McDaid	MS016	lj.mcdaid@ulster.ac.uk	75452	Senior Lecturer
Mr Derek Woods	MS134	dn.woods@ulster.ac.uk	75380	Senior Lecturer
Dr Ammar Belatreche	MS104	a.belatreche@ulster.ac.uk	75158	Lecturer
Mr Michael Callaghan	MS132	mj.callaghan@ulster.ac.uk	75771	Lecturer
Dr Sonya Coleman	MS133	sa.coleman@ulster.ac.uk	75030	Lecturer
Dr Joan Condell	MS131	j.condell@ulster.ac.uk	75024	Lecturer
Mr Martin Doherty	MG121A	m.doherty@ulster.ac.uk	75552	Lecturer
Dr Peter Kelly	MG121E	pm.kelly@ulster.ac.uk	75293	Lecturer
Mr Aiden McCaughey	MG126	a.mccaughey@ulster.ac.uk	75131	Lecturer & Placement Officer
Dr Sandra Moffett	MS015	sm.moffett@ulster.ac.uk	75381	Lecturer
Mrs Mairin Nicell	MG127	ma.nicell@ulster.ac.uk	75007	Lecturer
Mr Maeve Paris	MG040	m.paris@ulster.ac.uk	75212	Lecturer
Dr Jose Santos	MG035	ja.santos@ulster.ac.uk	75034	Lecturer
Dr NH Siddique	MG037	nh.siddique@ulster.ac.uk	75340	Lecturer
Dr Zumao Weng	MG050	zm.weng@ulster.ac.uk	75358	Lecturer
Dr Shane Wilson	MG038	s.wilson@ulster.ac.uk	75527	Lecturer

Support Staff:

Name	Office	Email	Telephone	Comments
Dr Caitriona Carr	MG121B	c.carr@ulster.ac.uk	75784	Computer Training Officer
Mr Anthony McCourt	MG121B	a.mccourt@ulster.ac.uk	75784	Computer Training Officer
Mr Pratheepan Yogarajah	MS216	p.yogarajah@ulster.ac.uk	75171	Teaching Assistant
Mr Ted Leath	MG126	ta.leath@ulster.ac.uk	75366	Senior Computing Officer
Mr Paddy McDonough	MS034	p.mcdonough@ulster.ac.uk	75322	Computing Officer
Mr Pat Kinsella	MG132/MS033	pa.kinsella@ulster.ac.uk	75617	Computing Officer
Mr Bernard McGarry	MG132	bg.mcgarry@ulster.ac.uk	75644	Network Assistant
Mr Daniel Farren	MF143/MS030	db.farren@ulster.ac.uk	75008	Technician
Mr Neill McDonnell	MF143/MS030	n.mcdonnell@ulster.ac.uk	75554	Technician

Administrative & Secretarial Staff:

Name	Office	Email	Telephone	Comments
Ms Caroline Elvin	MS126	c.elvin@ulster.ac.uk	75605	Secretary to Head of School
Mr Stephen Friel	MG048	s.friel@ulster.ac.uk	75148	Secretary to the Courses' Coordinator
Ms Michelle Stewart	MG048	m.stewart@ulster.ac.uk	75382	Secretary

Day-to-day administration of each Programme is the responsibility of the Courses' Coordinator. All major decisions in the running of the Programme are taken at Course Committee meetings.

Course Committee

The Course Committee is essentially a committee formed by those members of academic staff who have teaching responsibilities on the Programme as well as the nominated Studies Advisors. The Course Committee reports to the Faculty's Academic Affairs Committee, which in turn reports to the Faculty of Computing and Engineering Board. This is the normal route for all of the Faculty's Course Committee meeting minutes.

Student progression (i.e. assessing the performances of students and determining whether or not they should be allowed to proceed to the next stage of the Programme) is the responsibility of the Board of Examiners. The Board of Examiners is essentially the Course Committee plus an External Examiner.

The Programme Committee meets on a regular basis - normally at least once per semester, although other special meetings may be arranged should a need be identified.

