BSc Information Technology with Industrial Year **UCAS code: G503**
For students entering Part 1 in 2015/6

Awarding Institution:	University of Reading
Teaching Institution:	University of Reading
Relevant QAA subject Benchmarking group(s):	Computing
Faculty:	Science Faculty
Programme length:	4 years
Date of specification:	28/Nov/2016
Programme Director:	Dr Hong Wei
Programme Advisor:	Dr Lily Sun
Board of Studies:	UG Systems Engineering
Accreditation:	British Computer Society.

Summary of programme aims
This programme aims to prepare students for a career in the Information Technology industry, with a particular emphasis on the elements of computer systems and their use in business. The student's placement year aims to provide an understanding of how the methods and technologies learnt in the parts 1 and 2 of this degree relate to the requirements of industry; this deepens the student's appreciation of the topics studied and encourages a more effective approach to their final year modules and project. Graduates will be well qualified to play a disciplined and creative part in a development or support environment.

The programme also aims to develop the students' knowledge of the practice and underlying theory of Information Technology, necessary for them to secure employment as a professional in a wide variety of industries; to encourage their critical and analytical skills, including computational thinking; and to develop their skills in applying practical concepts to the design of information systems, and to the management of such information systems.

Transferable skills
During the course of their studies at Reading, all students will be expected to enhance their academic and personal transferable skills. In following this programme, students will have had the opportunity to develop such skills, in particular relating to CMS (Career Management Skills) and project management, which are built into the curriculum, in communication, interpersonal skills, learning skills, self-management, use of IT, technical writing, and problem-solving and will have been encouraged to further develop and enhance the full set of skills through a variety of opportunities available outside their curriculum.
As part of this programme students are expected to have gained experience in the following transferable skills: IT, technical writing, oral presentations, team-working, problem-solving, use of library resources, time-management, career planning and management, and business awareness.

Programme content
The programme is based on the following themes:
1. Information systems and software engineering
2. Enterprise, architecture and e-business systems
3. Programming and design
4. IT service management

Material from all themes must be taken to qualify for the degree; in addition there is some general material that is compulsory for all students.

Part 1 (three terms)
Compulsory modules

Code	*Module title*	*Credits*	*Level*
SE1PR11	Programming	20	4
SE1SE11	Software Engineering	20	4
SE1EA11	Enterprise, Architecture and e-Business Systems	20	4
SE1FA15	Fundamentals and Applications of Computing	20	4
SE1MA15	Mathematics	20	4

Optional modules

Select modules worth 20 credits from:

MM1F10	Student Enterprise	20	4
MM1F11	People and Organisation	20	4
MM1F12	Markets, Marketing and Strategy	20	4

Part 2 (three terms)
Compulsory modules

Code	*Module title*	*Credits*	*Level*
CS2SM16	System Design and Project Management	20	5
CS2BP16	Business Programming	20	5
CS2AM16	Enterprise Architecture Modelling	10	5
CS2SA16	Service-Oriented System Applications	10	5
CS2DB16	Databases	10	5
CS2FD16	Advanced Databases	10	5
CS2HA16	HCI and Applications	20	5

Optional modules:

Code	*Title*	*Credits*	*Level*
CS2EA16	Essential Algorithms	10	5
CS2OS16	Operating Systems	10	5
CS2JA16	Java	20	5
MM270	Practice of Entrepreneurship	20	5
MM259	Technology Advisory Practices	20	5
MM254	Organisational Behaviour	20	5
LA1XX1	Institution Wide Language Programme	20	4

Year abroad/Year away/Additional year (three terms)
Compulsory modules

Code	*Module title*	*Credits*	*Level*
CS2IY16	Industrial Year	120	5

Part 3 (three terms)
Compulsory modules

Code	*Module title*	*Credits*	*Level*
CS3IP16	Individual Project	40	6
CS3SL16	Social, Legal and Ethical Aspects of Science and Engineering	10	6
CS3RD16	Requirements, Domains and Soft Systems	10	6
CS3EA16	Enterprise Application Integration	10	6

Optional modules
Select modules worth 40 credits from:

Code	*Title*	*Credits*	*Level*
CS3CN16	Computer Networking	20	6
CS3IS16	Information Security	10	6
CS3SQ16	Software Quality and Testing	10	6
MM374	Informatics for e-Enterprise	20	6

MM379	Social Enterprise	20	6

Progression requirements
In order to complete the programme with a degree, students must satisfy general progression rules from Part 1 to Part 2, Part 2 to Part 3, and then successfully achieve the threshold for final classification.

To gain a threshold performance at Part 1 and qualify for the CertHE a student shall normally be required to achieve an overall average of 40% over 120 credits taken in Part 1, where all the credits are at level 4 or above, and a mark of at least 30% in each modules amounting to not less than 100 credits. In order to progress from Part 1 to Part 2, a student shall normally be required to achieve a threshold performance at Part 1.

