IET ACADEMIC ACCREDITATION
2007/08
UK Standard for Professional Engineering Competence

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FORM A (PART 2)

This form is the main document for the accreditation, or the re-accreditation, of programmes that are taught to fulfil or partly fulfil the educational base requirements for Chartered or Incorporated Engineers, as defined in UK-SPEC.

The Form together with the supplementary information should be sent to each accreditor **six weeks** prior to the visit, and a full copy must be available during the visit. **A late submission may result in the cancellation of the visit and the recovery of cancellation charges from travel and accommodation bookings.**

If the answer to any question is available in the additional documents requested, please provide a clear reference in the relevant section of this Form. The guidance notes in square brackets should be deleted. ***Please note that the onus is on Education Institutions to demonstrate that they meet the accreditation criteria.***

If you require further clarification or assistance in completing the submission documentation please contact the IET Accreditation Department at accreditation@theiet.org

Additional Information in support of an application for Accreditation

Below is a list of the additional accreditation documentation required in addition to Form A Part 2. Please specify in the space provided where the documentation is located (i.e. which Appendix) or confirmation it will be available during the visit

Additional documentation required	Format
To be provided 12 weeks prior to the visit	
Form A Part 1 (including Programme Specifications and External Examiner reports)	Email or Electronic
To be provided 6 weeks prior to the visit	
Form A Part 2	Electronic **and** Hardcopy
Form A Part 3	Electronic **and** Hardcopy
Documentation relating to the last internal periodic review of the programmes, including a copy of the Self-Evaluation Document (SED), periodic review report and departmental response to the report.	Electronic or Hardcopy
Histograms or similar diagram showing a comparison of last years results (split by coursework and examination results for those modules examined by both methods) by cohort and module (where different)	Electronic or Hardcopy
Unit/Module Descriptors	Electronic or Hardcopy
Examination papers (across all levels for the previous year)	Electronic or Hardcopy
Projects with marking sheets; 3 per panel member, 1 good, 1 average and 1 weak)	Hardcopy (electronic versions may be provided as well)
Additional information to be made available during the visit	
Samples of assessed student work including: • examination scripts, • coursework • Student lab books	Hardcopy
Examination papers (across all levels for last three years, excluding those already provided)	Electronic, Hardcopy or web link
Minutes of key committees concerned with Teaching and Learning e.g. Staff Student Liaison Committee, Industrial Advisory Board, Teaching and Learning Committee	Electronic, Hardcopy or web link
Quality Assurance Manual	Electronic, Hardcopy or web link
Safety Handbook	Electronic, Hardcopy or web link

Programme regulations	Electronic, Hardcopy or web link
A copy of the latest prospectus	Electronic, Hardcopy or web link
The Course/Programme/Student Handbook	Electronic, Hardcopy or web link
The Project Handbook	Electronic, Hardcopy or web link
Portfolios of assessed student work (***N.B. Only if these already exist)***	

SECTION 1-3

Information has already been provided in Form A part 1 [***please do not copy***].

SECTION 4 The programmes

4.1 UK-SPEC learning outcomes

[Complete Form A Part 3, Appendix A - Programme Specific Learning Outcomes, either as a separate document or as an appendix. For further information please refer to the UK Standard for Professional Engineering Competence: The Accreditation of Higher Education Programmes, Engineering Council UK, May 2004.]

4.2 Programme structure

Computing BEng (G400) Programme Structure

Year 1

Term 1	Term 2	Term 3
Discrete Mathematics I (required) Hardware (required) Logic (required) Mathematical Methods (required) Professional Issues (required) Programming Pt1 (required) Programming Pt2 (required)	Databases (required) Discrete Mathematics II (required) Object Oriented Programming (required) Reasoning about Programs (required)	Programming Pt3 (required)
Computer Systems (required) *Foreign Language I (required for ME)		
	Topics in AI	

In addition, students select either Topics in AI or a foreign language.

*Foreign Languages are taught by the Humanities Department.

Year 2

Term 1	Term 2	Term 3
Complexity and Computability (required) C short Course (required) Networks and Communications (required) Operating Systems (required) *Statistics (required) Software Engineering – Design I (required)	Algorithms Compilers (required) Computer Architecture Computational Techniques Concurrency Introduction to Artificial Intelligence Software Engineering – Design II (required)	
*Foreign Language II (normally required for ME)		

Note: Not all options may be offered every year.

*Statistics is taught within the department but by a Lecturer from the Mathematics Department. Foreign Languages are taught within the Humanities Department.

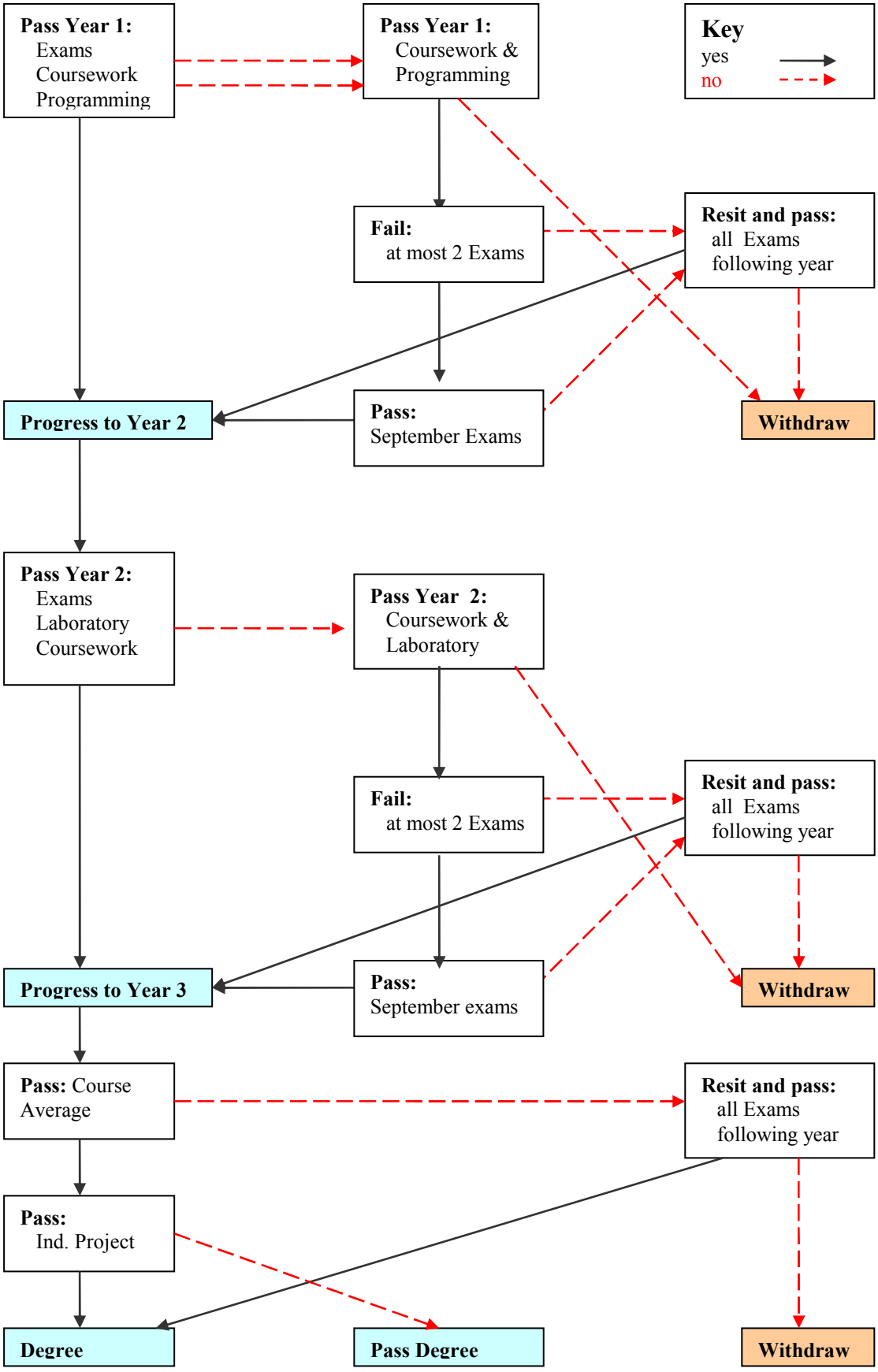
Year 3

Term 1	Term 2	Term 3
Advanced Databases (required for MSE) Computer Interfacing Decision Analysis (required for MM) Graphics Machine Learning (required for MAI) Operations Research (required for MM) Software Engineering – Methods (required) Simulation and Modelling	Advanced Computer Architecture Applied Operational Semantics Cognitive Perception (required for MAI) Custom Computing Distributed Systems (required for MSE) Introduction to Bioinformatics Multimedia Systems *Organisation and Management Processes (required) Performance Analysis Robotics Software Engineering – Systems Verification (required for MAI and MSE)	
*Humanities (normally required for ME)		

Students will be offered a choice of computing courses from the approved course list above. Students take eight options, including compulsory professional material, each of which is examined by written paper or coursework. In addition to the required course "Organisation and Management Processes", and with prior approval from the department, up to two of the eight courses may be studied in other Imperial College departments. BEST courses from the Tanaka Business School and Humanities courses however do not need explicit approval. Students are expected to participate in a group project and must also submit an individual project.

*Organisation and Management Processes is taught within the department but by a Lecturer from the Business School. Humanities courses are taught within the Humanities Department.

BEng Progression



Computing MEng (G401, G700, G402, G500 and G600) Programme Structure

Year 1

Term 1	Term 2	Term 3
Discrete Mathematics I (required) Hardware (required) Logic (required) Mathematical Methods (required) Professional Issues (required) Programming Pt1 (required) Programming Pt2 (required)	Databases (required) Discrete Mathematics II (required) Object Oriented Programming (required) Reasoning about Programs (required)	Programming Pt3 (required)
Computer Systems (required) *Foreign Language I (required for ME)		
	Topics in AI	

In addition, students select either Topics in AI or a foreign language.

Year 2

Term 1	Term 2	Term 3
Complexity and Computability (required) C short Course (required) Networks and Communications (required) Operating Systems (required) *Statistics (required) Software Engineering – Design I (required)	Algorithms Compilers (required) Computer Architecture Computational Techniques Concurrency Introduction to Artificial Intelligence Software Engineering – Design II (required)	
*Foreign Language II (normally required for ME)		

Note: Not all options may be offered every year.

*Statistics is taught within the department but by a Lecturer from the Mathematics Department. Foreign Languages are taught within the Humanities Department.

Year 3

Term 1	Term 2	Term 3
Advanced Databases (required for MSE) Computer Interfacing Decision Analysis (required for MM) Graphics Machine Learning (required for MAI) Operations Research (required for MM) Software Engineering – Methods (required) Simulation and Modelling	Advanced Computer Architecture Applied Operational Semantics Cognitive Perception (required for MAI) Custom Computing Distributed Systems (required for MSE) Introduction to Bioinformatics Multimedia Systems *Organisation and Management Processes (required) Performance Analysis Robotics Software Engineering – Systems Verification (required for MAI and MSE)	Industrial Placement (required for MEng)
*Humanities (normally required for ME)		

Students will be offered a choice of computing courses from the approved course list above. Students take eight options, including compulsory professional material, each of which is examined by written paper or coursework. In addition to the required course "Organisation and Management Processes" and with prior approval from the Department up to two of the eight courses may be studied in other Imperial College departments. BEST courses from the Tanaka Business School and Humanities courses however do not need explicit approval. Students are expected to participate in a group project.

*Organisation and Management Processes is taught within the department but by a Lecturer from the Business School. Humanities courses are taught within the Humanities Department.

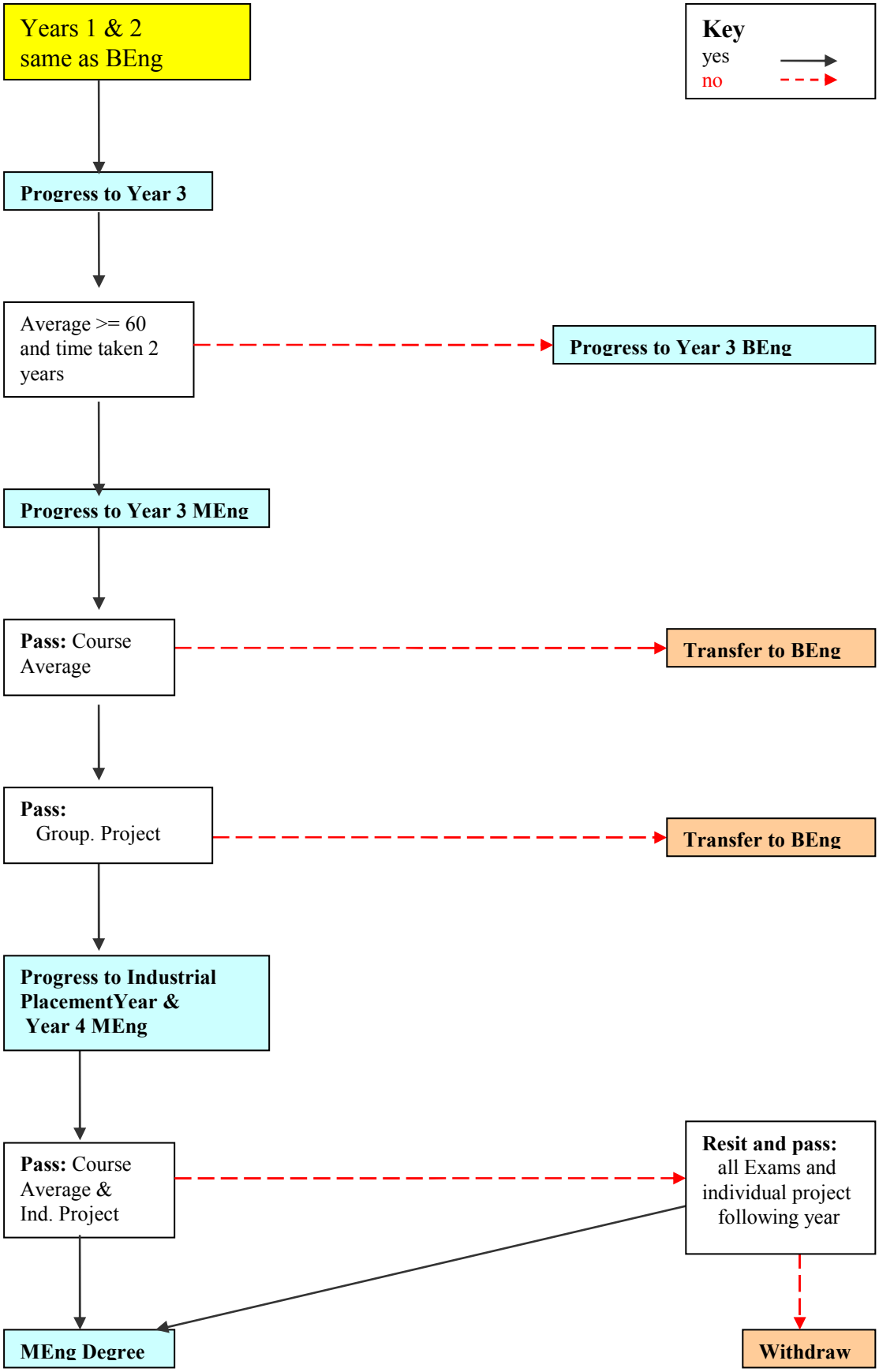
Year 4

Those students not going abroad complete their final year as described below.

Term 1	Term 2	Term 3
Advanced Issues in Object Oriented Programming Advanced Topics in Software Engineering (required for MSE) Automated Reasoning (*) Computing for Optimal Decisions (required for MM) Computer Vision Intelligent Data and Probabilistic Inference Management – Economics and Law (required for MM) Modal and Temporal Logic (*) Models of Concurrent Computation Network Security (required for MSE)	Advanced Graphics and Visualization Advanced Operations Research Complexity Cognitive Robotics (*) Distributed Algorithms Knowledge Representation (*) Multi-agent Systems (*) Parallel Algorithms Type Systems for Programming Languages Quantum Computing * Students on MAI need to study at least 3 of the following courses: Modal and Temporal Logic Cognitive Robotics Automated Reasoning Multi-agent Systems Knowledge Representation	
Humanities		

Students will be offered a choice of courses from the approved course list. Students take eight options, each of which is examined either by a written paper or by essay/coursework. Students must submit an outsourcing report and an individual project, and must also give an individual presentation.

MEng Progression



Mathematics and Computer Science BSc and MSci (GG14, GG41) Programme Structure

Unlike the other courses offered by the Department of Computing these courses are unit based. Students take two units from courses offered by the Computing Department and two from the Mathematics Department in each of the first two years. In the third and fourth year students select a total of four units each year to support their particular interests and areas of specialisation.

Year 1

Computing								Contribution to degree				
Unit value	Unit Composition			Ratio	Normlsd marks	% of Year		BSc			MSci	
								Marks	%		Marks	%
Full	MC178											
		MC110	Architecture 1	1	66.67	8.33		66.67	0.99		66.67	0.78%
		MC141	Reasoning about Programs	1	66.67	8.33 %		66.67	0.99		66.67	0.78%
		MC140	Logic	1	66.67	8.33		66.67	0.99 %		66.67	0.78%
					200	25%		200	2.97 %		200	2.35%
Full	MC172	Programming and Data Structure										
		C120.1	Programming (I)	20	40	5%		40	0.59		40	0.47%
		C120.2	Programming (II)	15	30	3.75		30	0.45		30	0.35%
		C123	Object Oriented Programming	40	80	10%		80	1.19		80	0.94%
								30	0.45		30	0.35%
		C120.3	Programming (III)	15	30	3.75		20	0.3%		20	0.24%
		C176	Maths Laboratory	10	20	2.5%						
					200	25%		200	2.98 %		200	2.36%
Total computing marks for year 1					400	50%		400	5.95 %		400	4.7%

Mathematics							Contribution to degree				
Unit value	Unit Composition			Normlsd marks	% of Year		BSc			MSci	
							Marks	%		Marks	%
Half	M1GLA	Geometry and Linear Algebra		100	12.5		100	1.49		100	1.17%
Half	MC1MF	Analytical Methods and Analysis		100	12.5		100	1.49		100	1.17%
Half	M1P1	Analysis		100	12.5		100	1.49		100	1.17%
Half	M1P2	Linear Algebra		100	12.5		100	1.49		100	1.17%
Total mathematics marks for year 1				400	50%		400	5.95 %		400	4.7%
Total marks for year 1				800	100%		800	11.9 %		800	9.4%

Year 2

Computing								Contribution to degree			
Unit value	Unit Composition			Exam	Normlsd marks	% of Year		BSc: × 3		MSci: × 2	
								Marks	%	Marks	%
Full	MC271	MC220	Software Engeneering - Design I		66.7	8.3%		200	2.97%	133.3	1.57%
								200	2.97%	133.3	1.57%
		MC114	Operating Systems		66.7	8.3%		200	2.97%	133.3	1.57%
			Labwork		66.7	8.3%		600	8.9%	400	4.7%
					200	25%					
Full	MC272	3 chosen options									
			Option 1		66.7	8.3%		200	2.97%	133.3	1.57%
			Option 2		66.7	8.3%		200	2.97%	133.3	1.57%
			Option 3		66.7	8.3%		200	2.97%	133.3	1.57%
					200	25%		600	8.9%	400	4.7%
Total computing marks for year 2					400	50%		1200	17.86 %	800	9.4%

Mathematics						Contribution to degree			
Unit value	Compulsory		Marks	% of Year		BSc: × 3		MSci: × 2	
						Marks	%	Marks	%
Half	M1S	Probability and Statistics I	100	12.5		300	4.46%	200	2.35%
Half	M2PM2 *	Algebra II	100	12.5 %		300	4.46%	200	2.35%
Half	M2AA3	Orthogonality	100	12.5		300	4.46%	200	2.35%
	1 or 2 chosen options *								
Half	M2OD	Graphs, Algorithms and Optimisation	100	12.5		300	4.46%	200	2.35%
Half	M2PM4	Rings and Fields	100	12.5		300	4.46%	200	2.35%
Total mathematics marks for year 2			400	50%		1200	17.86 %	800	9.4%
Total marks for year 2			800	100%		2400	35.7%	1600	18.8%

*: Students take four half-units. M1S is compulsory; one of M2PM2 and M2AA3 has to be taken; both can be taken, and then one of M2OD, M2PM4 has to be taken; otherwise, two of M2OD, M2PM4 have to be taken.