Support for Students

The University's **Teaching and Learning Support Charter** outlines the University's commitments to students and its responsibilities in relation to teaching and learning. This document is available for viewing at: <http://www.ulster.ac.uk/quality/qmau/t&l/supportcharter.pdf>

Student-Staff Consultative Committee

Part of the Course Committee meetings is devoted exclusively to the consideration of general student problems associated with the Programme which are reported from the Staff-Student Consultative Committee (SSCC). An elected student from each year of the Programme is invited to participate as Class Representatives on the SSCC. These elected representatives are invited to express the views of their peers in relation to the organisation and delivery of the Programme. In the past, issues addressed have included:

- Resourcing;
- Comments on the delivery assessment of each module;
- Workloads;
- General Feedback
- Other general programme-related matters

The Staff-Student Consultative Committee is a formal forum for students to express their opinions. The Faculty's policy is to encourage the early identification of problems and to bring these to the attention of staff as soon as possible.

Assessment

Criteria for assessing and grading course work

These are specific to each module and will be provided when each assignment is issued.

Assessment methods used may include:

Formal timed limited, unseen examination paper;
Open book class test;
Group project;
Individual project;
Written report;
Presentation.

SCHOOL OF COMPUTING AND INTELLIGENT SYSTEMS PROCEDURES FOR MONITORING STUDENT ATTENDANCE (MODULE OR OTHER NON-MODULE SPECIFIC EVENT)

1. Attendance will be monitored on all modules across all years of study (undergraduate and postgraduate). Attendance at other non-module specific events (e.g. general tutorials, induction sessions, meetings with Advisors of Study) will also be monitored.
2. Formal responsibility for attendance monitoring at the module level and the maintenance of evidence lies with the Module Coordinator. Module Coordinators will ensure that timely records of student attendance in an accessible format¹ are maintained. The Head of School will ensure that staff member(s) are nominated with corresponding responsibilities for the other designated non-module specific events.
3. At the start of each module², Module Coordinators will ensure that students are:
 - a) reminded of their general attendance obligations³;
 - b) advised of any additional module-specific attendance requirements⁴;
 - c) reminded of the resources available to them for informing them of non-attendance or other related issues⁵;
 - d) advised as to how attendance records for the module will be assembled. They will identify (for example):
 - The range of classes at which attendance records will be taken (e.g. all lectures and lab classes; lab classes only; selected classes)
 - The mechanism(s) employed (e.g. manual roll-call, use of technology such as Turning Point, WebCT engagement monitoring, combination of methods).

Members of staff assigned corresponding responsibilities for the other designated non-module specific events will provide corresponding information for their events.

4. All staff responsible for monitoring attendance will reflect regularly on the student attendance (and progress where appropriate) within their remit.
5. Module Level or other non-Module specific event.

Where a member of staff identifies a student's attendance profile as giving rise for concern (without reasonable explanation and in the absence of appropriate supporting documentation), they will invoke the School's process for investigation of Student non-attendance. This will involve the member of staff advising the student's Studies Advisor and the student's Course/Subject Director of their concerns. The student's studies Advisor will first try to establish the reasons for the student's non-attendance. If this is unsuccessful the Studies advisor will inform the student's Course/Subject Director who will arrange for the reasons for the student's absences to be investigated, meeting with the student if appropriate. Should a student's attendance continue to give rise for concern the student's Course/Subject Director will advise the Head of School who will formally communicate with the student inviting them to discuss the reason(s)

¹ Note that a particular module may have students from a number of different courses/programmes.

² This may be done efficiently and consistently via a standard note within a Module Handout form or within WebCT.

³ For example, quoting the Student Charter, Course Regulations and other relevant sources

⁴ For example, talks by guest speakers, site visits etc. Submission of coursework may also be included.

⁵ For example, NA1 and EC1 forms which are available via the Student Portal

for the recurring absences. Details of any meetings with a student will be recorded and placed on the student's file.

