UNIVERSITY OF ULSTER
COURSE SPECIFICATION

COURSE TITLE: M Sc in Informatics

PLEASE NOTE: This specification provides a concise summary of the main features of the course 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 learning, teaching and assessment methods of each module can be found in the module specifications.

1 AWARDING INSTITUTION/ BODY: UNIVERSITY OF ULSTER
2 TEACHING INSTITUTION: UNIVERSITY OF ULSTER
3 LOCATION: Jordanstown
4 COURSE ACCREDITED BY: British Computer Society
5 FINAL AWARD: M Sc in Informatics
6 MODE OF ATTENDANCE: Part-time and Full-time
7 SPECIALISMS: Computing
8 COURSE CODE: E536PJ, E116PJ
9 HESA CODE: G50

10 EDUCATIONAL AIMS AND OBJECTIVES OF THE COURSE

To provide graduates in the field of computer science and related disciplines with advanced knowledge of computing, the competence to apply the most recent techniques in the area and the ability to critically evaluate current research and practice:

• to enable graduates to evaluate current research in software engineering and related disciplines;
• to provide graduates already in industry with the opportunity to enhance their practice and experience with knowledge of the theory of computing;
• to make graduates familiar with best practice and state-of-the-art approaches to software engineering;
• to enable graduates to contribute to the management of the software engineering process in a complex environment and to evaluate its impact;
• to develop in students the ability to communicate effectively a complex argument concerning computer science;
• to have students carry out a substantial piece of work involving scholarship and critical evaluation in an area of computing and resulting in a dissertation.
11 MAIN LEARNING OUTCOMES

(In the following, the learning outcomes are related to those in the subject benchmark statement by means of the symbol (B).)

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

11A SUBJECT RELATED QUALITIES

Knowledge and Understanding

Graduates of the course will be well-versed in advanced aspects of the following:

A1 Software Engineering (B);
A2 Database Technology (B);
A3 Distributed systems (B);
A4 Computer communications (B);
A5 Computer Networks (B).

Learning and Teaching Methods: Lectures, tutorials, seminars, practical sessions, self-study, project work for dissertation.

Assessment Methods: Coursework assessment, written examinations, dissertation examination including project oral.

11B INTELLECTUAL QUALITIES

Graduates of the course will be able to:

B1 abstract and model real-world problems in terms of computer science concepts (B);
B2 conceptualise original design solutions to computer science problems (B);
B3 critically evaluate and integrate the arguments of others in the area of computer science research and/or professional practice;
B4 reason critically in the area of computer science and software engineering.

Learning and Teaching Methods: Lectures, student-led seminars, practical work and self-directed learning employing research based materials.

Assessment Methods: Coursework related to case studies and projects, written examinations, dissertation examination including project oral.

11C PROFESSIONAL/PRACTICAL SKILLS

The course will also be able to

C1 critically evaluate current research and practice in software engineering and computer science as applied to their professional area of interest (B);
C2 specify a complex computer-based system using tools and techniques from best practice in software engineering (B);
C3 design and implement software solutions to problems in their professional area of interest and in the process respond to changes in the problem area, and the software and hardware available (B);
C4 evaluate a software artefact in their professional area of interest using appropriate techniques (B);
C5 write reports, using complex arguments, for various audiences, users, management, other professionals and/or the academic community (B);
C6 Undertake a substantial piece of work in an area at the forefront of research or practice in computer science, to report professionally on the work which will have an original component (B).

Learning and Teaching Methods: Lectures, tutorials, problem based seminars and practical work, coursework, project, including literature review.

Assessment Methods: Coursework assessment, written examinations, dissertation assessment including project oral.

11D TRANSFERABLE/KEY SKILLS

The course will also inculcate in the students the ability to

D1 assess complex problems, abstracting information from the relevant professional or research literature, in order to arrive at an informed judgement (B);

D2 design solutions to complex problems, using a variety of techniques;

D3 structure complex ideas and convey them both orally and in writing, to a range of audiences;

D4 apply project management techniques to programmes of work;

D5 use information technology effectively (B);

D6 manage their own learning, taking responsibility for continuing professional development (B).