BSc Year 3

Computing							Contribution to degree	
Unit value	Unit Composition	Exam	Ratio	Normlsd marks	% of Year		BSc: × 4 Marks	%
Half	Project Unit							
	Group project		1	45	5.11%		180	2.67%
	Individual project		3	135	15.34		540	8.04%
				180	20.45 %		720	10.71%
N × half	2-5 options.							
	Option 1	100		100	11.36		400	5.95%
	. . .							
	Option N	100		100	11.36		400	5.95%
	(N = number of options chosen)			N*100				
Total computing marks for year 3				N*100+180				
Maximum allowable				680	77.28 %		2720	40.48%

Mathematics						Contribution to degree	
Unit value		Exam	Normlsd marks	% of Year		BSc: × 4 Marks	%
N × half	2-5 options, with possibility for 1 exam in Hum/Man.						
	Option 1	100	100	11.36		400	5.95%
	. . .						
	Option N	100	100	11.36		400	5.95%
	(N = number of options chosen)		N*100				
Total mathematics marks for year 3			N*100				
Maximum allowable			500	56.82 %		2000	29.76%
Total marks for year 3			880	100%		3520	52.38%
Maximum allowable computing marks						4320	64.28%
Maximum allowable mathematics marks						3600	53.57%
Total marks BSc degree						6720	100%

MSci Year 3

Computing					Contribution to degree	
Unit value		Marks	% of Year		MSci: × 3	
					Marks	%
	Computing group project	50	5.55%		150	1.76%
N × half	2 - 6 chosen options					
	Option 1	100	11.11		300	3.53%
	. . .					
	Option N	100	11.11		300	3.53%
	(N = number of options chosen)	N*100				
Total computing marks for year 3		N*100+50				
Maximum allowable		650	72.22 %		1950	22.94%
Mathematics					Contribution to degree	
Unit value		Marks	% of Year		MSci: × 3	
					Marks	%
	Mathematics group project	50	5.55%		150	1.76%
N × half	2 - 6 chosen options, with possibility for 1 Hum/Man.					
	Option 1	100	11.11		300	3.53%
	. . .					
	Option N	100	11.11		300	3.53%
	(N = number of options chosen)	N*100				
Total mathematics marks for year 3		N*100+50				
Maximum allowable		650	72.22 %		1950	22.94%
Total marks for year 3		900	100%		2700	31.76%

MSci Year 4

Computing						Contribution to degree	
Unit value	Unit Composition	Marks	Normlsd marks	% of Year		MSci: × 4	
						Marks	%
Half	Individual Project	100	150	17.65 %		600	7.1%
N × half	2 - 5 chosen options.						
	Option 1	100	100	11.76		400	4.7%
	. . .						
	Option N	100	100	11.76		400	4.7%
	(N = number of options chosen)		N*100				
Total computing marks for year 4			N*100+150				
Maximum allowable			650	76.47 %		2600	30.59%
Mathematics						Contribution to degree	
Unit value	Unit Composition	Marks	Normlsd marks	% of Year		MSci: × 4	
						Marks	%
N × half	2 - 5 chosen options, with possibility for 1 Hum/Man.						
	Option 1	100	100	11.76		400	4.7%
	. . .						
	Option N	100	100	11.76		400	4.7%
	(N = number of options chosen)		N*100				
Total mathematics marks for year 4			N*100				
Maximum allowable			500	58.82		2000	23.53
Total marks for year 4			850	100%		3400	40%
Maximum allowable computing marks						5750	67.65%
Maximum allowable mathematics marks						5150	60.59%
Total marks MSci degree						8500	100%

Current BSc/MSci Accreditation Rules

Figure 1 describes the alternative combinations of computing and mathematics options required for the BCS accreditation.

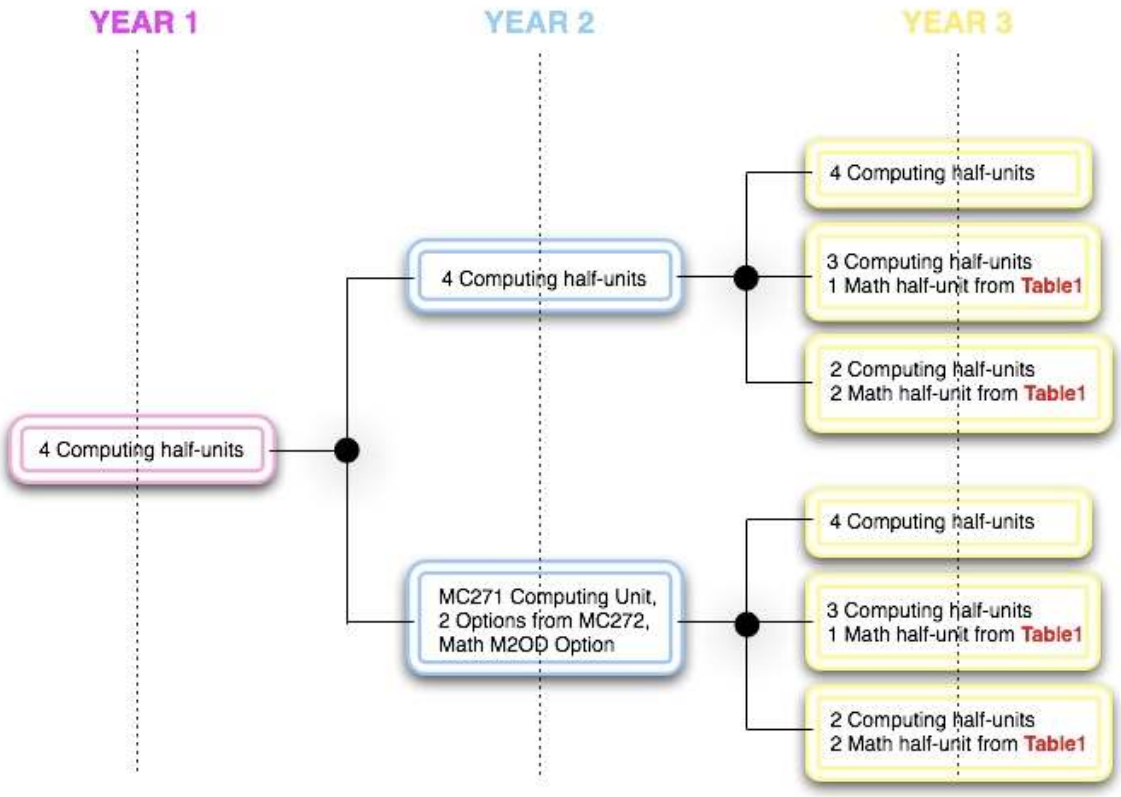


Figure 1: Pathways of options for BCS accreditation of BSc honours degree

Course Code	Course Name
M2OD	Graphs, algorithms and optimisation
M2S1	Probability and statistics II
M2S2	Statistical modelling
M3S4	Applied probability I
M3S7	Statistical pattern recognition
M3S9	Stochastic simulation
M3S10	Design of experiments and surveys
M3S12	Biostatistics
M3S14	Survival models and actuarial applications

Table 1: Third year maths options relevant to BCS accreditation

For the MSci degree, BCS accreditation is given to:

Any student with an honours MSci degree who has takes at least 2 full computing units in each year. The choice of the computing options is irrelevant but the final year project should be a *practical and problem solving* project in either computing or mathematics.

Any students with a honours MSci degree who has taken less then 2 computing units in their second and/or third and/or forth year provided that the maths options include, respectively, M2OD (in the second year), some of courses listed in Table 1 (in the third year) and some of the courses listed in Table 2 (in the forth year). Again the choice of computing options in the third and forth years, but the final year project should be a *practical and problem solving* project in either computing or mathematics.
Figure 2 on the next page describes the number of computing and mathematics options required for BCS accreditation.

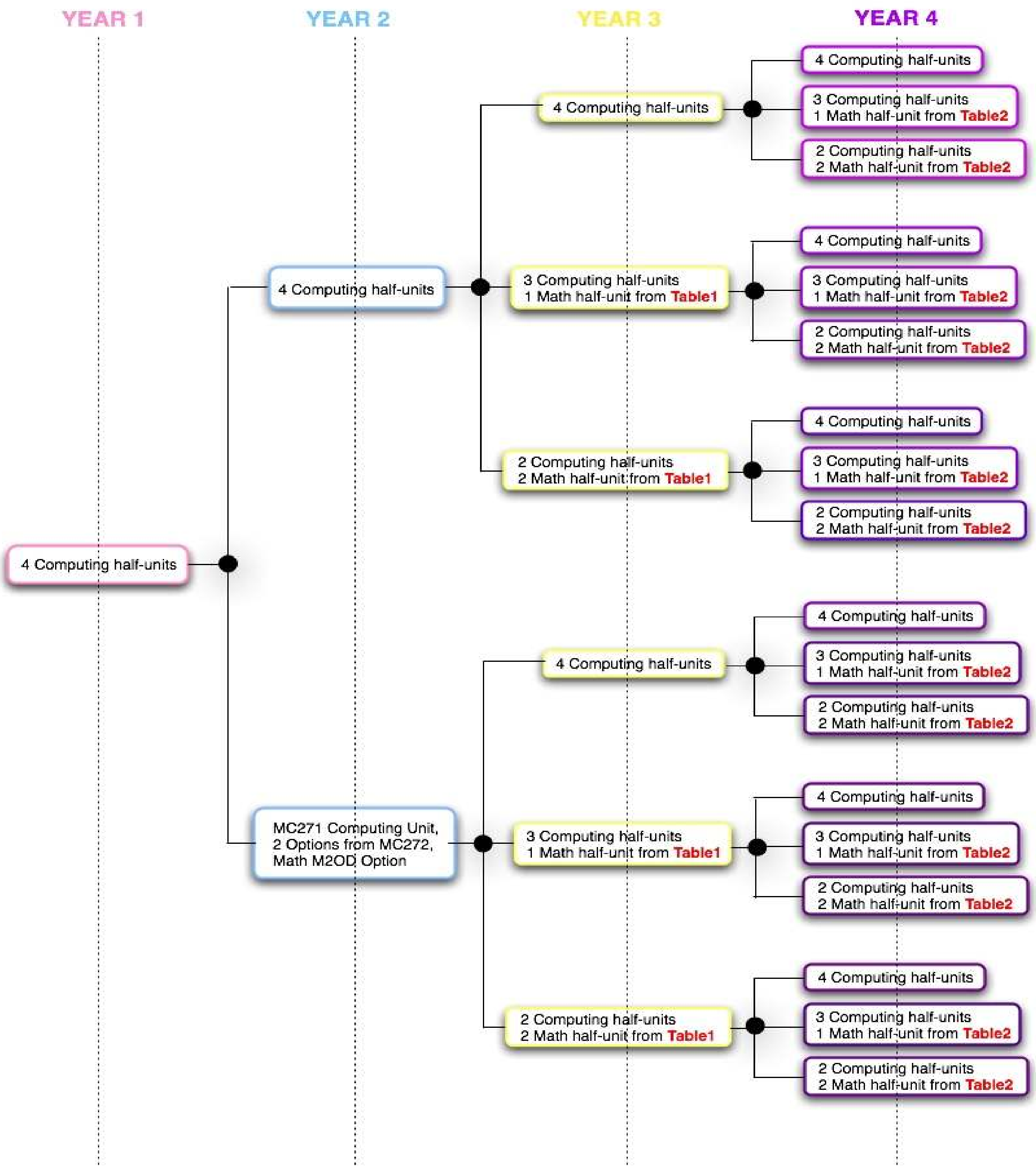


Figure 2: Pathways of options for BCS accreditation of MSci honours degree

Course Code	Course Name
M4N3	Optimisation with advanced study
M4N4	Computational linear algebra with advanced study
M4S2	Statistical modelling II with applications in finance with advanced study
M4S4	Applied probability with advanced study
M4S7	Statistical pattern recognition with advanced study
M4S9	Stochastic simulation with advanced study
M4S10	Design of experiments and surveys with advanced study
M4S11	Games, risks and decisions with advanced study
M4S12	Biostatistics with advanced study
M4S14	Survival models and actuarial applications with advanced study

Table 2: Fourth year maths options relevant to BCS accreditation

MSc in Advanced Computing

Course Structure

The MSc in Advanced Computing is a full-time course of 12 months' duration starting in October. The programme offers students the opportunity to study a wide variety of topics in depth and with dedicated experts and aims to prepare students for a rewarding career in computing in particular, and in information technology in general. Applicants should normally have a good first degree in computer science, or a subject with a substantial component in computing.

There are six groups of courses, each covering an area of specialisation. There are two different pathways through the degree, the "Standard Pathway" and the "Research Pathway". The "Standard Pathway" is for students primarily interested in a career oriented towards development and applications in industry and the "Research Pathway" is for students interested in a research career, either in the industrial or academic sector. The basic MSc programme consists of several integrated parts, which are further detailed below.

Students on the Standard Pathway:

Select eight taught courses in the Autumn and Spring terms. Up to two Individual Study Options (ISOs) can be selected in lieu of taught courses.

Complete a course of practical work in the Spring and Autumn terms including programming assignments related to their chosen courses.

Complete an individual project in term 3, containing an element of original work, on a topic related to their chosen specialist area; they also carry out a background paper related to the project area in term 2. The purpose of the Project Background Paper is to give students a running start on their projects by ensuring that they have read and understood technical material which provides essential background reading. The Project Background Papers will, with suitable updates, often serve as a chapter in their MSc dissertations.

Students on the Research Pathway:

Select five taught courses in Autumn and Spring terms.

Attend a course in "Research Skills" in the Autumn term and also attend a seminar course in the Spring term to put into practice the skills learned. The Research Skills course aims to provide high quality training in methods and practice of research.

Complete two individual study options (ISOs), one in each of the Autumn and Spring terms. One will be directly related to the project area and students will be expected to make a study of the relevant research material, the other will be more general. The ISOs are intended to give students the opportunity to acquire individual research skills and to explore potential research areas.

Complete a course of practical work in both the Autumn term and Spring terms.

Complete an individual project, containing an element of original work, on a topic related to their chosen specialist area.
Structure (Both Pathways)
All courses include associated coursework. Each course is timetabled for a total of 27 hours, either in the Autumn term (October – December), or in the Spring term (January – March). Students are expected to spend an additional 40 – 50 hours in independent study. It is usual that students on the "Standard Pathway" study 4 courses in each term and those on the research pathway study 2 or 3 courses in each term, together with one ISO in each term. All taught courses are formally examined by written examination at the start of the Summer term.

The choice of optional courses and projects available to students may, to some extent, be restricted by the schedule of lectures and the availability of staff. The list of options offered may be adjusted slightly from time to time.

The individual project is started in the Spring term, when students on the "Standard Pathway" complete a background paper and those on the research pathway complete a related ISO. In the Summer term, after examinations, the project is undertaken full-time leading to submission of a thesis in the middle of September. The project is expected to contain some element of original work.

Students may wish to complement the foundational material of the first two terms with practical, applied work during the project. It is possible for this type of project to involve informal collaboration with one of the many industrial organisations with whom the Department has contacts. A project may involve a period of up to three months spent outside the College, as long as regular contact is maintained with the project supervisor.