6. Failure to Submit Coursework

Where a student has failed to submit a piece of coursework (without reasonable explanation and in the absence of appropriate supporting documentation) the Module Coordinator will advise the student; and his/her Adviser of Studies and Course/Subject Director that a mark of zero has been awarded for the work as per University Policy. Module Coordinators should use non-submission of coursework in conjunction with a student's module attendance profile to support invoking the School's process for investigation of student non-attendance or referring the student to their Course/Subject Director (as described under Point 5).

7. Staff will produce summary reports of attendance upon request from a Course/Subject Director and will also produce a final summary report on completion of the module.

PROGRAMME REGULATIONS

UNIVERSITY OF ULSTER SCHOOL OF COMPUTING AND INTELLIGENT SYSTEMS UNDERGRADUATE COURSE REGULATIONS

1. COURSE TITLES

COURSE TITLE	CODE
Bachelor of Science (with Honours) in Computer Science with Diploma in Industrial Studies/ Diploma in Area Studies FT/PT	2134/2183
Bachelor of Science (with Honours) in Computer Science (Software Systems Development) with Diploma in Industrial Studies/ Diploma in Area Studies FT/PT	6245
Bachelor of Science (with Honours) in Computer Science (Intelligent Systems) with Diploma in Industrial Studies/ Diploma in Area Studies FT/PT	6241
Bachelor of Science (with Honours) in Computer Science (Mobile Computing) with Diploma in Industrial Studies/ Diploma in Area Studies FT/PT	6243
Bachelor of Science (with Honours) in Computer Science (Embedded Computing) with Diploma in Industrial Studies/ Diploma in Area Studies FT/PT	6244
Bachelor of Science (with Honours) in Computer Science (Robotics) with Diploma in Industrial Studies/ Diploma in Area Studies FT/PT	6242

Note part-time (P/T) versions of all the Bachelor of Science courses are available but for efficiency the University system only generates a related course code when a student enrolls on the programme.

2. MODE OF ATTENDANCE

Full Time and Part Time

3. DURATION

FULL-TIME SANDWICH:

Normally 4 years (6 semesters of study and placement year) or 5 years (if student enters at Level 3 (8 semesters of study and placement year).

FULL-TIME INTERCALARY: Normally 4 years (8 semesters of study including year of study abroad) or 5 years if the student enters at Level 3 (10 semesters of study including year of study abroad).

PART-TIME:

A minimum of 3 years and a maximum of 6 years (12 modules, at the rate of one or two per semester).

4. LOCATION

Magee Campus

5. FACULTY

Computing and Engineering

6. ADMISSION REQUIREMENTS

Applicants must:

- (b) satisfy the University's general entry requirements and subjects must include Mathematics at least Grade C at GCSE level.

In addition, individual courses may have higher entry requirements set by the Course Committee and the Faculty.

or

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

See prospectus entry for each programme.

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, or evidence from the accreditation of prior experiential learning, may be accepted as exempting candidates from part of an approved programme provided that they shall register as students of the University of Ulster for modules amounting to at least the final third of the credit value of the award at the highest level.

8. PLACEMENT/STUDY ABROAD

During their placement year candidates are expected to adhere to the normal attendance practices at their place of employment. Each student is supervised by an industrial supervisor from the employing company and an academic supervisor from the Faculty.

Assessment of placement is on the basis of four elements. Overall performance on placement is collated by the Placement Tutor taking into account the elements listed above with weightings as indicated:

Academic Assessment (First & Second visits)	30%
Employer Assessment	20%
Professional Practice (Logbook & Technical Report)	20%
Reflection (Student Final Report)	30%

A candidate on placement who is unable to complete the placement year due to illness or other circumstances may, at the discretion of the Board of Examiners, be permitted to proceed to the final year of the course, and may be awarded the DIS provided that the minimum requirement of 25 weeks has been completed along with all assessments.

To be awarded the DAS, a candidate on placement abroad must complete the minimum requirement of 25 weeks and complete all assessments.