To gain a threshold performance at Part 2, a student shall normally be required to achieve:
(i) a weighted average of 40% over 120 credits taken at Part 2;
(ii) marks of at least 40% in individual modules amounting to not less than 80 credits; and
(iii) marks of at least 30% in individual modules amounting to not less than 120 credits.
In order to progress from Part 2 to Part 3 and qualify for the DipHE, student must achieve the threshold performance.

To be eligible for Honours, students must achieve at least 40% in modules amounting to 80 credits in the final Part, including the Individual Project (CS3IP16).
In order to graduate with this degree, students are required to achieve 'PASS' in their industrial placement (module CS2IY16). Otherwise students will be eligible for the BSc Information Technology degree.

Summary of Teaching and Assessment
The University's honours classification scheme is:

Mark	*Interpretation*
70% - 100%	First class
60% - 69%	Upper Second class
50% - 59%	Lower Second class
40% - 49%	Third class
35% - 39%	Below Honours Standard
0% - 34%	Fail

For the University-wide framework for classification, which includes details of the classification method, please see: www.reading.ac.uk/internal/exams/Policies/exa-class.aspx

The weighting of the Parts/Years in the calculation of the degree classification is

Four-year programmes, including placement year: Normally:
Part 2 one-third
Placement Year not included in classification
Part 3 two-thirds
(where students fail a placement year which does not contribute to classification they transfer to the three-year version of the programme)

Teaching is organised in modules that typically involve both lectures and practical work. Most modules are assessed by a mixture of coursework and formal examination. There are some modules which are assessed only as coursework and others wholly by examination; the details are given in the relevant module descriptions.

Admission requirements
Entrants to this programme are normally required to have obtained:
ABB (320 points) from 3 A levels or 360 from 3 A levels + an AS
GCSE English: grade C; maths: Grade B
International Baccalaureate: 32 points; or
Irish Highers: AAABB
Equivalent qualifications are acceptable.

Admissions Tutor: Dr Etienne B. Roesch

Support for students and their learning
University support for students and their learning falls into two categories. Learning support is provided by a wide array of services across the University, including: the University Library, the Careers, Placement and Experience Centre (CPEC), In-sessional English Support Programme, the Study Advice and Mathematics Support Centre teams, IT Services and the Student Access to Independent Learning (S@il) computer-based teaching and learning facilities. There are language laboratory facilities both for those students studying on a language degree and for those taking modules offered by the Institution-wide Language Programme. Student guidance and welfare support is provided by Personal Tutors, School Senior Tutors, the Students' Union, the Medical Practice and advisers in the Student Services Centre. The Student Services Centre is housed in the Carrington Building and offers advice on accommodation, careers, disability, finance, and wellbeing, academic issues (eg problems with module selection) and exam related queries. Students can get key information and guidance from the team of Helpdesk Advisers, or make an appointment with a specialist adviser; Student Services also offer drop-in sessions and runs workshops and seminars on a range of topics. For more information see www.reading.ac.uk/student

An Industrial placement team is available to help you find a suitable role in your placement year (subject to successful application and employee interview). A placement tutor is allocated to you to support you whilst you are out on placement.

Additional support is given though practical laboratory classes. The development of problem-solving skills is assisted by appropriate assignment and project work. There is a Course Adviser to offer advice on the choice of modules within the programme. Course handbooks are provided for each Part of the course: these give more details about the modules which make up the degree. In addition, the School produces a Handbook for Students, which provides general information about the staff and facilities within the school.

Career learning
In the School of Systems Engineering (SSE), students are given strong supports on career management/learning throughout their course.

- Students are introduced to the Placement & Careers Team in their welcome week, where they receive information of how the team supports their Careers/Placement.
- During their first year all students attend a one week intensive course, where a combination of presentations and workshops take place in: Placement/Graduate Job Search & using Social Media, Application Preparation & Research, Writing CV's & Covering Letters and completing Application Forms, Psychometric Testing (Numerical, Verbal & Diagrammatical Reasoning Tests), Competency Based Interviewing, Group Exercises & Presentations and Placement Presentations from 40+ employers.
- In the second year, students are prepared and encouraged to apply for a placement (either a three month summer Internship or a 12 month Industry placement).
- In the final year, students' graduate applications are supported by the Placement & Career Team with the following activities.

1. Organising an SSE Placement/Graduate Fair & Company presentations and source Placement & Graduate positions and send these out to the students
2. Arranging on site Interviews, Selection Skill Workshops with Employers & Placement Team
3. 1 - 1 Career/Placement support meetings

Career prospects
This degree is designed to be industry oriented. It is expected that all graduates will work both within the IT industry as a developer/manger and in a wide range of industries in a support role. Graduates in Information Technology could be expected to have the following generic job titles:
programmer, systems analyst, analyst/programmer, software engineer, applications developer, web developer, helpdesk/support technician, system support engineer, network engineer, communications specialist, database administrator, project manager, data analyst, software/hardware trainer.