Lecture Course Options

Autumn Term
Advanced Issues in Object Oriented Programming
Advanced Topics in Software Engineering
Automated Reasoning
Computing for Optimal Decisions
Computer Vision
Intelligent Data and Probabilistic Inference
Machine Learning
Modal and Temporal Logic
Models of Concurrent Computation
Network Security

Spring Term
Advanced Computer Architecture
Advanced Graphics and Visualisation
Advanced Operations Research
Cognitive Robotics
Complexity
Custom Computing
Knowledge Representation
Multi-Agent Systems
Parallel Algorithms
Performance Analysis
Quantum Computing
Type Systems for Programming Languages

*Please note that the courses taken should include no more than two from the following list:
Advanced Computer Architecture
Machine Learning
Custom Computing
Performance Analysis

Areas of Specialisation

This MSc provides the opportunity for students to acquire the necessary background to undertake postgraduate research and this is an important objective of the degree.
There are a large number of options taught and to ensure that a coherent course of study is undertaken, students can focus on one specific area of specialisation. The main areas of specialisation are:

- Computational management
- High performance computing
- Logic and artificial intelligence
- Mathematical foundations
- Parallel and distributed systems
- Software engineering

Computational Management

Computational Management offers a course of study on the theory and tools of business and management, including decision support and constraint solving techniques. Graduates will be well equipped to contribute both to academic research and commercial, industrial and financial applications. Suitable options include:

Options
Advanced Operations Research
Advanced Topics in Software Engineering
Complexity
Computing for Optimal Decisions
Custom Computing
Intelligent Data and Probabilistic Inference
Parallel Algorithms
Performance Analysis

High Performance Computing

High performance computing offers study of rigorous methods applied to the design of software for complex, parallel, systems. Included are new architectures for data-mining, simulation and modelling of distributed systems. Particular emphasis is placed on combining knowledge of architectures, algorithms and hardware to meet performance goals. Graduates will be well equipped to contribute to both research and application software projects. Suitable options include:

Options
Advanced Computer Architecture
Advanced Graphics and Visualisation
Computer Vision
Computing for Optimal Decisions
Custom Computing
Intelligent Data and Probabilistic Inference
Models of Concurrent Computation
Network Security
Parallel Algorithms
Performance Analysis

Logic and Artificial Intelligence

Logic and artificial intelligence offers a course of study on the theory and applications of artificial intelligence. Options within this area allow a student to specialize in the design and implementation of applications, including logic-based agents in a distributed environment, or to study how a logic framework can be useful for the resolution of fundamental questions in artificial intelligence and computer science generally. Suitable options include:

Options
Automated Reasoning
Complexity
Computer Vision
Computing for Optimal Decisions
Intelligent Data and Probabilistic Inference
Knowledge Representation
Modal and Temporal Logic
Machine Learning
Multi-Agent Systems
Network Security
Quantum Computing

Mathematical Foundations

Mathematical foundations offers a course of study on the applications of mathematics to the theory and practice of computing, including the formal design of advanced soft ware. On graduation, a specialist will be able to conduct research into methods for strengthening a systematic approach to developments in Computing. Suitable options include:

Options
Advanced Issues in Object Oriented Programming
Automated Reasoning
Custom Computing
Complexity
Knowledge Representation
Modal and Temporal Logic
Models of Concurrent Computation
Network Security
Quantum Computing

Parallel and Distributed Systems

Parallel and distributed systems offers study on the design of, and techniques used in, parallel and distributed algorithms and concurrent systems. Particular emphasis is placed on distributed systems and their industrial applications, including techniques for maintaining and accessing distributed databases. Also included are systems based on field programmable hardware. Graduates will be well equipped to contribute both to academic research and industrial applications. Suitable options include:

Options
Advanced Computer Architecture
Advanced Databases
Advanced Issues in Object Oriented Programming
Advanced Topics in Software Engineering
Complexity
Custom Computing
Models of Concurrent Computation
Multi-Agent Systems
Network Security
Parallel Algorithms
Performance Analysis

Software Engineering

Software engineering offers study of the tools and techniques underlying the design and development of complex large scale software systems. Included are considerations of software size and age together with the analysis of their performance. Graduates will be well equipped to contribute both to academic research and industrial applications. Suitable options include:

Options
Advanced Issues in Object Oriented Programming
Advanced Topics in Software Engineering
Automated Reasoning
Computer Vision
Modal and Temporal Logic
Models of Concurrent Computation
Multi-Agent Systems
Network Security
Parallel Algorithms

MSc Computing Science Specialist Pathway

The MSc Computing Science Specialist Pathway provides opportunities for postgraduate students to develop and demonstrate knowledge and understanding and practical skills in a wide variety of specialised topics in Computing, in the areas of Software Engineering, Distributed Computing, Artificial Intelligence, Computational Management and Mathematical Foundations. Students are also able to develop and demonstrate the qualities and skills needed for literature research, technical presentation and report writing.

On the specialist pathway students complete a compulsory programme of laboratory exercises in Prolog in the first term. In terms one and two students select 8 courses from about 30 options, usually four in each term. These are examined by coursework and written examination in May. Students complete a team programming project in term two with a presentation at the end of term. They also select an individual project area, relevant to their chosen specialisation. In the period from May to September students carry out their individual project.

A more detailed description of the Specialist pathway is below:

Term 1

During the first week students attend a compulsory Prolog course, which is supplemented by a programme of laboratory exercises in the rest of the term. There are also several practical programming tests related to this course. In the second week all the other courses begin and each of these consists of specialist lectures and supporting tutorials. Students attend their specialist options from a list of about 30 courses, according to their interests and previous background. The choice of optional courses available to students may, to some extent, be restricted by the schedule of lectures and availability of staff. During this term the students will be introduced to the team programming project and they will be allocated specific team programming projects to start in term two.

Term 2

During the second term, students attend their remaining specialist lecture courses and work on team programming projects. The team programming projects extend over the whole of the second term and involve groups of five to six students. A member of

academic staff acts as a customer and technical consultant, and ensures that the work is properly structured with regular meetings and appropriate documentation of the decision making process. During the second term the students will be provided with the descriptions of all the individual projects and they are also given opportunities to propose their own project and discuss their feasibility and appropriateness with the staff. By the end of the second term students are allocated a project and a supervisor.

Term 3

Written examinations are held during the first three weeks of the third term; during the months from May to September, students undertake an individual project culminating in the presentation of a thesis. This is a full-time activity and is expected to contain an element of original work. Students often choose to complement the material of the first two terms with applied work in the project. It is possible for this type of project to involve informal collaboration with one of the many industrial organisations with which the Department has contacts. A project may involve a period of up to three months spent outside the College, as long as regular contact is maintained with the supervisor. Project assessment is based on a written dissertation and a demonstration to the supervisor and a second marker.

Rules:

1. Maximum of 5 courses from the A-list and a total of 8 courses in all.
2. Some course combinations are excluded. These are Databases and Advanced Databases, Computer Networks and Distributed Systems, Software Engineering and Advanced Topics in Software Engineering
3. The Multi-Agent Systems course requires a previous course in Artificial Intelligence.

A-list

Term 1	Term 2
Advanced Databases	Advanced Computer Architecture
Computer Interfacing	Applied Operational Semantics
Graphics	Cognitive Perception
Machine Learning	Custom Computing
Simulation and Modelling	Distributed Systems
	Introduction to Bioinformatics
	Performance Analysis
	Robotics
	Software Engineering - Verification

Other courses

Term 1	Term 2
Automated Reasoning	Artificial Intelligence
Computer Vision	Advanced Graphics and Visualisation
Intelligent Data and Probabilistic Inference	Computational Finance
Network Security	Computer Networks and Distributed Systems
Advanced Topics in Software Engineering	Databases
	Multi-agent Systems
	Software Engineering
	Knowledge Representation
	Cognitive Robotics
	Advanced Operations Research

Individual Project

An individual project is undertaken under the supervision of a member of the academic staff. There are opportunities for industry-based projects providing joint specification and supervision, allowing students to experience realistic industry-based system and application development.

- **Year/Level One BEng Computing G400**
- **Year/Level One MEng Computing G401**
- **Year/Level One MEng Computing (Artificial Intelligence) G700**
- **Year/Level One MEng Computing (International Programme of Study) G402**
- **Year/Level One MEng Computing (Computational Management) G500**
- **Year/Level One MEng Computing (Software Engineering) G600**

Table 4.2 (a)

Year or Level: 1						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Discrete Mathematics (c)	N/A	1	2 hours	120		18
Mathematical Methods (c)	N/A					18
Hardware (c)	N/A	1	2 hours	120		18
Databases (c)	N/A					18
Logic (c)	N/A	1	2 hours	120		18
Reasoning about Programs (c)	N/A					18
Computer Systems (c)	N/A	1	1.5 hours	90		18
Programming	N/A	4*	3 hours each		200	
Professional Issues	N/A					24
Projects in AI or Language Option	N/A					50
Totals for typical years	N/A		**7.5 + 12***	**450**	**200**	**200**

* Laboratory tests, sat under exam conditions

Year/Level Two BEng Computing G400

- **Year/Level Two MEng Computing G401**
- **Year/Level Two MEng Computing (Artificial Intelligence) G700**
- **Year/Level Two MEng Computing (International Programme of Study) G402**
- **Year/Level Two MEng Computing (Computational Management) G500**
- **Year/Level Two MEng Computing (Software Engineering) G600**

Table 4.2 (b)

Year or Level: 2						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Complexity and Computability (c)	N/A	1	2 hours	120		20
Networks and Communications (c)	N/A	1	2 hours	120		20
Operating Systems (c)	N/A	1	2 hours	120		20
Statistics (c)	N/A	1	2 hours	120		20
Software - Engineering Design I (c)	N/A	1	2 hours	120		20
Software - Engineering Design II (c)	N/A	1	2 hours	120		20
Compilers (c)	N/A	1	2 hours	120		20
Algorithms (o) **Computer Architecture (o)** **Computational Techniques (o)** **Concurrency (o)** **Introduction to artificial Intelligence (o)** **Foreign language (o)**	N/A	3	2 hours each	120 each		20
Laboratory	N/A				200	
Project Work	N/A				100	
Totals for typical years	N/A	**10**	**20 hours**	**1200**	**300**	**200**

Year/Level Three BEng Computing G400

Table 4.2 (c)

Year or Level: 3						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1].	Laboratory based coursework[2]	Other coursework[3]
Advanced Databases (o) **Computer Interfacing (o)** **Decision Analysis (o)** **Graphics (o)** **Machine Learning (o)** **Operations Research (o)** **Simulation and modelling (o)** **Advanced Computer Architecture (o)** **Applied Operational Semantics (o)** **Cognitive Perception (o)** **Custom Computing (o)** **Distributed Systems (o)** **Introduction to Bioinformatics (o)** **Multimedia Systems (o)** **Performance Analysis (o)** **Robotics (o)** **Software Engineering – Systems Verification (o)** **Humanities (o)** **Business Courses (o)** **Engineering Courses (o)**	N/A	6	2 hours	180 each		30 each
Organisations and Management Processes (c)		1	2 hours	180		30
Software Engineering – Methods with Group Project (c)					440	
Individual Project (c)					670	
Totals for typical years		**8**	**16**	**1260**	**1110**	**210**

- **Year/Level Three MEng Computing G401**
- **Year/Level Three MEng Computing (Artificial Intelligence) G700**
- **Year/Level Three MEng Computing (International Programme of Study) G402**
- **Year/Level Three MEng Computing (Computational Management) G500**
- **Year/Level Three MEng Computing (Software Engineering) G600**

Table 4.2 (d)

Year or Level: 3						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Advanced Databases (o) **Computer Interfacing (o)** **Decision Analysis (o)** **Graphics (o)** **Machine Learning (o)** **Operations Research (o)** **Simulation and modelling (o)** **Advanced Computer Architecture (o)** **Applied Operational Semantics (o)** **Cognitive Perception (o)** **Custom Computing (o)** **Distributed Systems (o)** **Introduction to Bioinformatics (o)** **Multimedia Systems (o)** **Performance Analysis (o)** **Robotics (o)** **Software Engineering – Systems Verification (o)** **Humanities (o)** **Business Courses (o)** **Engineering Courses (o)**	N/A	6	2 hours	150 each		30 each
Organisations and Management Processes (c)		1	2 hours	150		30
Software Engineering – Methods with Group Project (c)					440	
Totals for typical years		**7**		**1050**	**440**	**210**

Year/Level Four MEng Computing G401

- **Year/Level Four MEng Computing (Artificial Intelligence) G700**
- **Year/Level Four MEng Computing (International Programme of Study) G402**
- **Year/Level Four MEng Computing (Computational Management) G500**
- **Year/Level Four MEng Computing (Software Engineering) G600**

Table 4.2 (e)

Year or Level: 4						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Advanced Issues in Object Oriented Programming (o) **Advanced Topics in Software Engineering (o)** **Automated Reasoning (o)** **Computing for Optimal Decisions (o)** **Computer Vision (o)** **Intelligent Data and Probabilistic Inference (o)** **Management Economics and Law (o)** **Modal and Temporal Logic (o)** **Models of Concurrent Computation (o)** **Network Security (o)** **Advanced Graphics and Visualisation (o)** **Advanced Operations Research (o)** **Complexity (o)** **Cognitive Robotics (o)** **Distributed Algorithms (o)** **Type Systems for Programming languages (o)** **Quantum Computing (o)** **Humanities (o)** **Business Courses (o)** **Engineering Courses (o)**	N/A	8	2 hours	240 each		30 each
Outsourcing Exercise (c)						200
Individual Project					940	
Industrial Placement						100
Totals for typical years		**8**		**1920**	**940**	**540**

- **Year/Level One BSc (Hons) Mathematics and Computer Science CG14**
- **Year/Level One MSci (Hons) Mathematics and Computer Science GG41**

Table 4.2 (f)

Year or Level: 1						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Computing Courses						
Architecture (c)	MC178 = 200 Points	1	1.5 Hours	57.17		9.5
		1	1.5 hours	57.17		9.5
Reasoning about Programmes (c)		1	1.5 Hours	57.17		9.5
Logic JMC (c)						
Programming I	MC172 = 200 Points				40	
					30	
Programming II					30	
					80	
Programming III					20	
Object Oriented Programming (c)						
Laboratory (c)						
Professional Issues (c)						
Mathematics Courses						
Geometry and Linear Algebra	M1GLA = 100 Points	1	1.5 Hours	90		10
Analytical Methods and Analysis	MC1MF = 100 Points	1	1.5 hours	90		10
Analysis	M1P1 = 100 Points	1	1.5 Hours	90		10
Linea Algebra	M1P2 = 100 Points	1	1.5 Hours	90		10
Totals for typical years		**7**	**10.5**	**531.5**	**200**	**68.5**

- **Year/Level Two BSc (Hons) Mathematics and Computer Science CG14**
- **Year/Level Two MSci (Hons) Mathematics and Computer Science GG41**

Table 4.2 (g)

Year or Level: 2						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1].	Laboratory based coursework[2]	Other coursework[3]
Computing Courses						
Software Engineering Design I (c)	MC271 = 200 Points	1	1.5 hours	5		
		1	1.5 hours	66.67		
Operating Systems (c)		1			200	
Labwork (c)						
Algorithms (o)	MC272 Students choose three courses from the list opposite = 400 Points	3	2 hours each	66.7 each		
Compilers (o)						
Concurrency (o)						
Introduction to AI (o)						
Complexity and Computability						
Mathematics Courses						
Probability and Statistics(c)	M1S = 100 Points	1		100		
Algebra II (c)	M2PM2 = 100 Points	1		100		
Orthogonality (c)	M2AA3 = 100 Points	1		100		
Graphs, Algorithms and Optimisation (o) **and / or** **Rings and Fields (o)**	M1P2 = 100 Points	1		100		
Totals for typical years						

- **Year/Level Three BSc (Hons) Mathematics and Computer Science CG14**

Table 4.2 (h)

Year or Level: 3						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Computing Courses						
Group Project and Software Engineering – Methods (c)	I80 Marks				45 135	
Individual Project (c)						
Compilers (o) **Concurrency (o)** **Applied Operational Semantics (o)** **Graphics (o)** **Custom Computing (o)** **Cognitive Perception (o)** **Distributed Systems (o)** **Performance Analysis (o)** **Simulation and Modelling (o)** **Introduction to Bioinformatics (o)** **Operations Research (o)** **Decision Analysis (o)** **Machine Learning (o)** **Type Systems for Programming Languages (o)** **Artificial Intelligence (o)** **Databases (o)** **Computer Networks and Distributed Systems (o)** **Humanities (o)**	Students choose between 2 to 5 courses from the list opposite = N * 100 Points	2 - 5	2 hours each	86 each		14 each

Mathematics Courses						
Orthogonality (o) **Optimisation (o)** **Orthogonality (o)** **Computational linear algebra (o)** **Methods of approximation (o)** **Theoretical numerical analysis (o)** **Numerical solution of ordinary differential equations (o)** **Finite element method (o)** **Finite difference methods for partial differential equations (o)** **Algebra II (o)** **Rings and fields(o)** **Graphs, algorithms and optimisation (o)** **Linear algebra and matrices (o)** **Group theory (o)** **Galois theory (o)** **Group representation theory (o)** **Rings and modules (o)** **Elementary number theory (o)** **Algebraic number theory (o)** **Discrete Mathematics (o)** **Tilings and patterns** **Probability and statistics II (o)** **Statistical modelling (o)** **Statistical theory (o)** **Statistical modelling II (o)** **with application in finance(o)** **Statistical theory II (o)** **Applied probability I (o)** **Statistical pattern recognition (o)** **Time series (o)** **Stochastic simulation (o)** **Design of experiments and surveys (o)** **Games, risks and decisions (o)** **Biostatistics** **Survival models and actuarial applications (o)** **Monte Carlo methods in financial engineering (o)** **Communicating Mathematics (o)**	Students choose between 2 to 5 courses from the list opposite = N * 100 Points	2 - 5		90 each		10 each
Totals for typical years		**2-5**		**180 - 450**	**180**	**20 - 50**

- **Year/Level Three MSci (Hons) Mathematics and Computer Science GG41**
-

Table 4.2 (i)

Year or Level: 2						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Computing Courses						
Group Project (c)	50 Marks				50	
Compilers (o) **Concurrency (o)** **Software Engineering – Methods (o)** **Applied Operational Semantics (o)** **Graphics (o)** **Custom Computing (o)** **Cognitive Perception (o)** **Distributed Systems (o)** **Performance Analysis (o)** **Simulation and Modelling (o)** **Introduction to Bioinformatics (o)** **Operations Research (o)** **Decision Analysis (o)** **Machine Learning (o)** **Type Systems for Programming Languages (o)** **Artificial Intelligence (o)** **Databases (o)** **Computer Networks and Distributed Systems (o)** **Humanities (o)** **Management(o)**	Students choose between 2 to 6 courses from the list opposite = N * 100 Points	2 - 6	2 hours each	86 each		14 each

- **Year/Level Three MSci (Hons) Mathematics and Computer Science GG41 (Continued)**

Mathematics Courses						
Maths Group Project						50
Orthogonality (o) **Optimisation (o)** **Orthogonality (o)** **Computational linear algebra (o)** **Methods of approximation (o)** **Theoretical numerical analysis (o)** **Numerical solution of ordinary differential equations (o)** **Finite element method (o)** **Finite difference methods for partial differential equations (o)** **Algebra II (o)** **Rings and fields(o)** **Graphs, algorithms and optimisation (o)** **Linear algebra and matrices (o)** **Group theory (o)** **Galois theory (o)** **Group representation theory (o)** **Rings and modules (o)** **Elementary number theory (o)** **Algebraic number theory (o)** **Discrete Mathematics (o)** **Tilings and patterns** **Probability and statistics II (o)** **Statistical modelling (o)** **Statistical theory (o)** **Statistical modelling II (o)** **with application in finance(o)** **Statistical theory II (o)** **Applied probability I (o)** **Statistical pattern recognition (o)** **Time series (o)** **Stochastic simulation (o)** **Design of experiments and surveys (o)** **Games, risks and decisions (o)** **Biostatistics** **Survival models and actuarial applications (o)** **Monte Carlo methods in financial engineering (o)** **Communicating Mathematics (o)** **Humanities (o)** **Management(o)**	Students choose between 2 to 5 courses from the list opposite = N * 100 Points	2 - 6		90 each		10each
Totals for typical years		**2-6**		**180 - 600**	**180**	**70 - 110**

- **Year/Level Four MSci (Hons) Mathematics and Computer Science GG41**

Year or Level: 4						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Computing Courses						
Individual Project (c)	100 Marks				100	
Advanced Databases (o) **Graphics (o)** **Custom Computing (o)** **Cognitive Perception (o)** **Advanced Computer Architecture (o)** **Performance Analysis (o)** **Machine Learning (o)** **Advanced Graphics and Visualisation (o)** **Computer Vision (o)** **Cognitive Robotics (o)** **Parallel Algorithms (o)** **Network Security (o)** **Distributed Algorithms (o)** **Complexity (o)** **Advanced Issues in Object Oriented Programming (o)** **Multi-agent Systems (o)** **Advanced Topics in Software Engineering (o)** **Computing for Optimal Decisions (o)** **Advanced Operations Research (o)** **Automated Reasoning (o)** **Models of Concurrent Computation (o)** **Type Systems for Programming Languages (o)**	Students choose between 2 to 5 courses from the list opposite = N * 100 Points	2 - 5	2 hours each	86 each		14 each