Exemption from Placement

Exemption from the placement requirement will be awarded only in the most exceptional circumstances. To be so exempted a candidate must satisfy the Board of Examiners that he/she has acquired appropriate work experience which the course committee considers equivalent to placement. A candidate must submit an application for exemption which must include a report (approximately 2,000 words) outlining the extent and level of the work experience already obtained, together with a report from his/her employer(s). The application will be assessed by a sub-committee consisting of the Course Director and the Placement Tutor, which will then make a recommendation to the Board of Examiners. An interview with the candidate may form part of the assessment process.

A candidate who is exempted from placement will not be eligible for the award of Diploma in Industrial Studies or Diploma in Area Studies.

Part-time students do not do a placement year, and are not eligible for the awards of DIS or DAS.

Unplaced Students

- A student who is unable to obtain placement may, at the discretion of the Board of Examiners and in exceptional circumstances only, be permitted to proceed directly to the final year of the course.
- 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 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.
- A student who does not complete an appropriate placement will not be eligible for the award of Diploma in Industrial Studies or Diploma in Area Studies.

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 their Studies Adviser or the Courses' Co-ordinator. 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 University regulations.
- 9.3 Students who are absent without good cause for a substantial proportion of classes may be required to discontinue studies, in accordance with University regulations.

10. RULES GOVERNING STUDENT CHOICE

- 10.1 Students enrolled for a Single Honours degree undertake an integrated programme of study primarily in Computer Science, Electronics and Computer Systems, Computer Games Development or Multimedia Computer Games. Students enrolled for a Major/Minor Honours degree undertake a programme of study with a two-thirds/one-third balance between two subjects. Students enrolled for a Joint Honours degree (Main) undertake a programme of study of equal weight in two subjects.

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 Programmes 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 table at section 18.
- 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 achieved in each element.
- 11.5 FOR PROGRAMMES INCLUDING THE DIS/DAS AWARD: 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 Courses' Co-ordinator.

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.

Part-time students may proceed from semester to semester, unless they have accumulated such failures as to prohibit them from proceeding to the subsequent level of the course. To proceed from level to level they are subject to the same regulations as full-time students

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 15.2 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 coursework component or examination 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 DIS/DAS 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:

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 OR withdraw from the course.
Failure in modules with an overall value of more than 80 credit points	Withdraw from the course.
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).
Failure in modules with an overall value up to and including 40 credit points (except as above)	Repeat once only 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).
Failure in modules with an overall value of more than 40 credit points	Withdraw from the course.

Consequences of failure in placement year (DIS):

Failure at the First Attempt:

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

Failure at the Second Attempt:

Failure in project	Repeat <i>once only</i> the project. (Maximum mark not to exceed 50%.)
Failure in placement	Withdraw from the Programme.

Consequences of failure in intercalary year (DAS)

Failure at the First Attempt	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%.)
Failure at the Second Attempt	Withdraw from the programme OR repeat <i>once only</i> specified examinations and/or coursework. (Maximum mark not to exceed 50%.)

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).
Failure in modules with an overall value of more than 40 credit points	Withdraw from the programme. Candidate may be considered for a linked AB exit award if appropriate.

15. CLASSIFICATION OF FINAL RESULT

15.1 The table at section 18 indicates the contribution of each final year module to the final award. The weighting of each module's contribution to the overall mark shall be determined by its credit value.

NOTE THAT: LEVELS 3/4/5 ASSESSMENT RESULTS DO NOT CONTRIBUTE TO THE FINAL HONOURS DEGREE RESULT.

15.2 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%

15.3 Classification of Associate Bachelor's Exit Award

The overall results of candidates shall be based on their performance in all Level 5 modules only. The weighting of each module's contribution to the overall mark shall be determined by its credit value.

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

Pass with Commendation	60%
Pass	40%

15.3.1 Classification of Diploma in Computer Systems

(Exit award for Level 3: BSc Hons Computer Science and BEng Hons Electronics and Computer Systems only)

All modules contribute to the final result. The table at section 18 indicates the contribution of each module to the exit award. The weighting of each module's contribution to the overall mark shall be determined by its credit value.