Opportunities for study abroad
N/A

Placement opportunities
Industrial placements are compulsory in the third year.

Programme Outcomes

Knowledge and Understanding

A. Knowledge and understanding of:	**Teaching/learning methods and strategies**
1. Software including: 1a) Programming languages 1b) Software tools, Packages and Computer Applications, including those used in business 1c) Structuring of data and information 2. Practice 2a) Problem identification and analysis 2b) Design, development and evaluation 2c) Management and organisation 2d) Professionalism and ethics 2e) Commercial and industrial exploitation 3. Hardware 4. Communication and interaction 5. Theory	The course concentrates on aspects 1. and 2. with teaching of all aspects involving an introduction of the aspects in theoretical manner and re-enforcement by related practical work, with the first year providing the core, subsequent years involve deeper study. Aspects 2c) and 2d) will additionally be covered by the compulsory material in the final year. Aspects 3 and 4. feature particularly from a practical perspective. Aspects 3, 4. and 5. are presented as supporting material and taught in the context of aspects 1. and 2. as and when they are needed. *Assessment* Knowledge is tested through a mixture of formal examinations and practical work.

Skills and other attributes

B. Intellectual skills - *able to:*	**Teaching/learning methods and strategies**
1. Demonstrate knowledge and understanding related to aspects outlined above. 2. Apply such knowledge and understanding to the modelling of computer systems. 3. Recognise and analyse criteria and specifications appropriate to a specific problem. 4. Critically evaluate and test a computer based system. 5. Deploy appropriate methods and tools for creating computer systems. 6. Reflect and communicate 7. Recognise and conform to appropriate professional, ethical and legal practices	Appropriate software, mathematical, scientific and IT skills and tools are taught in lectures, and problems to be solved are given as projects or assignments. Project planning is part of the Part 3 project, and written and oral presentations are required for various assignments and projects. *Assessment* These skills are tested through a mixture of formal examinations, presentations, reports and practicals. The individual project provides a major piece of work in which among other things the student will be assessed on their abilities to reflect and communicate. Oral presentations will be required in Information Systems, Software Engineering and the final year Project. These will be assessed by academic staff.

C. Practical skills - *able to:*	**Teaching/learning methods and strategies**
1. Specify, design and construct computer-based systems 2. Evaluate systems 3. Recognise Risks and Safety aspects 4. Effectively deploy software tools 5. Operate computing equipment effectively	1 will be covered both theoretically and practically, particularly in the IT Service Management and Programming and Design themes. 2 will be particularly covered as part of Information Systems and e-Business Systems. 3. The IT Service Management theme will cover practical and theoretical aspects of risk and safety, the compulsory material in the final year will also cover managerial aspects.

4 will be covered theoretically and practically as part of Programming and Design and Software Engineering themes.
5 will be covered as part of IT Service Management in a theoretical and practical manner.

Assessment
Skills 1-5 will be assessed by a mixture of practical work and examination.

D. Transferable skills - *able to:*

1. Effectively retrieve information
2. Present cases in a quantitative dimension
3. Manage own learning and development
4. Appreciate the need for continuing professional development (CPD), be able to plan and execute their own CPD
5. Organise and work as part of a team
6. Plan and manage their own careers
7. Communicate in a manner appropriate to the situation
8. Effectively use Information Technology

Teaching/learning methods and strategies

1. Information retrieval will be covered theoretically and by practical work necessitating the use of browsers and search engines. It will be exercised extensively.
2. Numerical skills will be introduced as needed and used in programming examples and project planning. They will also be exercised in databases. The IT Service Management theme will require a study of quantative issues related to aspects of costs, efficiency, performance and economics.
3. Time management and organisational skills will be taught as part of Career Management Skill through Software Engineering and Project Management. The students will also be expected to use a number of on-line learning tools.
4. Professionalism will be an important issue throughout the course. Students will be encouraged to join the BCS and participate in local meetings.
5. The theory of team work will be covered, in Software Engineering, System Design and Project Management, and the students are required to undertake a piece of group work
6. The University's Careers management skill (CMS) module component will be spread through modules within the three year of the Information System and Software Engineering theme. The role of written and verbal communications will be covered in CMS and other relevant soft skill training.
7. Information Technology will be used throughout the course.

Assessment
1 to 3, and 5 to 7, will be assessed by a mixture of practical work, presentations, reports and examinations. 4 will be assessed by formal examination. Communication skills (6) will also be assessed with the Individual Project.

Please note - This specification provides a concise summary of the main features of the programme and the learning outcomes that a typical student might reasonably be expected to achieve and demonstrate if he/she takes full advantage of the learning opportunities that are provided. More detailed information on the learning outcomes, content and teaching, learning and assessment methods of each module can be found in the module description and in the programme handbook. The University reserves the right to modify this specification in unforeseen circumstances, or where the process of academic development and feedback from students, quality assurance process or external sources, such as professional bodies, requires a change to be made. In such circumstances, a revised specification will be issued.