Quantum Computing (o) **Knowledge Representation (o)** **Intelligent Data and Probabilistic Inference (o)** **Modal and Temporal Logic (o)** **Computer Networks and Distributed Systems (o)** **Humanities (o)** **Management(o)**						
Mathematics Courses						
Optimisation with advanced study (o) **Computational linear algebra with advanced study (o)** **Methods of approximation (o)** **Theoretical numerical analysis (o)** **Numerical solution of ordinary differential equations with advanced study (o)** **Finite element methods with advanced study (o)** **Finite difference methods for partial differential equations with advanced study (o)** **Linear algebra and matrices with advanced study (o)** **Group theory with advanced study (o)** **Galois theory with advanced study (o)** **Group representation theory with advanced study (o)** **Rings and modules with advanced study (o)** **Elementary number theory with advanced study (o)** **Algebraic number theory with advanced study (o)** **Discrete Mathematics with advanced study (o)** **Tilings and patterns with advanced studies (o)** **Riemann surfaces (o)** **Number theory: elliptic curves (o)** **Algebraic geometry (o)** **Groups and representations (o)** **Ring theory (o)** **Representation theory of symmetric groups (o)** **Mathematics in molecular biology (o)** **Geometric and combinatorial group theory (o)** **Sympletic geometry and**	Students choose between 2 to 5 courses from the list opposite = N * 100 Points	2 - 5	2 hours each	90 each		10each

quantisation (o) **Homological algebra (o)** **Analytic methods in partial differential equations (o)** **Analysis on manifolds and heat kernels (o)** **Algebraic topology (o)** **Riemannian geometry (o)** **Differential geometry and Lie groups (o)** **Lie algebra (o)** **Stochastic filtering (o)** **Introduction to infinite dimensional analysis (o)** **Model theory (o)** **Staitistical modelling II with application in finance with advanced study (o)** **Statistical theory II with advanced study (o)** **Applied probability with advanced study (o)** **Modern statistical methods for pattern recognition with advanced study (o)** **Time series with advanced study (o)** **Stochastic simulation with advanced study (o)** **Design of experiments and surveys with advanced study (o)** **Games, risks and decisions with advanced study (o)** **Biostatisticswith advanced study (o)** **Survival models and actuarial applications with advanced study (o)** **Monte Carlo methods in financial engineering with advanced study (o)**						
Totals for typical years		**2-5**		**180 - 600**	**180**	**70 - 110**

- **MSc in Advanced Computing Standard Pathway**

Year or Level: 5						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Computing Courses						
Individual Project (c)	? Marks					
Laboratory (Prolog) (c)						
Custom Computing (o) **Advanced Computer Architecture (o)** **Performance Analysis (o)** **Machine Learning (o)** **Advanced Graphics and Visualisation (o)** **Computer Vision (o)** **Cognitive Robotics (o)** **Parallel Algorithms (o)** **Network Security (o)** **Complexity (o)** **Advanced Issues in Object Oriented Programming (o)** **Multi-agent Systems (o)** **Advanced Topics in Software Engineering (o)** **Computing for Optimal Decisions (o)** **Advanced Operations Research (o)** **Automated Reasoning (o)** **Models of Concurrent Computation (o)** **Type Systems for Programming Languages (o)** **Quantum Computing (o)** **Knowledge Representation (o)** **Intelligent Data and Probabilistic Inference (0)** **Modal and Temporal Logic (o)**	Students choose 8 courses from the list opposite = 800 Points	8	2 hours each	86 each		14 each
Individual Study Option (0)	Students can choose up to a maximum of two of these in lieu of taught courses above.	2				100 each
Totals for typical years		**8**		**516 - 688**	**?**	**112 - 312**

Year or Level: 5						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Computing Courses						
Individual Project (c)	? Marks					
Laboratory (Prolog) (c)						
Research Skills course (c)						
Custom Computing (o) **Advanced Computer Architecture (o)** **Performance Analysis (o)** **Machine Learning (o)** **Advanced Graphics and Visualisation (o)** **Computer Vision (o)** **Cognitive Robotics (o)** **Parallel Algorithms (o)** **Network Security (o)** **Complexity (o)** **Advanced Issues in Object Oriented Programming (o)** **Multi-agent Systems (o)** **Advanced Topics in Software Engineering (o)** **Computing for Optimal Decisions (o)** **Advanced Operations Research (o)** **Automated Reasoning (o)** **Models of Concurrent Computation (o)** **Type Systems for Programming Languages (o)** **Quantum Computing (o)** **Knowledge Representation (o)** **Intelligent Data and Probabilistic Inference (0)** **Modal and Temporal Logic (o)**	Students choose 5 courses from the list opposite = 500 Points	5	2 hours each	86 each		14 each
Individual Study Option (c)	200 Points	2				100 each

- **MSc in Advanced Computing Research Pathway**

- **MSc Computing Science Specialist Pathway**

Year or Level: 5						
Subject Designate subjects: core (C) optional (O)	**Number of credits or units for each module**	**Examinations**		**Maximum Marks available from:-**		
		Number	Duration	Examinations[1] .	Laboratory based coursework[2]	Other coursework[3]
Computing Courses						
Individual Project (c)	? Marks					
Laboratory (Prolog) (c)	? Marks					
Team Programming Project (c)	? Marks					
Software Engineering - Systems Verification(o) **Advanced Databases (o)** **Applied Operational Semantics (o)** **Graphics (o)** **Custom Computing (o)** **Cognitive Perception (o)** **Advanced Computer Architecture (o)** **Robotics (o)** **Computer Interfacing (o)** **Distributed Systems (o)** **Performance Analysis (o)** **Simulation and Modelling (o)** **Introduction to Bioinformatics (o)** **Machine Learning (o)** **Advanced Graphics and Visualisation (o)** **Computer Vision (o)** **Cognitive Robotics (o)** **Computational Finance (o)** **Parallel Algorithms (o)** **Network Security (o)** **Multi-agent Systems (o)** **Advanced Topics in Software Engineering (o)** **Advanced Operations Research (o)** **Automated Reasoning (o)** **Knowledge Representation (o)** **Intelligent Data and Probabilistic Inference (o)** **Software Engineering (o)** **Artificial Intelligence (o)** **Databases (o)** **Computer Networks and Distributed Systems (o)**	Students choose 8 courses from the list opposite = 800 Points	8	2 hours each	86 each		14 each
Totals for typical years		**8**		**688**		**112**

4.3 Laboratory and Coursework Assessment Criteria

Assessed laboratory and coursework exercises are marked on an individual basis, with reference to a model answer with an associated mark scheme. In most cases coursework is marked exclusively by the lecturer, or an approved assistant. In some cases, there may be several markers, in which case they will mark relative to the same model answer and marking scheme. In this case, the lecturer will assume responsibility for checking that the marks are consistent among markers.

All assessed work is made available to the external examiners for independent checking as to the quality and standard of the exercises and of the students' submissions.

4.4 Weighting of continuously assessed work

1. Computing BEng/MEng Degrees

In the first two years there is coursework for selected courses. The coursework marks are a separate component of the final marks allocation for each year. Students must pass the aggregate of their coursework in order to proceed to the next year. In the third and fourth years there is coursework associated with each course. The final mark for each course is formed from the coursework mark and a mark from a written examination. Coursework counts for one sixth of the total for each third-year course and one ninth of the total for each fourth-year course.

2. Joint Maths and Computing BSc/MSci Degrees

All Mathematics courses have assessed coursework associated with them. The final mark for each Maths course is formed from the coursework mark and a mark from a written examination. The coursework mark contributes 10% of the final mark of each Maths course. Their contribution towards the final classification depends on the year, as each year has a different weighting towards the final degree classification. In the first year, Maths assessed coursework contributes 0.15% of the total BSc final classification and 0.12% of the total MSci final classification. In the second year, Maths assessed coursework contributes 0.45% (resp. 0.24%) of the total BSc (resp. MSci) final classification. In the third they contribute 0.6% (resp. 0.35) of the total BSc (resp. MSci) final classification. In the fourth year, they contribute 0.47% of the final MSci degree classification.

As for Computing assessed coursework, in the first two year only Computing courses with written examinations have assessed coursework associated with them. The final mark for each such Computing courses is then formed from the coursework mark and the mark from the written examination with the ratio 1:6 respectively. In this first year, Computing assessed coursework contributes 0.14% (resp. 0.11%) of the total BSc (resp. MSci) final classification. In the second year, they contribute 0.42% (resp. 0.22) of the total BSc (resp. MSci) final classification. In the third year, they contribute 0.85 (resp. 0.50%) of the total BSc (resp. MSci) final classification. Finally in the forth year, assessed coursework of Computing courses contributes 0.67% of the final MSci classification.

3. Postgraduate degrees

MSc in Advanced Computing

In the first two terms there is continuous assessment in the form of laboratory exercises and tests, and courseworks associated with each of the individual courses. The continuous assessment is made up in equal measures from (a) the laboratory tests, (b) the laboratory (non-test) assessed work, (c) all other courseworks. The coursework for each lecture course contributes equally to the coursework component. An average mark of at least 50% is required on the continuous assessment. Moreover, a mark of at least 30% is required on each component ((a), (b), (c)) of the continuous assessment. An average mark of at least 70% is required on the continuous assessment for consideration of a Distinction degree classification.

Continuous assessment is one of three independent components of the degree examinations. The other two are the examinations and the individual project. There is no weighing of continuous assessment with respect to the other two components.

MSc Computing Science Specialist Pathway

In the first two terms there is continuous assessment in the form of laboratory exercises and tests and courseworks associated with each of the individual courses, and the team programming project in the second term. The continuous assessment is made up in equal measures from (a) the laboratory tests, (b) the laboratory (non-test) assessed work, (c) all courseworks, (d) the team programming project. The coursework for each lecture course contributes equally to the coursework component. An average mark of at least 50% is required on the continuous assessment. Moreover, a mark of at least 30% is required on each component ((a), (b), (c), (d)) of the continuous assessment. An average mark of at least 70% is required on the continuous assessment for consideration of a Distinction degree classification.

Continuous assessment is one of three independent components of the degree examinations. The other two are the examinations and the individual project. There is no weighing of continuous assessment with respect to the other two components.

4.5 Group Working Skills

1. Computing BEng/MEng Degrees

In the first year there is an integrated laboratory programme spanning all three terms backed up by weekly programming tutorials; there are also weekly tutorial exercises covering the courses in logic, discrete maths and reasoning, and additional weekly tutorials in the first term in continuous mathematics. Students normally submit as individuals. However, the weekly tutorials are run in groups of six or seven students where group discussion and group problem solving is encouraged from the beginning. One of the laboratory exercises is undertaken in pairs, which introduces the students to group work for the first time on a small scale. In the second and third terms, students not taking the language option undertake the course in Topics in AI. Here they work in teams of three to deliver a set of web pages and a 15-minute group presentation at our one day mini workshop ('AI fest') which takes place on the last day of the second term. There are both internal and external prizes for the best talks.

In the second year there is an increased emphasis on group work. There is again an integrated laboratory spanning the first two terms with additional assessed coursework for individual courses. In the first term two of the coursework exercises are undertaken in pairs. In the second term all laboratory work is undertaken in groups of two or three students. There is also a substantial software engineering coursework exercise, spanning the whole of the second term, that is undertaken in groups of four. In the summer term students undertake a substantial laboratory exercise (Space Trader) in groups of three.

In addition to the group project itself in the third year, students also work as a team to produce various deliverables related to the group project, as part of the Software Engineering - Methods course; the emphasis here is on the software engineering process. There are an additional six assessed coursework exercises related to individual courses that are undertaken in pairs.

For students on the MEng programme, the industrial placement, which spans the six months from April-September, exposes the students to an extended period of group working in an industrial setting.

2. Joint Maths and Computing BSc/MSci Degrees

Group working differs from the Computing BEng and MEng in the following ways. In the first year, the Topic in AI course is replaces by a group project in MatLab in the third term only, where students work in teams of four to six.

In the second year, the JMC degrees differ from the BEng and MEng degrees only the summer term, when students undertake a group project in Computing. For JMC, students work in teams of three to deliver a set of Web pages on a mathematical topic that they have to first research on, and give a 20-minute presentation as part of a one-day JMC2 project presentations that normally takes place toward the end of the third term.

The third year is identical to the BEng degree.

For students on the MSci programme, there is a substantial Mathematic group project in the summer term of their third year. Here, students work in groups on a substantial mathematical problem that they are required to solve using either MatLab or Maple. The project requires a substantial level of programming within the context of the Mathematical Software package in hand.

3. Postgraduate degrees

MSc Computing Science Specialist Pathway

During the Autumn term the students will be introduced to the team programming project. They will have access to an online list of proposals and will have to meet and discuss a selection of them with the proposers. The allocations of groups and projects is done towards the end of the Autumn term, giving students enough time to meet with their groups and the designated supervisors before the Christmas break.

The team programming projects will start in earnest in the Spring term and will continue throughout that term, culminating in two intermediate and one final report, a logbook, and a demonstration and presentation at the end of that term.

The projects involve groups of five to six students. The supervisor, who is normally a member of academic staff, acts as a customer and technical consultant, and ensures that the work is properly structured with regular meetings and appropriate documentation of the decision making process. The project normally involves development of a substantial piece of software, often using languages, technologies and packages that are new to the students. Projects involving collaboration with industry are often available for selection.

4.6 Industrial Input and influence

4.6.1 Informal Input

We have an informal but productive approach through our industrial visiting researchers, industrial research collaborations and those companies who employ our MEng students on their six-month Industrial placement. In particular academics visit their tutees and talk to the students' supervisors. Were a supervisor to believe that something was lacking in the education of their intern they would certainly tell us. In addition, when they return from their placement the students give a presentation, where the academic supervisor and the industrial supervisor, as well as other academics and students, attend. In the talk, the student correlates their past education and the skills they needed.

Feedback from the placements and our other industrial contacts leads to changes in the content and delivery of our courses, e.g. through revised syllabuses and the introduction of new tools to support the teaching of specific courses. Some recent concrete examples include the following:

* The design of the Software Engineering Course has been influenced by contacts with industry and standardisation bodies in particular, Rational, Unisys and OMG's UML revision task force.

* The Network Security course was updated with more specific focus on the problems of distributed access control and cross-domain authentication. This has been influenced current work in collaboration with industry IBM, Microsoft, BAE, BT and SAP

* The first year course on program reasoning incorporates material on the Perfect Developer System from Escher Technologies for proving correctness of programs. The same tool has also been used in a second year group project, and third year and MSc individual projects (see below).

* The multi-agent systems course is much influenced by contracts with Fujitsu labs in California (FLA) and the student placements we have had there. In particular, the course makes extensive use of Qu-Prolog, developed in part at FLA, that makes crucial use of public domain software for store and forward inter-host communication of symbolic messages.

* The Decision Analysis course is influenced substantially by various consultancies with BP, in particular the importance of business processes (rather than just formal software requirements) in the design of software solutions, and the role of software tools in helping organisations to achieve their aims.

4.6.2 The Industrial Liaison Board

We have acknowledged the importance of formal input from industry to help guide the Department's future teaching and research activities. We have therefore committed to the establishment of an Industrial Liaison Board (ILB). The Board will convene once a year and include of the order of ten senior industrialists from a range of industry sectors, in line with the Department's student career destination profile. Members will be drawn from senior technical management and will have an empathy with the goals of an engineering education. The Board will further include:

* two representatives from relevant professional bodies (e.g. IET, BCS)
* one representative from College industry-related professional support services (e.g. the Research Development Unit)
* one representative from Academic Committee
* one representative from Research Committee

The Board's Terms of Reference have been drawn up and are as follows:

* To advise the Department on the industrial relevance and suitability of the curriculum of its taught courses (both undergraduate and postgraduate), including suggestions for new (or changes to existing) courses and degree programs
* To review the Department's portfolio of research projects, both planned and current, with respect to their industrial relevance and suitability, and to support them with practical help, letters of support, internships etc.
* To identify opportunities for commercialisation of research
* To identify overlapping interests and to facilitate the formation of research consortia in precompetitive areas
* To explore other ways in which the Department can catalyse, encourage and foster a higher level of industry involvement in its degree and research programmes
* To identify any recent or longer term developments and/or concerns of industry which are likely to have a significant impact on the Department's activities
* To advise on major strategic initiatives, such as the establishment of research centres, fund-raising initiatives etc.
* To award a final year undergraduate project as the winner of the Industry Project Prize

We are currently in the process of setting up this board. Seven companies (IBM, Google, HP, Greycon, Morgan Stanley, Betfair, and BT) and the BCS have nominated provisional representatives. We plan to hold the inaugural meeting of Board in May 2008.

4.6.3 Industry Lectures

Where appropriate, we invite members of industry to give guest lectures on our courses and to contribute to the supervision (in a non-executive capacity) of individual projects. This year, for example, guest lectures were given by Ian Page (Seven Spires Investments) on entrepreneurship and Robert Chatley (Google) on software testing and domain-specific languages. Nat Pryce (UBS Consultant) will be contributing lectures on software engineering in the forthcoming academic year.

4.6.4 Individual and Group Projects

A large number of individual and group projects are inspired by, and in some cases proposed by, our industry collaborators. For example, this year's projects include industry-inspired projects from IBM (parallel pub/sub infrastructure) Betfair (strategy testing, ecosystem modelling), Alcatel-Lucent (access control policies), IBM TJ Watson Research Laboratories NY (information quality in mobile sensor networks), Introversion Software Ltd (AI automation of game playing avatars), Chelsea and Westminster Hospital (neo-natal nutrition database), Functional Intelligent Training (online gym booking), Nokia (A distributed filesystem for mobile phones), IBM (RAID systems modelling), Trayport (Multi-agent trading simulations), Ubisense (Location tracking), Escher Technologies (Tool support for Object-Z).

4.7 Industrial sponsorship / training

The Six-Month Industrial Placement for MEng Computing students

The MEng undergraduate programme consists of four years of study, including six months of industrial training in the summer term of their third year**.** Acceptance on this programme is conditioned by a result of at least 60% at the end of their second year of studies. The placement takes place from the beginning of April to the end of September, after the second term of the third year. During this time, the students typically work on a small number of (usually one or two) large projects.

Participating companies this year include ARM, Barclays Capital, Betfair, Citi, Credit Suisse, Deutsche Bank, FactSet Europe Ltd, Formicary, Goldman Sachs, Google Irvine, IBM, KBC Financial Products, LShift, MIK, Morgan Stanley, NewVoiceMedia, Philips, Pixel Addicts Ltd, Symbian, Thales, UBS, Vodafone and youDevise.