Learning and Teaching Methods: Lectures, tutorials, self-directed study, seminars and practical sessions, project.

Assessment Methods: Seminars, coursework assessment, written examinations, dissertation assessment including project oral.
**11E MODULE OUTCOME MAP**

Please Note: The matrix displays only the main measurable outcomes. There may be other outcomes detailed in the module descriptions (e.g. attitudes and behaviours) which are not assessed.

<table>
<thead>
<tr>
<th>Module Code</th>
<th>Module Title</th>
<th>Core/Option</th>
<th>A1</th>
<th>A2</th>
<th>A3</th>
<th>A4</th>
<th>A5</th>
<th>B1</th>
<th>B2</th>
<th>B3</th>
<th>B4</th>
<th>C1</th>
<th>C2</th>
<th>C3</th>
<th>C4</th>
<th>C5</th>
<th>C6</th>
<th>D1</th>
<th>D2</th>
<th>D3</th>
<th>D4</th>
<th>D5</th>
<th>D6</th>
</tr>
</thead>
<tbody>
<tr>
<td>COM870</td>
<td>Software Technology</td>
<td>C</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>COM873</td>
<td>Distributed Relational and Object Databases</td>
<td>C</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td>✓</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>COM876</td>
<td>Computer Comms and Networks</td>
<td>C</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
</tr>
<tr>
<td>COM878</td>
<td>Dissertation</td>
<td>M Sc only</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>COM822</td>
<td>Software Project Management and Quality Control</td>
<td>O</td>
<td>✓</td>
<td></td>
<td></td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>COM827</td>
<td>Advanced Interaction Technologies</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>COM829</td>
<td>Web Applications Development</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>COM834</td>
<td>Networks, their Applications and Social Implications</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>COM839</td>
<td>Intelligent Systems</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>COM874</td>
<td>Intelligent Agents and Knowledge Management</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
<tr>
<td>COM875</td>
<td>Interactive User Interfaces</td>
<td>O</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td>✓</td>
<td></td>
</tr>
</tbody>
</table>
COURSE STRUCTURE AND REQUIREMENTS FOR THE AWARD

This course is studied part-time over a period of two years or full-time over a period of one year. The taught component of the programme is worth 120 credit points. It comprises five modules of study: three core modules (each worth 30 credit points), and two optional modules (each worth 15 credit points). Having completed the taught modules, students undertake a sixth module, a dissertation worth 60 credit points.

Every academic year, one core module is taught to full-time students in 'long-thin' mode, i.e. in semesters 1 and 2. All other modules are taught over the period of a semester of 15 weeks duration which includes the examination period. The study units within the course, both core and options, the levels at which they are studied and the credit ratings are shown below.

Students who complete the taught component of the course satisfactorily are eligible for a Postgraduate Diploma in Informatics. On completion of the dissertation module, students are awarded the degree of Master of Science in Informatics.

<table>
<thead>
<tr>
<th>Module Title</th>
<th>Credit</th>
<th>Credit Level</th>
<th>Status</th>
<th>Coursework [core/optional]</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Software Technology</td>
<td>M</td>
<td>30</td>
<td>Core</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Distributed Data Systems</td>
<td>M</td>
<td>30</td>
<td>Core</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Computer Communications and Networks</td>
<td>M</td>
<td>30</td>
<td>Core</td>
<td>40</td>
<td></td>
</tr>
<tr>
<td>Project Management and Quality Control</td>
<td>M</td>
<td>15</td>
<td>Optional</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Advanced Interaction Technologies</td>
<td>M</td>
<td>15</td>
<td>Optional</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Web Applications Development</td>
<td>M</td>
<td>15</td>
<td>Optional</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Networks, their Applications and Social Implications</td>
<td>M</td>
<td>15</td>
<td>Optional</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Intelligent Systems</td>
<td>M</td>
<td>15</td>
<td>Optional</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Intelligent Agents and Knowledge Management</td>
<td>M</td>
<td>15</td>
<td>Optional</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Interactive User Interfaces</td>
<td>M</td>
<td>15</td>
<td>Optional</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Dissertation</td>
<td>M</td>
<td>15</td>
<td>M Sc Only</td>
<td>100</td>
<td></td>
</tr>
</tbody>
</table>