Candidates who successfully complete the year will normally proceed to Year 1 of the BSc Hons Computer Science programme or the BEng Hons Electronics and Computer Systems programme. Candidates who wish to discontinue their studies may leave with a Diploma in Computer Systems.

Where candidates choose 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%

15.3.2 Award of Diploma in Industrial Studies OR Diploma in Area Studies

The following shall be the minimum percentages used in determining the overall gradings of candidates in the Diploma.

Pass with Commendation	70%
Pass	50%

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 indicated 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.

18 TABLE

Year	Semester	Level	Module Title	Code	Credit Value	Status Compulsory (c) Optional (o)	Assessment Methods		Contribution to the overall mark of the Final Award
							% Examination	% Coursework	
0	1	3	Introduction to Internet and Multimedia Technology	COM008	20	C		100	0
0	1	3	Introduction to Programming	COM009	20	C	50	50	0
0	1	3	Introduction to Mathematics for Computing	COM010	20	C	50	50	0
0	2	3	Introduction to Electronics	COM011	20	C	50	50	0
0	2	3	Introduction to Computer Systems	COM012	20	C	50	50	0
0	2	4	Business Information Systems	COM112	20	C	50	50	0
1	1	4	Algorithmic Programming I	COM136	20	C		100	0
1	1	4	Mathematics 1	COM121	20	C	50	50	0
1	1	4	Systems Analysis and Data Management	COM178	20	C	50	50	0
1	2	4	Computer Hardware and Organisation	COM167	20	C	50	50	0
1	2	4	Algorithmic Programming II	COM139	20	C	50	50	0
1	2	4	Internet and Multimedia Technology	COM134	20	C		100	0
2	1	5	Object Oriented Programming	COM326	20	C	50	50	0
2	1	5	Professional Issues	COM417	10	C		100	0
2	1	5	Informatics Entrepreneurship	COM418	10	C		100	0
2	1	5	Object-oriented Systems Development	COM419	20	C	75	25	0
2	2	5	Human-Computer Interaction	COM350	20	C	50	50	0
2	2	5	Computer Networks and Operating Systems	COM320	20	C	75	25	0
2	2	5	Algorithms and Data Structures	COM328	20	C	75	25	0
3	1/2/3	5	Industrial Placement	COM367	60	C		100	DIS/DAS
4	1 and 2	6	Final Year Project	EEE521	30	C		100	25%
4	1	6	Visual Programming	COM622	10	C		100	8.3%
4	1	6	Software Engineering	COM565	20	O/ C(SSD)	75	25	16.6%
4	1	6	Intelligent Systems	COM623	20	O/C(IS,ROB)	75	25	16.6%
4	1	6	Network Games Development	COM588	20	O		100	16.6%
4	1	6	Database Systems	COM620	20	O/C(IS,MC,SSD)	50	50	16.6%
4	2	6	Natural Language Processing	COM566	20	O	75	25	16.6%

Year	Semester	Level		Code	Credit Value	Status Compulsory (c) Optional (o)	Assessment Methods		Contribution to the overall mark of the Final Award
							% Examination	% Coursework	
4	1	6	Programmable Logic Systems	EEE540	20	O/C(ROB,EC)	50	50	16.6%
4	1	6	Mobile Computing	COM594	20	O/C(MC,EC)	50	50	16.6%
4	2	6	Intelligent Multimedia	COM556	20	O/C(IS)		100	16.6%
4	2	6	Computer Graphics	COM523	20	O/C(SSD)	75	25	16.6%
4	2	6	Concurrent and Distributed Systems	COM561	20	O/C(MC,SSD,EC)	75	25	16.6%
4	2	6	Wireless Communication Systems	COM586	20	O/C(MC)	75	25	16.6%
4	2	6	AI Techniques	COM595	20	O/C(IS)	75	25	16.6%
4	2	6	Mobile Robotics	COM596	20	O/C(ROB)	75	25	16.6%
4	2	6	Embedded Systems Design	EEE502	20	O/C(EC,ROB)	50	50	16.6%