The department employs an Industrial Liaison Officer who co-ordinates the application process, including testing, interviews and placement offers. Although it is usually preferable for the students to be interviewed at the company, company representatives can also meet and interview students in the department. Before recommending a particular placement to the students, the department has to ensure that the company will provide suitable projects and that the students will get adequate supervision by a qualified member of staff.

Students are paid for their work whilst on placement. However, the College does not stipulate a rate of pay, so this will be agreed between the company and the student. Other statutory terms and conditions will also apply, including holiday leave allowance. These conditions will be stipulated in the contract of employment or appointment letter agreed between the company and their employee, i.e. the student.

The student keeps in close contact with the department during their placement. In the period June/July the tutor and/or the industrial Liaison Officer will visit the student and their mentor/supervisor at their place of work. At the end of the visit the tutor submits a report on the student's progress, the level of supervision they are receiving and the suitability of the placement itself. the tutor will notify the supervisor of any perceived problems or recommendations. Companies are generally very receptive to suggestions and generally act quickly to resolve any problems.

Throughout the placement, the student will be monitored by their academic tutor, who will also visit them at their workplace during this period. The tutor will also get in touch with the students manager/ mentor to gauge how the student is doing. The tutor's assessment, made during a visit at the placement site, will go on the student's personal file.

Students are required to hand in a logbook containing an executive summary and a week-by-week account of their work. The logbook contains:

* a brief description of the organization and where they worked.
- a one page description of each week's work.
* an explanation of the key technical tasks, difficulties and achievements.
* a conclusion outlining the skills the students have acquired, the lessons they have learned and the extent to which they were able to link their work experience to their course of study.

The logbook is signed by their Company supervisor or manager before they leave the placement.

The students are also required to prepare a typed four page executive summary of their placement outlining where they worked, what they aimed to do, what they actually did and what they learned whilst on placement. The objective of the summary is to enable the reader to understand the whole placement by reading just a few pages.

In the first week of the autumn term students are required to make a presentation to academic staff and industrial visitors describing their industrial placement experience and outcomes. The presentation makes up 40% of the final placement grade. The remaining 60% of their final placement grade are determined as follows:

– At or near the end of the placement, the student's line manager will complete a quantitative questionnaire about the students placement performance, including questions about the quality of their logbook and executive summary.

– The tutor uses the output from the questionnaire, together with the logbook and executive summary, and details of the visit, to determine a mark for the placement.

Industrial Sponsorship

Companies can provide support for teaching in the form of donation of or substantial discounts for equipment or software for teaching as this provides exposure to students who then become decision makers in industry. Examples include the Apple Computing Laboratory, SunSite archive servers, Sony Playstations, custom hardware development kits from Altera, Xilinx, Celoxica and Symplicity, and the Medical Imaging Computing Laboratory. Companies have also provided funding for high-profile infrastructure such as the Systems Engineering Studios partly funded by Symbian.

Companies are invited to sponsor prizes for outstanding student achievements such as academic excellence in examinations, or exemplary individual or group project work. These prizes are displayed on our web site and are announced at Imperial's annual Commemoration Day ceremonies. Minimum prize sponsorship is £1000 per year for a minimum of five years, with prizes taking the form of cheques, book tokens or medals. Companies that already offer prizes are BT, IBM, Formicary Software, Microsoft,, Morgan Stanley, Phillips and Trayport,

Morgan Stanley also offer one-off bursaries of £500 to the top ten students in the first year; the recipients are chose on the basis of a test taken prior to the Christmas break.

4.8 Scholarship/research and consultancy

The Department has achieved the highest rating in all the past Research Assessment Exercises. It is a comparatively large Department with 56 academics of which 23 are full professors. It has 95 post-doctoral research assistants. These academics provide a very broad range of expertise in all aspects of Computing which companies respect and call upon for consultancy or collaborative research.

All our academics have teaching responsibilities and all our research staff are expected to play some role in teaching support. Their research interests and expertise invariably feeds into their teaching and thus paves the way for innovative education. For example, a significant proportion of student projects are motivated by current research in the Department. Each year, a number of student projects (both individual and group) lead to published research papers. In addition, it is quite common for coursework and laboratory exercises, for third and fourth year courses in particular, to be inspired by problems resulting from recent research.

A particularly successful scheme is the College's Undergraduate Research Opportunities (UROP) scheme that gives students the opportunity to contribute to the activities of a research team via small-scale projects, usually over the summer vacations. Students are normally paid for their contribution with funding from research grants or industry. The Department is an enthusiastic contributor to this scheme with, typically, around ten students per year participating. We find that a significant proportion of students who have been employed under UROP move into research (e.g. via a PhD) after graduation. Students who have participated in the scheme invariably benefit from the experience when it comes to their individual project, as they tend to choose projects with a high research content.

SECTION 5 Admissions, progression and award

5.1 Entry Routes

Below is a list of qualifications we require students to hold in order to be considered for a place on our undergraduate degrees. All home and EU students who meet our criteria are invited for interview. Overseas students are also invited for interview but those who for logistical reasons cannot attend are asked to sit a paper which helps to inform the Admissions Officer as to their suitability for the course they are applying for.

1. Undergraduate Degrees

A-levels

Our minimum A-level offer is: **AAA** with an **A in Maths**. We encourage applicants to take Further Maths at A2 or AS level.

International Baccalaureate
Our standard IB offer is: **38 points** with a **6 in Maths at higher level** and a 6 in one other relevant subject at higher level.

Other International Qualifications
We accept qualifications from all over the world. Below is a selection of the most common that we take. Imperial has an English language requirement which equates to a C-grade at English GCSE. The IELTS requirement for Computing is 6.5.

European Baccalaureate
Our typical European Baccalaureate offer is: **8.5 overall** with a 9.0 in Maths and 9.0 in one other relevant subject.

French Baccalaureate
Our typical French Baccalaureate offer is: **15 or higher overall** with a 15 in Maths and 15 in one other relevant subject.

German Abitur
Our typical German Abitur offer is: **1.3 or less overall** with a 15 in Maths and 14 in one other relevant subject.

Foundation Courses
We only currently accept students from two high-quality UK foundation courses. These are specialised courses for overseas students whose home qualifications are not usually accepted for study at UK universities.

The University Preparatory Certificate for Science and Engineering is a high quality foundation programme. We would typically look for scores at or above **80%**. A student would also be expected to take the Advanced Maths exam.

Warwick HEFP
The Higher Education Foundation Programme has a Science & Engineering specialisation that we accept. We would typically look for scores at or above **85%**.

The incoming students vary in their amount of programming experience, from none to those who have spent a gap year in the software industry. About half the intake has no programming experience prior to starting the course.

2. Postgraduate Degrees

All potential students applying for our postgraduate degrees are expected to have the following:

MSc Advanced Computing

Applicants should normally have a good first degree (upper-second class or first class honours) in computer science, or a subject with a substantial component in computing.

MSc Computing Science Specialist Pathway

Applicants should have studied some Computing Science in their degree but not necessarily exclusively. The entrant is required to have an upper-second class or first class honours degree in a science or engineering discipline.

5.2 Entry Profile

1. Undergraduate Degrees

Please see above

2. Postgraduate Degrees

Please see above

5.3 Progression conditions

Please refer also to Section 4.2 for the programme structures.

1. Computing BEng/MEng

The assessment of student performance is through a combination of written examinations, assessed coursework (individual and small groups), assessed laboratory exercises, laboratory tests done under exam conditions, group project documentation and presentation, individual project report(s) and presentation and, for MEng, an industrial placement report and presentation. All BEng and MEng students follow the same core courses in years 1 and 2.

Marks from examinations and the practical assessment are separate hurdles. Failure to pass examinations cannot be offset by coursework marks.

First Year

Students are assessed on the basis of three 2 hour examinations, one 1.5 hour examination, relevant coursework (associated with their lecture courses), their online programming tests and either their projects in AI or their language option:

Marks

Three 2 hour examinations (each contributing 120)	360
One 1.5 hour examination (contributing 90)	90
Coursework	150
Programming	200
Projects in Artificial Intelligence or language option	50
Total Marks	850

Progression Requirements

In order to pass the Part I examination and qualify to progress to the second year, the candidate must have:

1. Achieved at least 40% in the Coursework
2. Achieved at least 40% in Programming
3. Achieved at least 40% in the aggregate of written and practical examinations.

The pass mark for each written examination is 30%. All written examinations must be passed. From the 2008 entry, the minimum pass mark for each written examination will be increased to 40%.

Supplementary Qualifying Tests

At the discretion of the Examiners, Supplementary Qualifying Tests may be offered to a candidate who marginally fails to achieve the conditions laid down for a pass in the Part I Examination.

Second Year

Students are assessed on the basis of ten 2-hour examinations, laboratory work and relevant coursework (both associated with their lecture courses) and project work:

Marks

Ten two-hour examinations (each contributing 120)	1200
Laboratory work	200
Coursework	200
Project work	100
Total Marks	**1700**

Progression Requirements

In order to pass the Part II examination and qualify to progress to the third year, the candidate must have:

1. Achieved at least 40% in the coursework
2. Achieved at least 40% in the laboratory work
3. Achieved at least 40% in the aggregate of written papers.

The pass mark for each written examination is 30%. All written examinations must be passed. From the 2008 entry, the minimum pass mark for each written examination will be increased to 40%.

In order to be admitted to the third year of the MEng programmes, students must normally satisfy the above minimum requirements and obtain a minimum of 60% overall. Students who only marginally satisfy the requirements for MEng may be advised to transfer to the BEng.

BEng Third Year

Students are assessed on the basis of seven 2-hour examinations, one per course taken, and associated coursework, a group project and an individual project:

Marks

Seven courses each with an examination (contributing 180) and coursework (contributing 30)	1470
Software Engineering with Group Project	410
Individual Project	670
Total marks	**2550**

BEng Honours Classification

The marks for all components of the three years of the course are aggregated into an overall mark. The class of Honours awarded depends on this overall mark, with the proviso that candidates must normally have achieved at least 40% overall in Part III and at least 30% in their individual project.

Students who marginally fail to meet these requirements may be awarded a pass degree. From entry 2008 onwards there will be no pass degree. Students may then be offered a second chance at their final year. In appropriate circumstances the Aegrotat degree will be the only possibility other than failure.

For each year, the total possible marks are:

Year 1 total	850
Year 2 total	1700
Year 3 total	2550
Total over 3 years	**5100**

The class boundaries are:

I	70%
II/I	60%
II/II	50%
III	40%

MEng Third Year

MEng students undertake a six month Industrial placement between April and September. Students are assessed on the basis of seven 2-hour tests, one per course taken, with associated coursework for each course, and a group project:

Marks

Seven courses each with a test (contributing 150) and coursework (contributing 30)	1260
Software Engineering with Group Project	440
Total marks	**1700**

Progression Requirements

In order to remain on the MEng degree course a student must pass the Group Project submitted in the Autumn Term of the third year. Failure in this component of the course will normally require transfer to the BEng degree for the remainder of the third year.

To pass Part III and qualify for the fourth year, students must obtain an overall mark of at least 40%. Furthermore, they need to obtain a combined mark of at least 40% in their laboratory work, coursework and projects.

MEng Fourth Year

Students are assessed on the basis of the industrial placement, eight 2-hour examinations, one per course taken, with associated coursework for each course, a project outsourcing exercise, and an individual project:

Marks

Eight courses each with an examination (contributing 240) and coursework (contributing 30)	2160
Industrial Placement	100
Outsourcing Exercise	200
Individual Project	940
Total marks	**3400**

Honours Classification (All MEng programmes)

The marks for all components of the four years of the course are aggregated into an overall mark. The class of Honours awarded depends on this overall mark, with the proviso that candidates must normally have achieved at least 40% overall in Part IV and at least 40% in their individual project.

Students may then be offered a second chance at their final year. In appropriate circumstances the Aegrotat degree will be the only possibility other than failure.

In addition to these requirements, candidates are normally expected to successfully complete the MEng degree programme in four continuous years.

For each year, the total possible marks are:

Year 1 total	850
Year 2 total	1700
Year 3 total	1700
Year 4 total	3400
Total over 4 years	**7650**

The class boundaries are:

I	70%
II/1	60%
II/II	50%
III	40%

2. Joint Maths and Computing BSc/MSc

The means of assessment as the same as that described in for the Computing BEng/MEng (see above). The degree structures of BSc and MSci are as follows.

First Year

Students are assessed on Computing lecture courses on the basis of one 2 hour examination and 1 hour examination, relevant coursework (associated with their lecture courses), their online programming tests and their MatlLab group project. They are assessed on the Mathematics lecture courses on the basis of four 2 hour examinations, and relevant coursework and progress test (associated with their lecture courses).

Marks

One 2 hour Computing examination (each contributing ≈ 67)	133
One 1 hour Computing examination (contributing 67)	67
Programming and Data Structure	200
Four 2 hour Magthematics examination (each contributing 100)	400
Total Marks	800

Progression Requirements

In order to pass the Part I examination and qualify to progress to the second year, the candidate must have:

1. Achieved at least 40% in the Computing Unit MC178 composed of the two Computing examinations, aggregated with a ratio of 2:1
2. Achieved at least 40% in Programming and Data Structure unit
3. Achieved at least 40% in 3 of the four Mathematics half units

The pass mark for each written Computing examination is 30%. All written Computing examinations must be passed. From the 2008 entry, the minimum pass mark for each written examination will be increased to 40%.

The pass criteria for Computing unit MC178 is to have passed all the Computing examinations, to have achieved at least 40% of the weighted exam average, and to have achieved at least 40% of the weighted overall courses mark that include examination and coursework.

Supplementary Qualifying Tests

At the discretion of the Examiners, Supplementary Qualifying Tests may be offered to a candidate who marginally fails to achieve the conditions laid down for a pass in the Part I Examination.

Second Year

Students are assessed on the basis of five 2-hour Computing examinations, laboratory work and relevant coursework (both associated with their lecture courses), project work, and four 2-hour Mathematics examination, with relevant associated coursework:

Marks

Five two-hour Computing examinations (each contributing ≈ 66.7)	333.3
Laboratory work and Project work	66.7
Four two-hour mathematics examinations (each contributing 100)	400
Total Marks	**800**

Progression Requirements

The five two-hour Computing examinations and Laboratory/Project work are divided into two Computing Full Units. Unit MC271 is composed of two core Computing courses and the Laboratory/Project work, whereas Unit MC272 is composed of the three Computing courses, chosen from a list of five options. Each of the Mathematics courses is counted as half unit.

In order to pass the Part II examination and qualify to progress to the third year, the candidate must have obtained 3 Full Units from Computing and Mathematics overall.

To pass Computing Unit MC271, students must have:

a. Achieved an average of 40% in the exam component
b. Achieved 40% overall for the Unit including coursework.

To pass Computing Unit MC272, students must have:

- Achieved an average of 40% in the Computing examination component
- At most *one* fail (i.e. obtained less than 30%) for the examination component
- Achieved at least 40% overall for the Unit, including coursework

To pass a Mathematics half unit, students must have achieved 40% overall including examination and coursework.

In order to proceed to MSci3, candidates must normally have achieved an overall mark of 60% in both Mathematics and Computing.

BSc Third Year

Students are assessed on the basis of seven option assessments (one per course taken), each contributing 1 half unit, a group project and an individual project. The seven options have to comprise at least 2 and at most 5 in Computing, and at least 2 and at most 5 in Mathematics; they each involve a 2-hour written examination and associated coursework.
The group project and individual project are combined in the ratio 1:3 to form 1 half unit. This is weighted to have a maximum mark of 1.8 times that of a normal half unit (which is 100 marks).

Marks

Seven courses each with an examination and coursework	700
Software Engineering with Group Project	45
Individual Project	135
Total marks	**880**

BEng Honours Classification

The pass mark for each half unit is 40% (including examination and coursework).

Part I, II and III each contribute a maximum of 4 full units from Computing and Mathematics combined, making a total of 12 full units for the degree.

In order to be awarded a degree, students must normally have passed at least 9 full units. Students who have taken at least 9 units but have passed only 8 or 8.5 of them may exceptionally be awarded a Pass Degree.

Parts I, II and III are aggregated with the ratio 1:3:4.

The Computing marks for of the three years of the course are aggregated into an overall Computing; similarly for Mathematics marks. The two overall marks are then integrated into a single (joint) overall mark that defines the class of Honours awarded.

For each year, the total possible weighted marks are:

Year 1 total	800
Year 2 total	2400
Year 3 total	3520
Total over 3 years	**6720**

The class boundaries, based in the Mathematics scale, are:

I	75%
II/1	60%
II/II	45%
III	35%
Pass	30%

MSci Third Year

MSci students are assessed on the basis of eight option assessments (one per course taken), each contributing 1 half unit, a Computing group project and a Mathematics group project. The eight options have to comprise at least 2 and at most 6 in either Computing or Mathematics, and they each involve a 2-hour written examination and associated coursework.
The group projects contribute no units but carry marks equivalent to a quarter of a full unit in Computing and Mathematics respectively.

Marks

Eight courses each with a written examination and coursework	800
Software Engineering with Computing Group Project	50
Mathematics Group Project	50
Total marks	**900**

Progression Requirements

In order to proceed to Part IV students must have achieved at least 3 full units from Computing and Mathematics overall, and have gained at least 10 full units over the three years.

The pass mark for each half unit is 40% including examination and coursework.

MSci Fourth Year

Students are assessed on the basis of seven (overall) option assessments from each department, each contributing 1 half unit, and individual project. Each option assessment includes a 2-hour written examination and associated coursework. The individual project forms 1 half unit, and is weighted to have a maximum mark of 1.5 times that of a normal half unit.

Marks

Seven courses each with an examination and coursework	700
Individual Project	150
Total marks	**850**

Honours Classification

The pass mark for each half unit is 40%.

Parts I,II, III and IV each contribute a maximum of 4 full units from Computing and Mathematics combined, making a total of 16 full units for the degree.

In order to be awarded a degree, students must normally have passed at least 12 full units.

Students who have taken at least 12 units but have passed only 11 or 11.5 of them may exceptionally be awarded a Pass Degree.

Parts I, II, III and IV are aggregated with the ratio 1:2:3:4.

The Computing marks for of the four years of the course are aggregated into an overall Computing mark; similarly for Mathematics marks. The two overall marks are then integrated into a single (joint) overall mark that defines the class of Honours awarded.

The marks for all components of the four years of the course are aggregated into an overall mark. The class of Honours awarded depends on this overall mark, with the proviso that candidates must have achieved at least 40% overall in Part IV and normally at least 40% in their individual project.

In addition to these requirements, candidates are normally expected to successfully complete the MSci degree programme in four continuous years.