SUPPORT FOR STUDENTS AND THEIR LEARNING

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

- Course handbook and a Module Handout for each module;
- Library pack and specialised introduction to electronic resources in the library;
- Extensive library and other learning resources, including on-line journals;
- Over six computer laboratories with a wide range of software;
- Intranet with a wide range of learning support material;
- CD-ROM with a wide range of software, tutorials and information resources;
- Student e-mail accounts and full access to the Internet;
- Course director acts as a personal tutor.
14 CRITERIA FOR ADMISSION TO THE COURSE

Applicants must satisfy the University’s general entry requirements for Master's courses. Specific requirements for admission to the course are detailed below:

Applicants for admission to the course must normally

(i) hold a minimum of a 2.2 honours degree in Computer Science or in a related discipline;

or

(ii) hold a pass degree in Computer Science or in a related discipline and have a minimum of 2 years relevant professional experience;

or

(iii) hold the equivalent of a British Computer Society Part 1 accreditation qualification and have a minimum of 3 years relevant experience;

or

(iv) hold a Degree in another discipline and have a minimum of 5 years relevant experience in the computing profession.

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

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

• Module reviews (student questionnaires and teaching team report).
• Annual course review prepared by the course director and reviewed by peers at Faculty and University level.
• Course accreditation by the British Computer Society.
• Peer teaching observations and feedback.
• Annual staff appraisals.

Committees with responsibility for monitoring and evaluating quality

• Staff Student Consultative Committee
• Course committee
• Board of Examiners
• School Board (includes student members)
• Faculty Teaching and Learning 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
• Module evaluation questionnaires / module forum / module freeform responses
• University questionnaires on course completion
• Feed back to the Course Director in his capacity as personal tutor.

**Staff development includes:**

• Updating in the subject through research, scholarship and academic enterprise.
• Consultancy

16 **REGULATION OF STANDARDS**

• Pass mark for each module is 50%; Examination: Coursework weighting varies as shown in table above.
• Full details of module assessment are set out in each module booklet.
• Students must pass the dissertation to be awarded a Master's degree.

**Role of the external examiner**

• An External Examiner is appointed by the Faculty Teaching and Learning Committee and reports annually to the University.

• The role of the external examiner is to report on quality and standards of the course so that the validity of the degrees which are awarded can be maintained.

• The full roles and responsibilities are set out in the university's Handbook for External Examiners.

• External examiners are given training on appointment.

17 **INDICATORS OF QUALITY RELATING TO LEARNING AND TEACHING**

• This course was last accredited by the British Computer Society in October 2002 for FIVE intakes starting 2002-03. M Sc in Informatics graduates are exempt from BCS examination requirements for Professional Graduate Diploma and PGD project; holders of PG Dip in Informatics are exempt from BCS examinations for Professional Graduate Diploma.

• The faculty was given a satisfactory rating by the QAA subject review process for its provision of Computer science Teaching in 1993.

• Many Faculty members are also members of the Institute of Learning and Teaching.

• Four staff have received the University’s Distinguished Teaching Award

• Research Assessment Exercise rating of 4 (2001)

External funding for learning and teaching initiatives of the order of £200,000. The Faculty hosts the LTSN centre for computing.

The faculty also hosts the Centre for Software Process Technologies with a brief to vitalise the software industry in Northern Ireland by engaging in ‘applied research with commercial software development organisations to improve the efficiency, effectiveness and quality of their processes and products’ (http://www.infc.ulst.ac.uk/informatics/cspt/aboutCSPT.html). The teaching of software engineering benefits directly from the expertise available in the