For each year, the total possible marks are:

Year 1 total	800
Year 2 total	1600
Year 3 total	2700
Year 4 total	3400
Total over 4 years	**8500**

The class boundaries, based on the Mathematics scale, are:

I	75%
II/1	60%
II/II	45%
III	35%

3. MSc in Advanced Computing Degree

In order to pass the MSc the students have to satisfy the following requirements:

1. An average mark of at least 50% on the 8 written examinations. The mark of one ISO is considered as the mark of one written examination, as is the mark obtained for the seminar course.
2. A mark of at least 30% on each of the 8 written examinations. Again an ISO and the seminar course are considered as one examination, each.
3. An average mark of at least 50% on the continuous assessment. The continuous assessment is made up in (roughly) equal measures from (a) the laboratory tests, (b) the laboratory (non-test) assessed work, (c) all other courseworks. The coursework for each lecture course contributes equally to the coursework component.
4. A mark of at least 30% on each component ((a), (b), (c)) of the continuous assessment.
5. A Pass grade on the individual project.

In order to be considered for the MSc with distinction the students have to satisfy the following requirements:

1. An average mark of at least 70% on the 8 written examinations. The mark of one ISO is considered as the mark of one written examination, as is the mark obtained for the seminar course.
2. A mark of at least 30% on each of the 8 written examinations. Again an ISO and the seminar course are considered as one examination, each.
3. An average mark of at least 70% on the continuous assessment. The continuous assessment is made up in (roughly) equal measures from (a) the laboratory tests, (b) the laboratory (non-test) assessed work, (c) all other courseworks. The coursework for each lecture course contributes equally to the coursework component.
4. A mark of at least 30% on each component ((a), (b), (c)) of the continuous assessment.
5. A Distinction grade on the individual project.

In order to be considered for the MSc with merit the students have to satisfy the following requirements:

1. Pass the MSc without DISTINCTION.
2. An average mark of at least 60% on the 8 written examinations. The mark of one ISO is considered as the mark of one written examination, as is the mark obtained for the seminar course.
3. A mark of at least 30% on each of the 8 written examinations. Again an ISO and the seminar course are considered as one examination, each.

4. An average mark of at least 60% on the continuous assessment. The continuous assessment is made up in (roughly) equal measures from (a) the laboratory tests, (b) the laboratory (non-test) assessed work, (c) all other courseworks. The coursework for each lecture course contributes equally to the coursework component.
5. A mark of at least 30% on each component ((a), (b), (c)) of the continuous assessment.
6. A Merit grade on the individual project.

4. MSc Computing Science Specialist Pathway

***In order to pass the MSc students have to satisfy the following requirements:**

1. An average mark of at least 50% on the 8 written examinations.
2. A mark of at least 30% on each of the 8 written examinations.
3. An average mark of at least 50% on the continuous assessment. The continuous assessment is made up in equal measures from (a) the laboratory tests, (b) the laboratory (non-test) assessed work, (c) all courseworks, (d) the team programming project. The coursework for each lecture course contributes equally to the coursework component.
4. A mark of at least 30% on each component ((a), (b), (c), (d)) of the continuous assessment.
5. A Pass grade on the individual project.

***In order to be considered for the MSc with DISTINCTION students have to satisfy the following requirements:**

1. Pass the MSc
2. An average mark of at least 70% on the 8 written examinations.
3. An average mark of at least 70% on the continuous assessment.
4. A Distinction grade on the individual project.

***In order to be considered for the MSc with MERIT students have to satisfy the following requirements:**

1. Pass the MSc without DISTINCTION.
2. An average mark of at least 60% on the 8 written examinations.
3. An average mark of at least 60% on the continuous assessment.
4. A Merit grade on the individual project

5.4 Progression table

[Please complete Appendix B, tables 5.4]

5.5 Student support

Personal Tutors

All students are allocated a personal tutor for the duration of their studies. The role of the personal tutor is to support:

1. Academic Development. This involves providing input in the following ways:

Study skills: Advise students on drawing up study plans, learning strategies, time management, note taking in lectures, how to research a topic and write a report. Information on study skills is issued in the 'Learning to Learn' booklet which each student receives early in their first year of study.

Exam preparations: Advise students on preparing for assessment and examination. The College runs special Exam Stress Workshops at the Health Centre; students who report exam stress problems will be advised to attend these workshops either by their Personal Tutor or the Senior Tutor.

Examiners meeting: Personal Tutors may be asked to comment on their tutee's performance, particularly if there are any special circumstances that need to be considered, at departmental examiners meetings.

Academic progress: Assist students to develop responsibility for their own academic progress. Monitor and review student academic progress and provide reports on this to Senior Tutor and departmental files where requested.

2. Professional Development: This in part overlaps with and builds on aspects of the Personal Tutor's role in student academic development.

References: Students usually name their Personal Tutor as a referee on job applications and/or applications for further study, and this can continue long after a student has graduated. When writing references Personal Tutors will make sure they are factually correct and any opinion expressed in them could be justified on reasonable grounds if ever questioned.

Personal development plans: Students can discuss their personal development plans as it helps them take charge of their own educational, personal and career development by reflecting on what and how they are learning.

Career planning: Personal Tutor will often advice about selecting option courses and on choosing a career direction. Similar advice will be offered on suitable vacation work.

Curriculum Vitae: Some students might ask for advice on preparing a CV.

3. Pastoral Care: Students are able to discuss with their Personal Tutor any problems they might have, including personal problems. Personal tutors give students compassionate assistance and if appropriate give advice, but will refer serious cases to the Senior Tutor.

In addition, personal tutors play a major role in identifying "At Risk" Students, who they will normally refer to the Senior Tutor. Absence, e.g. due to illness: forced absence, or requests for absence from the student are also referred to the Senior Tutor.

Senior Tutor

The Senior Tutor has overall responsibility for the academic and pastoral care of undergraduate students in the department. The Senior Tutor carries out the following range of activities:

* Ensure that each undergraduate student is allocated a personal tutor and that the personal tutorial system works effectively, e.g. that personal tutors meet regularly with their tutees.
* Liaise with the Director of Undergraduate Studies to ensure that the pastoral and academic roles of personal tutors fully support the degree programmes.
* Liaise with personal tutors to monitor the academic progress of students and take action where necessary whey there is cause for Concern.
* Liaise with personal tutors to monitor student attendance.
* Liaise with the College Disabilities Officer and the Registry to ensure that students with special educational needs are advised and assisted appropriately.
* Liaise with Registry to implement the withdrawal procedure where there is no improvement over an extended period.
*Advise on individual student problems as referred by personal tutors or directly to students as an alternative to the personal tutor.
* Refer students to other sources of help in the College as appropriate and liaise with these other agencies.
* Inform Boards of Examiners of extenuating circumstances affecting in students performance.
* Advise students who fail examinations and are required to withdraw from the College
* Advise students wishing to withdraw from the College or transfer from another department.
* Maintain accurate and comprehensive student records for the Department, liaising with Registry as appropriate.
* Provide regular reports on students as required to LEAS and other funding bodies.
* Provide references for students, liaising with personal tutors as necessary.
* Serve as member of Staff-student Committee.
* Serve as member of other departmental/Faculty/College committees concerned with student learning and welfare as appropriate.
* Serve as member of College Disciplinary Committees or Appeals
* Administer nominations for prizes and scholarships.
* Take responsibility for departmental academic procedures, such as the granting of extensions for submission of coursework.
* Take responsibility for dealing with examination irregularities, including plagiarism.
* Deal with disciplinary cases, liaising with College Tutors, Registry and other sections of College as necessary.

Small group tutorial support (undergraduate degrees only)

Students are put into tutorial groups of six by combining the personal tutees of two members of the academic staff. Those staff form the academic tutors for weekly tutorials, one specialising in programming and the other in logic and discrete maths. The same group of students also attends a series of tutorials in Mathematical Methods (continuous mathematics) in the first term.

In the first year, the group has three tutorials per week, to support (1) programming, (2) logic and discrete maths and (3) mathematical methods. The students' prior programming experience is taken into account when allocating the groups: students with similar backgrounds are placed together and their experience and ongoing performance is taken into account when conducting weekly tutorials. The weekly tutorials play a major role in helping the tutor to get to know their own personal tutees. Students keep the same personal tutor throughout the course.

Undergraduate teaching assistants (UTAs) are paid to mark weekly submissions in programming and logic and discrete maths, and lead the tutorial discussions in collaboration with the academic tutor. These exercises are unassessed, but students are told that they are otherwise compulsory. Students who fail to submit an exercise will be encouraged to catch up and submit after the deadline by the academic tutor/UTA. Students who display a pattern of non-submission are referred to the Senior Tutor. Where necessary, students will be given additional support by either the UTA or academic tutor.

Tutorials in mathematical methods are run by a single academic or by a suitably qualified RA or PhD student.

In the first year attendance at the small group tutorials is recorded on CATE and is visible to the student and the Senior Tutor. After the first year, students and personal tutors are asked to meet twice each term, and reminders are sent by the Senior Tutor.

Special needs provision

Provision for students with disabilities is arranged by the Disabilities Officer in consultation with the College Disabilities Officer under the SENDA guidelines. This includes teaching and examination arrangements. Students are encouraged to access the Disabled Student Allowance where appropriate, or otherwise are supported by the Department.

Students that are likely to require additional support through disability are identified during the admissions process and receive special consideration by the Senior Tutor. Where an interview is possible the Senior Tutor conducts the interview in part to acquire an accurate picture of the applicant's likely needs. The Senior Tutor arranges appropriate support before they arrive, for these students, and for any others who respond to an invitation made with the August admissions letter to declare special needs.

Individual Projects (HNC/HND/BEng/MEng and MSc)

6.1 Project Selection

[Give details of how and when the list of project titles are offered to students; how the selection is effected and conflicts resolved]

The department has a web based project administration system administered through CATE. This provides staff and students with access to a database of proposals and individual student selections/preferences. Within the project administration system, they can:

- Search the proposals database
- Add their own proposal to the database
- Select a shortlist of preferred projects prior to allocation
- Access the project allocation table
- Check that project review reports, and final assessment forms, have been completed by the first and/or second makers

If the students have their own idea for an individual project it is their responsibility to find a member of staff who both approves of the proposed programme of work and is willing to supervise it. They first add their proposal to the database, and then discuss it with prospective supervisors. The Project Coordinator will advise students on a suitable supervisor.

Before a student can shortlist a staff-proposed project they must have met with the proposer to discuss the project. The member of staff is required to sign to the effect that they have met them. Once the student has selected a project from the database the proposer will be able to see from their administration page that the student has done so; they will also have the option to sign the student off electronically. Once the supervisor has done this the student will then find that they can add the project to a final shortlist of up to three projects. An electronic signature is completely non-binding - it is merely an acknowledgement that they have met the member of staff. The member of staff has the ability to express their own willingness to supervise each student who has selected one of their projects, or who has chosen them as a potential supervisor for an own proposal; this information is not visible to the students.

The administration system requires students to specify either one of their own proposals, or one preferred project and two others from staff-proposed projects. The projects are assigned by taking into account both student and staff preferences. This is done manually as there are many natural pairings and individual requests from both staff and students which would be missed by an automated system.

The administration system is normally made available at the following times:

BEng, MEng, BSc: the start of the Autumn term
MSci: the end of April
MSc: the end of January

The deadline for shortlists is normally:

BEng. MEng and BSc: the last week of October
MSci: the end of May
MSc: the beginning of March

The allocation process usually takes around one week, although for MSc students there is less urgency as the students do not begin their projects until after the examinations in May.

A limit of four undergraduate students and four MSc students per member of staff is normally set.

When processing student preferences, the student's first choice project (or own proposal) is considered first. Own proposals can nearly always be allocated to the nominated supervisor. Also, it is usually possible to pair up most students whose first-choice project is with a supervisor that has expressed a positive preference to supervise them. If a student's first choice cannot be assigned, their second choices will be considered likewise.

Where a supervisor is already supervising their quota it may, in some cases, be allocated to another member of staff who is willing to supervise it. Students that cannot be allocated in this way are allocated in a second round, where they are invited to modify their preferences in the light of the available projects/supervisors.

The objective of the allocation process is to ensure that students are allocated projects that they are suited to academically, and that the supervisor is happy to supervise them. Naturally, in order to strike a balance, it is common for supervisors to take a mix of students that they particularly want to supervise, and those that they might otherwise rather not.

6.2 Staff supervision and Management of Student Projects

[Give details of how the students' work-plan is managed, including any formal and informal supervision]

The students arrange regular meetings with their supervisor - typically once every one or two weeks, but more frequently as the project nears completion. The supervisor monitors the project closely to ensure that realistic milestones are set and met, to ensure that there are always fallback positions.

Students who fall out of contact for any reason with the supervisor are referred to the project coordinator and Senior Tutor. The Senior Tutor contacts the student to identify the problem and will liaise with the coordinator and supervisor to put in place a plan of remedial action where appropriate.

The supervisor will generally provide more intensive supervision as the project nears completion, particularly in helping them to prepare the final report and presentation.

During the summer term, all project students are given lectures on report writing and presentation skills tailored specifically for individual projects.

Undergraduate Student Review

All undergraduate students are required to have their projects reviewed by a second marker at around the mid-point (early February) to ensure that they are progressing satisfactorily. The second marker is chosen by the supervisor. One of the objectives of the review is to ensure that the student has a plan for the completion of the project, but they will also provide technical advice and input.

After the review the second marker submits a short status report to CATE. The students are able to see from the allocation table whether this has been done and both the project coordinator and Senior Tutor can access the individual reports. CATE provides a 'traffic light' system for highlighting problem students - students who are flagged 'red' are brought to the attention of the project coordinator who immediately contacts the first and second marker to request special action be taken to put the student on track. The review process often has the effect of kicking flagging students into action. Where that is not the case the recommendation is for the second marker to conduct a second review, after a specific work plan has been put in place. All students are required to undertake the review, even though it is unassessed. Any students who miss the deadline are referred to the coordinator and Senior Tutor and are immediately contacted. It is usually the case that uncompleted reviews are associated with students who have essentially dropped out.

6.3 Project Planning and Management

[Give details of how the students are expected to manage their projects]

MEng students are required to submit an “Outsourcing Report” at the start of the spring term. This contains a detailed background section, a specification for the project and a schedule for its completion. This is assessed by the supervisor who provides feedback to the student. MSci students undertake a similar exercise except their projects are assigned in May, with the report due at the start of the autumn term.

All undergraduate students are required to detail the project specification, progress and completion plan during the project review in February (see above). Project reviews are not formally assessed but the student’s progress and planning are taken into account in the final management component of the assessment, (see below). Failure to complete the review on time will also be reflected in the management mark.

All project students are expected to:

* Arrange meetings with prospective supervisors prior to the deadline for preferences and ensure that they are signed for
* Make contact with their supervisor after the project has been allocated and set up regular meetings
* Produce a specification and plan for the project, in the form of an outsourcing/background report (for MEng/MSci)
* Attend all meetings as planned and implement, and report back on, recommended actions
* Arrange a project review with the second marker and ensure, through CATE and in conjunction with the second marker, that the review report is completed by the deadline (undergraduates only)
* Liaise with the supervisor on the recommendations of the review (undergraduates only)
* Complete a substantial project report by the specified deadline
* Plan, prepare and deliver a presentation (demonstration in the case of MSc students) summarising the project and its findings
* Submit electronic versions of their project report and a complete project archive to the CATE system, at the end of the project
* Notify the supervisor or second marker of any technical problems with the project
* Notify the project coordinator of any problems with supervision

6.4 Marking and Moderation

[Give details of how project marks are allocated and moderated and provide a list of project titles and marks for the last three years for all students grouped by different awards]

1. Undergraduate Students

Project Assessment

The initial assessment of the project is undertaken by the supervisor and second marker and then completed by an assessment team which is made up by supervisors and second markers of other projects in the same team. All team members attend the presentations of all students in the same team and agree a team mark.

Each presentation is 40 minutes long, including a demonstration where appropriate and questions. The presentation is not assessed separately but is a compulsory component of the project. The assessment team will not allocate a mark for a project unless there had been a formal presentation. The objective of the presentation is to find out exactly what the students have done and to ensure that they get an accurate mark that is consistent with other projects in the same team. A final moderation process checks consistency across the different teams.

There are four components to the assessment:

Background Preparation This component assesses the way the student arrived at their initial project specification, work programme and list of objectives. It particularly addresses the background research undertaken and the manner in which the approach and programme of work fits in with the current state-of-the-art. It is worth 15% of the final mark.

General Competence This assesses the students overall approach to the project and his or her ability to overcome the inevitable complications which arise. The specific areas in which the student will be assessed are management and organisation, reliability and punctuality, overall technical competence, and the student's individual contribution to the project. This part of the assessment is worth 25% of the final mark.

Technical achievement This assesses the main technical output from the project. It addresses specific issues such as the design, correctness, elegance and usability etc. of the final product and the significance of the work in relation to the state-of-the-art. It is worth 30% of the final mark.

Report This part of the assessment is worth 30% of the final mark.

The assessors are given the following checklist to help the assessment of each category, taking into account the difficulty of the project.

Background
Did the student do their homework? Are they aware of existing work in the area? Have they made it clear how this informs their project work? Do they cite the relevant papers/documents/reports/books/urls in the report? Do they know why they're doing the work (motivation)? Do they know their target audience or user?

Competence
Did they study alternative approaches before embarking on the main activity? Did they use the right tools for the job? Did they show the ability to work independently? Did they show the ability to make things work without needing constant assistance? Did the ideas (not necessarily the ideas in the original proposal) come from them? Did they manage their time well? Did their project review go smoothly?

Achievement
Were the major goals met? Did they get further than you might normally have expected? Is the output fully functional/correct? Is the project output technically sound? Is the work properly evaluated (e.g. functionality/performance testing, discussions, tables, graphs, subjective/objective comparisons, user surveys)? Is it (potentially) useful to the target audience? Could it be published in some form?

Report
Was it handed in on time? Does it contain the main components you expected (e.g. abstract, introduction, background, main body, evaluation, conclusion, bibliography)? Is the bibliography correctly cited? Is it well laid out? Is it well written? Is it largely free of typos, spelling mistakes and grammatical errors? Are the contributions clear? Does it describe the motivation for the work? Does it set the scene well in terms of introduction and background? Can you follow what they have done, how and why by reading the main body? Are any results well explained and easy to interpret? Are the strengths and weaknesses presented appropriately? Are there meaningful conclusions and is there a sensible programme of future work? Does it have an appropriate level of detail and is it of an appropriate size? Does the report cite the appropriate literature (are there important sources that are *not* cited)? Are the sources correctly cited in the bibliography?

Grade Boundaries

The grade boundaries set for individual projects are roughly in line with those of the overall degree programme, that is:

70% - I
60% - II/I
50% - II/II
40% - III

To help with project marking, assessors are given the following guidelines and criteria for each of the above classifications, including an additional classification for 'Distinguished' projects. This information proves particularly useful when there is substantial disagreement over a project mark.

Remark: MEng vs BEng: The expectations of a BEng project differ slightly from that of an MEng project and this is taken into account when allocating marks. When compared with the average BEng student, the average MEng student will be expected to demonstrate:

1. A greater degree of originality and initiative.
2. A deeper understanding of the relevant state-of-the-art through research.
3. Superior practical and organisational skills, as a result of their additional experience, and the six-month industrial placement in particular.

For simplicity there is a single set of guidelines (below), which is targeted at MEng students, although the 'Pass' criteria (30-39%) are only applicable to BEng. When marking BEng students, the above distinction between BEng and MEng expectations should be taken into account. For example, a BEng project that fails to satisfy all the criteria for a given classification may still be awarded a mark within that classification, provided the other criteria are broadly met.

Distinguished project/potential prize candidate (80% - 100%)
As per a first (below) but in addition the project must contain a substantial and significant original contribution *from the student*. This should be publishable in some form, or be potentially marketable. There should be no substantial weaknesses beyond those reasonably expected given the project timescale. The project should display a comprehensive understanding of the relevant related

work and there should be a detailed evaluation of the project's contributions with respect to this. All projects in this category will be published on the Department's web pages as a Distinguished Project provided the report carries a mark of at least 24/30.

First class (70% +)
The project should display significant breadth and depth which covers some new ground, e.g. by developing a complex application which does not already exist, or by enhancing an existing application, method or theory in a novel and interesting way. The project must contain significant elements of risk and any associated problems that arise should be largely, or completely, overcome using tools and/or techniques appropriate to the job. The work should be well evaluated and it should be clear what the contributions are in relation to the state-of-the-art.

Upper second (60% - 69%)
The project should display both breadth and depth and should demonstrate a high level of individual technical competence and professionalism, although the final output might lack elements of novelty, sparkle or completeness. There should be at least a moderate level of risk in the project's objectives, in that the project was not completely specified at the outset or that the work presented some difficult challenges that needed to be overcome. All implementation work should be solid in terms of design and correctness, although there may be scope for improvements.

Lower second (50% - 59%)
The project should display an ability to solve well defined, i.e. moderately low-risk, problems competently. However, the student may lack ambition or drive and may prefer to shy away from, or fail to overcome, the more difficult challenges associated with the problem area. The resulting software/hardware should be broadly functional, although it may be limited in scope.

Third (40% - 49%)
As for a lower second, except that the project may have more significant deficiencies, e.g. in scope, implementation, project management, write-up etc. Students who produce a reasonable final product, but who struggle to make things work without ongoing help from others, may also fall into this category.

Pass (30% - 39%, applying to BEng projects only)
The project must contain some recognisable successes, although the scope may be very limited with substantial parts of the project being incomplete or not addressed at all.

2. Postgraduate Students

MSc students begin their projects in May and complete in the middle of September. There is no interim project review. Second markers are allocated by the supervisor, usually as the project nears completion. Assessment is undertaken by the supervisor and second marker and is on the basis of a written report and demonstration. The supervisor and second marker agree a nominal percentage mark using the MEng assessment criteria (see above). Projects achieving 70% or more are marked as 'Distinction' projects. From this year, projects achieving marks between 60% and 69% will be awarded 'Credit' status. The pass mark is 50%.

6.5 Implication of project failure

[State the implications for the award of a degree to a student who fails their individual project at their first attempt].

MEng students must achieve a minimum of 40% in the individual project in order to qualify for an MEng (Honours) degree. BEng students who achieve less than 30% in the individual project are not eligible for the award of Honours.

These requirements hold regardless of their performance in the other components of the degree.

If a pass mark is not obtained by both undergraduate and postgraduate students at the first attempt on the individual project the student concerned may, if the examiners deem there to be reasonable mitigating circumstances, be allowed to resubmit their project once in the following year. Normally, a student who has to resubmit their project cannot have accredited status to their degree.

Group Projects (MEng)

6.6 Group Project Selection and allocation

Students are required to complete a group project in the third year of their study. Students register their team and choose a possible project via CATE. Normally a typical group consists of five students. Students access a “Projects List” via CATE where supervisors have detailed possible projects they are willing to offer. The project list is updated to show which students have been allocated which project. This task is usually completed by week two of Term 1 for undergraduates, and the last week of Term 1 for MScs.

6.7 Staff supervision and Management of Student Project

1. Undergraduate Students

Each group is allocated a supervisor who meets regularly with the students, initially as a group, but this may later be with selected individuals, e.g. the project leader.

There is a set of deliverables that serve to guide the management of the group project:

1. Students register their team and choose potential projects on CATE (Continuous Assessment Tracking Engine), usually by the middle of October. Projects are allocated immediately after the deadline.
2. Report One: 'Project Inception' is due one week after allocation
3. Details of any special Project Resources requirements are due by around the first week of November
4. Report Two: 'Project Progress & Revisions' is due by the third week of November
5. Students attend a Technical Writing lecture at the end of November
6. Students attend a Technical Speaking lecture in the first week of December
7. Report Three: 'Software Validation' is due in the first week of November

By early December, students will normally have completed their project to specification. Any remaining time they have left is spent completing the Final Report and preparing the presentation and demonstration.

8. The Final Report is submitted in early January
9. Students prepare and deliver a presentation and demonstration in the first week of the Spring term

2. Postgraduate Students

MSc group projects are undertaken in Term 2. Each group has a supervisor, as for undergraduates (see above) and the supervision arrangements are the same. Each group is required to submit a single final report and give a presentation at the end of Term 2.

6.8 Project Planning and Management

In each group, one person in the group must be elected as group leader and another as secretary by the members. It is quite common for the group leader and secretary to have fewer coding/testing responsibilities than the other members. The group leader decides what route to take when there are different opinions among group members. Also, it is the group leader's responsibility to ensure that group members deliver what required of them and that they are on time. Normally, the group leader is in charge of the integration process when the various members' contributions are moulded into a single working package.
The secretary is responsible for the proper keeping of a log-book, for records of the meetings and attendance of members and for integrating documentation (usually provided by all members) into professional looking reports. Each member of the group keeps an individual record of how much time they spent on the project and what they accomplished, each week. The actual time spent per week for each member and work carried out are recorded in the log-book.

Normally each group will have a minimum of two group meetings per week. These meetings are used to agree what each member's tasks will be for the next period and how previous tasks were (or were not) accomplished.

6.9 Marking and Moderation of Group Project

Group Project Assessment

Project assessment is conducted by the supervisors after the final report is submitted.

The assessment is according to three mainly equal areas:
Group Organisation, Planning and Management
Documentation, Presentation and Demonstration
Substance and Quality of Work Done

The assessment of Reports One (30%), Two (30%) and Three (40%) is undertaken by the coordinator of the Software Engineering – methods course and his helpers, according to the evaluation criteria outlined above. To foster incremental feedback, the aim is to return marks for the Reports within 7-10 days after their respective submission deadline.

The assessment of the Final Report, Presentation, Demonstration, and deliverables is undertaken by each group's supervisor. He or she assigns a preliminary mark and then teams of supervisors (typically four) attend the presentations of all groups they are supervising (e.g. four), after which the marks are moderated to ensure consistency.

6.10 Implication of Group project failure

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If an MEng student fails the group project, they are normally required to transfer to the BEng programme. In all other cases there is no formal requirement to pass the group project.

SECTION 7 Staffing

7.1 Student Counsellor

Mrs Margaret Cunningham (Senior Tutor)

7.2 Staff recruitment, development and training

The Department recognises the importance of training and development for all staff and actively encourages staff to attend relevant personal development courses run by the College. Researchers who teach for example have to undergo departmental training and induction. Probationary lecturers are expected to have completed five mandatory courses or the Imperial College Certificate of Advanced Study in Learning and Teaching (CASLAT) by the end of their probationary period. Half of the Teaching Associates in the Department have also undertaken the CASLAT certificate. Everyone who provides teaching support undergoes our departmental teaching induction. The Department carries out peer review of teaching regularly. It also runs a full appraisal scheme in line with College directives. New Staff are appointed a mentor. All academic staff are expected to maintain an active research programme.

To assist new academic members of the Department various internal web pages are maintained with information on teaching duties, departmental structure, workshops etc. (see https://www.doc.ic.ac.uk/internal/problecturers/index.html). Other web pages are maintained with information on a wide range of teaching-related topics (see https://www.doc.ic.ac.uk/internal/teachingsupport/index.html).

All these arrangements provide effective support and opportunities for student progression and achievement.

7.3 Use of teaching fellows, postgraduate tutors, demonstrators and visiting staff

The Department places great emphasis on its teaching and believes that as many staff as possible should have some role in supporting students and their learning. All research staff are expected to undertake certain teaching duties. This usually includes Research Associates and Research Assistants. Nearly all lectures within the Department receive some teaching support. Support staff can help as tutorial helper, give guest lectures on specialised topics that related to their own area of expertise, or can help with the setting and/or marking of assessed coursework. Most will be expected to invigilate exams.

Teaching Associates are specifically employed to carry out teaching duties and to coordinate and supervise lab work. Most Teaching Associates will deliver lectures in varying number. In some cases they deliver and examine whole courses.

Visitors to the Department often give seminars and our students are encouraged to attend these as much as possible. Many of these outside talks from visiting speakers are organised by our departmental student society called DoC SoC. Regular visitors are sometimes invited to deliver guest lectures (see Section 4.6.3 above).

7.4 Departmental technician/academic staff ratio

Technical Support Staff = 2, Computing Support Group Staff = 9, Teaching Associates = 8, Academic Staff = 56. Therefore technical support staff to academics = 19 to 56 = ratio 1:3 Approx

7.5 Departmental administration staff/academic staff ratio

Secretarial Support Staff = 9, Administrative Support Staff = 5, Academic Staff = 56. Therefore administrative staff to academic staff = 14 to 56 = ratio 1:4

7.6 Student/Staff Ratio (SSR)

There are 437 undergraduate Computing students in total; the ratio of academics to undergraduate Computing students is approximately 1:8

There are 81 MSc students in total; the ratio of academics to MSc students is approximately 1:1.4

The ratio of all students to academics is approximately 1:9

7.7 Academic staff

1	2	3	4
Full name and title	Present post and date of joining the institution	Area of expertise and Senior Departmental roles/responsibility	Professional Activity, e.g. membership of professional bodies, external examiner, ,QAA reviewer etc
Dr Jeremy Bradley	Lecturer	High Performance Computing. Undergraduate Admissions Tutor and Schools Liaison Officer	2004-2007 EPEW Programme Committee member. 2006 Member of EPSRC ICT Final Report Panel

Dr Krysia Broda	Senior Lecturer	Logic and Artificial Intelligence. PhD Admissions Tutor Coordinator of Postgraduate Studies	IFIP AI 2006-07: 'Artificial Intelligence in Theory and Practice', part of the 19th IFIP World Computer Congress. Acquired MBCS and CITP (Chartered IT Professional) status.
Prof Keith Clark	Professor	Logic and Artificial Intelligence. Alumni Coordinator.	Association of Logic Programming: Designated Founder and Pioneer of Logic Programming. Invited Keynote Speaker at Applied Computing, Salamanca, Feb. 2007: Contract Related Agents. Editorial Board, Journal Co-operative Information Systems.
Dr Simon Colton	Senior Lecturer	Bioinformatics. PhD Admissions Tutor, Deputy Undergraduate Admissions Tutor	Chair/co-chair of 7 international workshops, and the programme chair of the AISB convention. Special issue editor of the Machine Learning Journal. Committee membership for the UK AISB society (2001 - 2007) & guest editor AISBJ Journal
Mrs Margaret Cunningham	Senior Lecturer	Senior Tutor & Disabilities Officer	
Prof John Darlington	Professor	High Performance Informatics. Director London e Science Centre, Head of Section	Key note speaker Summer Conference on Topology and its applications 2004
Dr Andrew Davison	Lecturer	Visual Information Processing	EPSRC Advanced Research Fellowship 2002-07 Dyson Ltd Consultant. Programme Committee ICCV 2007, Robotics: Science and Systems 2005--2007.
Prof Sophia Drossopoulou	Professor	Theory of Computational Systems (THEORY)	Program Committee Chair for European Symposium on Programming (ESOP) 2008 Associate Editor in Chief IEEE Software Member of the ESPRC College January 2006 – December 2010 2007 WOSP Publicity Chair and Programme Committee Member
Dr Naranker Dulay	Senior Lecturer	Distributed Systems Engineering	Delegate, British Council IT Mission to India, May 2007. Programme Committee: Middleware 2007, 8th Intl Middleware Conference, Orange County, USA, Nov 2007. Programme Committee: MMM-ACNS 2007, Intl Conf Mathematical Methods, Models and Architectures Programme Committee: AMACS 2007, Workshop on Adaptive Methods in Autonomic Computing Systems, Florida, USA. June 2007.
Prof Abbas Edalat	Professor	Theory of Computational Systems (THEORY) Head of Section	Member of Editorial Board of Mathematical Structures in Computer Science 20O0-2OO7 Guest Editor Special issue on Domain Theory, Mathematical Structures in Computer Science, volume 14,2004 A Continuous Derivative of Real Functions, Invited article in New Computational Paradigms, Changing Conceptions of What is Computable,

Prof Susan Eisenbach	Professor	Distributed Systems Engineering Director of Studies	Co-Editor-in-Chief of IET Software. Member of Swedish Research Council Computer Science Board. Fellow of the British Computer Society Member of editorial board for the Journal of Object Technology. Member of Victoria University of Wellington Advisory Board.
Dr Anthony Field	Reader	Deputy Director of Studies, Undergraduate Studies Coordinator, Undergraduate Projects Organiser	PC Co-chair, International Conference on Modelling and Simulation of Computer and Telecommunication Systems (MASCOTS), 2007. Awarded Envision's prestigious inaugural Award for Teaching Excellence in Engineering Education. CEng and Member of IET.
Dr Philippa Gardner	Reader	Theory of Computational Systems (THEORY)	RAE/Microsoft Senior Research Fellowship. Invited lecture course on `Local Reasoning about Data Update' at the PhD summer school in 2005 associated with the EU Working Group APPSEM
Prof Duncan Gillies	Professor	Visual Information Processing ISO Coordinator	International Editorial Board Member, Machine Vision and Graphics Journal (since 1994)
Prof Yike Guo	Professor	Parallel applications and network computing Director of Data Mining Technical Director of ICPC	Editor Journal of Computational Bioinformatics Editor Journal of System Biology Editor Journal of Computational Management Science Invited Speaker and Scientific Committee in Grid@Asia Finalist THES award
Prof Chris Hankin	Professor	Quantitative Analysis and Decision Support Deputy Principal of the Faculty of Engineering	Editor-in-Chief ACM Computing Surveys (April 2007-March 2010) Chair ESOP Steering Committee (2006 --) Member of Advisory Board, Institute for Informatics and Mathematical Modelling, Danish Technical University (2006-2008) PC Chair Static Analysis Symposium (2005), SAS PC (2001-2007)
Prof Peter Harrison	Professor	High Performance Informatics Mathematics Coordinator	Editor, Performance Evaluation Journal. Invited keynote at Performance Modelling, Engineering and Optimisation, IPDPS, March 2007.
Prof Ian Hodkinson	Professor	Logic and Artificial Intelligence. Post Graduate Senior Tutor	Editor, Algebra Universalis (1999-) Plenary talk, British Logic Colloquium, Oxford, September 2006 This is the UK's premier conference for all aspects of logic, held annually. Invited talk, Advances in Modal Logic (Toulouse, Oct 2002). AiML is the main world organisation for developments in modal logic. See http://www.aiml.net/ Co-chair, program committee of Advances in Modal Logic 2006, steering committee 2004-12

Dr Christopher Hogger	Senior Lecturer	Logic and Artificial Intelligence. First Year Coordinator	Co-chair, program committee of Advances in Modal Logic 2006, steering committee 2004-12 Conference Co-Chair, Int. Conf. on Computational Intelligence and Intelligent Systems [ICCISS-2007], London, UK, 2007. Programme Committee Member, Int. Conf. on Computational Intelligence, Man-Machine Systems and Cybernetics [CIMMACS-05],
Dr Michael Huth	Reader	Quantitative Analysis and Decision Support Third Year Coordinator	Co-chair 13th International Conference on Tools and Algorithms for the Construction and Analysis of Systems (TACAS'07), co-edited Springer LNCS 4424, 738 pages, March 2007 Steering Committee Member of the European Joint Conferences on Theory and Practice of Software (ETAPS), October 2006 - September 2007 Guest Editor Vol. 9, No. 1, February 2007, Special Section on Advances in Automated Verification of Critical Systems International Journal on Software Tools for Technology Transfer (STTT) Programme Committee Member of TACAS 2004 - 2008,
Mr James Jacobson	Lecturer	MSc Admissions Tutor, MSc for Industry Course Coordinator.	
Prof Paul Kelly	Professor	Head of the Software Performance Optimisation research group. Deputy Senior Tutor	PC Co-chair, International Conference on Modelling and Simulation of Computer and Telecommunication Systems (MASCOTS), 2007. Invited address at the 2006 PASTA (Process Algebra and Stochastically Timed Activities) Workshop. PC Co-chair, International Conference on Modelling and Simulation of Computer and Telecommunication Systems (MASCOTS), 2007. PC member, WOSP (Workshop on Software Performance), 2007
Dr William Knottenbelt	Senior Lecturer	High Performance Informatics Industrial Liaison Officer, Deputy MSc Computing Course Coordinator,	Business Fellow in the London Technology Network International Conference on Quantitative Evaluation of Systems (QEST 2007) Tools Chair Invited lecture on “Tackling Large State Spaces” at School on Formal Methods (SFM-07), Bertinoro, Italy May 2007. Program Committee Member for MASCOTS 2007, PDMC 2007, ICSEA 2007, SMCTools 2007, PMEO-PDS 2007, PAEWN 2007, ADVCOMP 2007. Winner of the Engineering Teaching Prize from Royal Academy of Engineering
Prof Jeff Kramer	Professor	Distributed Systems Engineering Dean of Engineering	2006 Editor-in-Chief of IEEE Transactions on Software Engineering (IEEE TSE) FACM 2007 Awarded Fellowship of the City and Guilds of London Institute.

Mr Frank Kriwaczek	Lecturer	Logic and Artificial Intelligence.	
Dr Daniel Kuhn	Lecturer		Member of the program committee of the Computational Management Science Conference 2008 at Imperial College, London Principal grant holder: Active Portfolio Management Using Stochastic Programming. Fellowship from Swiss National Science Foundation (Grant Nr. PBSG2-108890, April 2006-March 2007)
Dr Alessio Lomuscio	Senior Lecturer	Logic and Artificial Intelligence Research Grants Facilitator	Programme vice chair IAT07 - 6th IEEE/WIC/ACM International Conference on Intelligent Agent Technology Senior PC member for AAMAS International Joint Conference on Autonomous Agents & Multi-Agent Systems 2005-2007 PC IJCAI 2005-2007
Prof Wayne Luk	Professor	Custom Computing Research Group Head of Section	Founding Co-Editor-in-Chief, ACM Transactions on Reconfigurable Technology and Systems, 2007 Program Co-Chair, 2006 and General Co-Chair, 2007, IEEE International Conference on Application-Specific Systems, Architectures and Processors (ASAP). Program Co-Chair, 2006 and General Co-Chair, 2007, IEEE International Conference on Application-Specific Systems, Architectures and Processors (ASAP).
Dr Emil Lupu	Reader	Distributed Systems Engineering European Studies Coordinator	IBM Faculty Award - PARIS A Policy Analysis, Refinement and Integration System. Membership of the Program Committee of the IFIP/IEEE Symposia on Integrated Network Management and Network Operations and management - 1999-2007. Invited keynote: IEEE Workshop on Policies for Distributed Systems and Networks, Bologna, June 2007.
Prof Jeff Magee	Professor	Distributed Systems Engineering Head of Department	Winner (with Jeff Kramer) of the 2005 ACM SIGSOFT Outstanding Research Award http://www.sigsoft.org/awards/outResAwd.htm Associate Editor of ACM Transactions on Software Engineering and Methodology from 2003 – 2006 Full Member of IFIP WG 2.9 on Requirements Engineering Distinguished Speaker Series Winter-Spring 2006 2007
Prof Istvan Maros	Professor	Quantitative Analysis and Decision	Academic Doctor of Science (DSc) title from the Hungarian Academy of Sciences, Budapest, Defended: 14/06/2006, title awarded: 05/12/2006. Member of International Program Committee: Conference on Computational Management Science 2003-2007

Dr Peter McBrien	Senior Lecturer	Distributed Systems Engineering Computing Support Coordinator	Chair of DIWeb 2004, and PC member 2004-2006 CAiSE Conference "Doctoral Consortium" panel member 2005 onwards, and co-chair 2008
Dr Julie McCann	Reader	Distributed Systems Engineering Post Graduate Senior Tutor	Technical director - DTI funded £1M Bop project CAiSE Conference "Doctoral Consortium" panel member 2005 onwards, and co-chair 2008 Programme Committee ACM/IEEE International Conference on Autonomic Computing (ICAC) (2005-present)
Dr Oskar Mencer	Senior Lecturer	Computer Architecture Research Deputy ISO Coordinator	Advanced Research Fellowship plus ~500K EPSRC grant, one of three EURYI nominees in Science and Engineering from the UK, 2005. Keynote: IEEE COOL Chips Conference, April 2006. DAFCA Inc., Technology Advisory Board.
Prof Stephen Muggleton	Professor	Computational Bioinformatics Head of Section	Royal Academy Chair in Machine Learning Director of Modelling at the Centre for Integrative Systems Biology at Imperial College (CISBIC) Editor-in-chief of the Machine Intelligence Series Fellow of American Association for Artificial Intelligence RAEng Research Chair in Machine Learning (2007-2012) Royal Institute Lecture on Computational Systems Biology, June 2007.
Dr Maja Pantic	Reader	Visual Information Processing Multimodal Human-Computer Interaction	Associate Editor of the International Journal on Image and Vision Computing) Member of the Young Academy, Dutch Royal Academy of Arts and Sciences, nominated for the membership as the sole nominee of Dutch Scientific Organization, May 2007 (final decision due in November 2007) Associate Editor of the IEEE Transactions on Systems, Man and Cybernetics – Part B: Cybernetics Key Note: “Machine Analysis of Facial Expressions” Int’l Conference on Artificial Intelligence Applications and Innovations (AIAI 2006), Athens, Greece, June 2006
Dr Dirk Pattinson	Lecturer	Theory of Computational Systems (THEORY) Mathematics Coordinator	Guest Editor, special issue of ``Mathematical Logic Quarterly'' on Recent Trends in Constructive Mathematics (with Schuster, Berger, Zappe) PC Member, ``Conference on Algebra and Coalgebra in Computer Science'' (CALCO 2007), Bergen, Norway Joint editor of special issue of journal Theoretical Computer Science devoted to selected papers from the 12th International Workshop on Expressiveness in Concurrency (will appear 2007/8).

Dr Iain Phillips	Senior Lecturer	Theory of Computational Systems (THEORY) Examinations Coordinator	Co-chair of 12th and 13th International Workshops on Expressiveness in Concurrency Joint editor of special issue of journal Theoretical Computer Science devoted to selected papers from the 12th International Workshop on Expressiveness in Concurrency (will appear 2007/8).
Dr Peter Pietzuch	Lecturer	Distributed Systems Engineering	IEEE Distributed Systems Online Editorial Board Appointment (pending IEEE CS Pubs board approval) Co-organiser DEBS 2007; DEBS steering committee PC DEBS 2004-2006 (Distributed Event-Based Systems) PC GLOBECOM 2007 (IEEE Global Telecommunications Conference) PC RDDS 2006-2007 (Reliability in Decentralized Distributed Systems) PC IPDPS 2008 (Parallel & Distributed Processing Symposium)
Prof Daniel Rueckert	Professor	Visual Information Processing Deputy PhD Admissions Tutor	Associate Editor: IEEE Transactions on Medical Imaging (since 2003) Guest Editor: IEEE Transactions on Medical Imaging – Special Issue on Mathematical Methods in Biomedical Image Analysis: To appear 2007 Conference Chair and Organizer: IEEE Computer Science Workshop on Mathematical Methods in Biomedical Image Analysis (MMBIA) 2006 Entrepreneurial activities: Advisory board (scientific) of VisionRT (http://www.visionrt.com) which produces real time 3D surface imaging systems for applications including image guided surgery and facial biometrics.
Dr Alessandra Russo	Senior Lecturer	Distributed Systems Engineering JMC Course Director	Co-editor of IEE Proceedings Software, May 2005 – June 2006, editor in Chief form 2006 Automatica; Computational Management Science; Assoc
Prof Berc Rustem	Professor	Quantitative Analysis and Decision Head of Section Director of Finance	Programme co-chair Computing in Economics & Finance, 2006, program member for Computing in Economics & Finance, 2001, 2, 3, 4, 5; 5th International Conference on Computer Science, 2004; Computational Management Science, 2003, 4, 5, 5, 7. Chair of ASAMI (Agent societies for ambient intelligence) 2007 Programme co-chair Computing in Economics & Finance, 2006, program member for Computing in Economics & Finance, 2001, 2, 3, 4, 5; 5th International Conference on Computer Science, 2004; Computational Management Science, 2003, 4, 5, 6, 7.

Dr Fariba Sadri	Senior Lecturer	Logic and Artificial Intelligence MSc Computing Science Coordinator, MSc in Advanced Computing	Chair of ASAMI (Agent societies for ambient intelligence) 2007 Chair of AmITA (Ambient intelligence technologies and applications) 2007 Invited speaker at Fourth International Conference of Applied Mathematics and Computing, Bulgaria, August 2007 Programme Committee: AAMAS 2007 (International Conference on Autonomous Agents and Multiagent Systems), Programme Committee: IADIS 2007 (International Conference Intelligent Systems and Agents) Programme Committee: ICCIIS 2007 (International Conference of Computational Intelligence and Intelligent Systems)
Prof Marek Sergot	Professor	Logic and Artificial Intelligence MSc in Bioinformatics Coordinator & Head of Section	Keynote speaker 8th International Conference on 'Engineering Societies in the Agents World' (ESAW'08), Athens, October 2007. Editorial board: Journal of Artificial Intelligence and Law (Kluwer/Springer). Editorial board: Journal of Applied Logic (Elsevier). Fellow of the British Computer Society
Prof Murray Shanahan	Professor	Logic and Artificial Intelligence Cognitive Robotics	Author of two invited encyclopedia articles (Macmillan Encyclopedia of Cognitive Science and Stanford Encyclopedia of Philosophy) Reviewer for EU FP6 project Mathesis Chair of UKCRC Grand Challenge 5: The architecture of brain and mind
Prof Morris Sloman	Professor	Distributed Systems Engineering Director of Research, Deputy Head of Department.	2006 Fellow Royal Academy of Engineering 2005, 2006 Chairman funding panel for Nederlandse Organisatie voor Wetenschappelijk Onderzoek Global Computer Science Program (GLANCE) 2006 Defence Scientific Advisory Council, Information Superiority Board.
Dr Francesca Toni	Senior Lecturer	Logic and Artificial Intelligence Second Year Coordinator	Senior Research Fellowship from The Royal Academy of Engineering and the Leverhulme Trust, 1 August 2006-31 July 2007 Prize for best paper at ATAL2001 Now AAMAS conference: Dialogues for negotiation: agent varieties and dialogue sequences, by Fariba Sadri, Francesca Toni and Paolo Torroni.

Dr Sebastian Uchitel	Reader	Distributed Systems Engineering	Philip Leverhulme Prize. The Leverhulme Trust, 2005. Associate Editor of the IEEE Transactions on Software Engineering (TSE) from 2006. Program Co-Chair of the 32nd IEEE/ACM International Conference on Software Engineering, Cape Town, 2010 Steering Committee Member of the IEEE/ACM Automated Software Engineering Conference since 2006.
Dr Steffen van Bakel	Lecturer	Theory & Formal Methods Fourth Year Coordinator	Co-editor for special issue for Annals of Pure and Applied Logic on Classical Logic and Computation. Programme Co-Chair and organiser for the Classical Logic and Computation (CL&C 2006) workshop, Venice, Italy, July 15, 2006. Guest editor for Annals of Pure and Applied Logic; preparing special issue on Classical Logic.
Dr Herbert Wiklicky	Senior Lecturer	Quantitative Analysis and Decision Seminars Coordinator	Keynote Talk at MFCSIT06: 4th Irish Conference on the Mathematical Foundations of Computer Science and Information Technology, Cork, August 2006 Keynote Talk at MFCSIT06: 4th Irish Conference on the Mathematical Foundations of Computer Science and Information Technology, Cork, August 2006 Guest Editor TCS: Quantitative Aspects of Programming Languages, 2007 Invited Observer IFIP WG 2.2 "Formal Description of Programming Concepts"
Prof Alexander Wolf	Professor	Distributed Systems Engineering Head of Section	Fellow of the ACM Chair, ACM SIGSOFT (3000 member organization) Keynote, 12th Int. Symposium on Foundations of Software Engineering Member, ACM Council Associate Editor, ACM Transactions on Software Engineering and Methodology Associate Editor, IEEE Transactions on Software Engineering

Prof Guang-Zhong Yang	Professor	Visual Information Processing Director of Medical Imaging & Head of Section	Royal Society Research Merit Award – in recognition of personal research achievements and international research profile. Tyco Healthcare Global Advisory Board PI for Major Collaborative Grants - SAPHE: Smart and Aware Pervasive Healthcare Environment, DTI £3.6M, involving major industrial partners including BT, Philips, and Medtronic. Associate Editor IEEE TMI General Chair: BSN 2004, BSN 2005, PC Chair BSN 2006 – Pioneering effort in Body Sensor Networks, now a fast moving inter-discipline research field that has significant impact on the future development of pervasive healthcare.
Dr Nobuko Yoshida	Reader	Theory of Computational Systems (THEORY)	EPSRC Advanced Fellow Web Services Choreography Working Group Invited Expert **POPL 2008** the 35th ACM SIGPLAN-SIGACT Symposium on Principles of Programming Languages, Programme Committee Member. **FoSSaCs 2008** Foundations of Software Science and Computation Structures (a member conference of ETAPS), Budapest, Spring 2008. Programme Committee Member. **CONCUR 2007** the 18th International Conference on Concurrency Theory, Programme Committee Member.

7.8 Professional Institution Membership

Number and percentage of **staff** who are currently members of the IET or another professional institution:

Institution	Number	Percentage
IET	*10	18%
BCS	*11	20%
Other Professional bodies	*29	52%

*Academic staff only

SECTION 8 Resources and facilities

[Give a brief outline of your current resources and facilities and any major planned expenditure over the next five years. Provide details of the budget process for laboratory upgrades, resourcing of new equipment (for key areas such as teaching, research and administration) and library provision. If an existing document contains this information please provide copies and references e.g. last internal review self-assessment document]

Learning resources.

Lecture theatres.

The Department has pursued a rolling programme of refurbishment, which has encompassed all teaching and learning rooms within the department. All have been refurbished within the last five years. Space within the Department is at a premium and our ability to deliver all our courses requires careful timetabling and coordination.

Flat rooms.

The Department has flexible flat space which can be used as one large room or divided into upto four smaller rooms. This space was refurbished two years ago. It also has two rooms that each hold forty and can be combined into one larger room. This space is shared with Mathematics.

Laboratories.

The Department's teaching laboratories were refurbished in the summer of 2004. They have over 200 workstations available for students to use at any one time (less than two undergraduates per workstation). We renew over one-third of the workstations and upgrade another one third every year. Those students who prefer to use their own laptops also have access to high-speed wireless networking with dedicated special areas set aside for such use. The Department boasts some of the best university computing facilities in the UK. There are an array of servers for disk space, email, web, and database provision and special purpose equipment for high performance projects. As a practical based subject the department is committed to ensuring that students have sufficient resources to get a good practical education. Equipment is purchased for both courses and project work. For instance in the last year position sensors have been purchased for group and individual projects and compasses and lego for the Robotics course. There is both a budget for these one off purchases.

Library.

Students have access to the main College library which has an associated electronic catalogue that is accessible from the world-wide web.

SECTION 9 Quality Assurance (QA)

Design, review and improvement mechanisms

Operations and Academic Committees

The top level committee in the Department is the Operations Committee. The Director of Studies is a member and issues related to teaching are on every agenda. This committee primarily performs a strategic role and there is a two-way flow of ideas to and from the Operations Committee and the Departmental Academic Committee.

Curriculum development and review is mainly the responsibility of the Department's Academic Committee (AC) which is chaired by the Director of Studies. This committee meets monthly and deals with both the strategic and the regular day to day decisions about teaching. All teaching staff are members as is the Departmental Student Representative. Normally attendance includes the Course and Year Coordinators, Senior Tutor, Teaching Administrator, Director of Studies, Quality Officer the Student Representative and anyone who has a specific interest in an agenda item.

Proposed changes to the course provision are initiated by individual members of staff and considered by the Academic Committee. Periodically, groups of courses under a common theme are reviewed simultaneously. This is done to ensure that the various themes are up to date and that there is no overlap between the courses that make up that theme

All changes affecting the Scheme for Award of Honours, or to the Degree Programme Specification, must be approved by the Engineering Studies Committee.

Feedback from students

We have a cooperative relationship with our students. Each year group elects two student representatives who are in regular contact with their Year Coordinator. The student body as a whole elects a Departmental Student Representative. Regular dialog between students and their representatives ensures a flow of information throughout the Department. Day-to-day problems reported to a Year Coordinator are usually resolved by the coordinator or, if necessary, brought to Academic Committee.

The elected student representatives meet with academics at the Staff-Student Committee once every term to discuss issues relating to their study and environment. Items raised by the committee are discussed by the Academic Committee if appropriate.

Students are encouraged to discuss issues related to teaching and learning with their Personal Tutors. Where it is felt that those issues are significant, and cannot be resolved by individual lecturers or assistants, the Personal Tutor will refer the matter to the Director of Studies. The Senior Tutor and Director of Studies are similarly available to see students to discuss any item of concern.

Students fill out the college online student questionnaire (SOLE) which provides feedback on all courses delivered. Members of staff take pride in their teaching and are normally responsive to criticisms from SOLE. The Head of Department and Director of Studies identify any problem cases and hold constructive discussions with the member of staff concerned. This is normally effective, but in the unusual event that it is not, a new lecturer will usually be assigned to the course.

Feedback from institutional review

The last Imperial College review of undergraduate teaching in the Department was carried out by the Undergraduate Studies Committee in 2002 using four independent external assessors - three academics and one from industry. The reviewers were complimentary of our degrees. They did recommend that we should implement provision for a Student Common Room which we now have. The next review will be this summer (2008).

Feedback from accreditation

The BCS and IET accreditation exercise often raise issues that feed back into our procedures. In last exercise, issues concerning third- and fourth-year course pre-requisites and the distinction between BEng and MEng project assessment criteria were both raised and have since been addressed.

Feedback from external examiners

External examiners annually check all examination papers to ensure that they are at an appropriate level. Prior to the final examiners meeting all examination question papers and scripts, project reports, coursework submissions and project assessment criteria are presented to the external examiners to ensure that our assessment methods are of the appropriate standard.

Reports from External Examiners commenting on the range of subjects covered and the standard achieved thus help to inform the Department of quality and standards achieved. Any suggestions for change are discussed at a subsequent Academic Committee meeting.

We believe these are a wide and effective range of mechanisms for assuring and enhancing quality.

SECTION 10 Special Features

Appendix B, table 5.4

5.4 Progression Table

Title of award for *BEng and MEng* programmes:

Year of entry:	**2004**	**2003**	**2002**	**2001**
(a) Initial Entry	117	112	143	114
(b) Direct Entry/transfer into course	1	0	0	0
(c) Repeats (in) (exam only + interrupted study)	5	3	0	3
(d) Repeats (out) (defered)	5	6	3	4
(e) Fail during course B/M1, B/M2	8	7	4	1
(f) Withdrawal during course	8	14	8	6
Totals	**102**	**88**	**128**	**106**
Year of graduation:	**2007**	**2006**	**2005**	**2004**
(g) BEng	47	43	55	48
Year of graduation:	**2008**	**2007**	**2006**	**2005**
(g) MEng	55	45	73	58
Total sitting finals (*)	**102**	**88**	**128**	**106**

Title of award for *BEng* programmes:

Most recent years of graduation:	**2007**	**2006**	**2005**
(a) Initial Entry to BEng 3	55	43	55
(b) Direct Entry/transfer into course	0	0	0
(c) Repeats from previous year (coming into this cohort)	0	0	0
(d) Repeats from this year (leaving the cohort) *Interrupted Study	*1	0	0
(e) Fail during course	0	0	0
(f) Withdrawal during course	0	0	0
(g) Transfer onto another programme	0	0	0
Total sitting finals (*)	**54**	**43**	**55**
Programme type: *Honours programme (example)*			
(1^{st})	11	13	16
(2.1)	20	11	27
(2.2)	18	17	10
(3^{rd})	2	0	1
Ordinary (Exit award)	2	1	1
DipHE (Exit award)	N/A	N/A	N/A
Pass	0	0	0
Fail		1	
Other – *Project deferred to next year.	*1		
Total students graduating	**53**	**42**	**55**

(*) Note: This total should equal (a + b + c) - (d + e + f + g). [Normally d = c^{n}]
For further clarification please contact the IET Accreditation Department.

[Please provide annotations detailing any irregularities in the figures]

Title of award for *MEng* programmes:

Most recent years of graduation:	**2007**	**2006**	**2005**
(a) Initial Entry to MEng 3	45	73	58
(b) Direct Entry/transfer into course	0	0	0
(c) Repeats from previous year (coming into this cohort)	0	1	1
(d) Repeats from this year (leaving the cohort)	1	0	0
(e) Fail during course (interrupted study)	1	0	0
(f) Withdrawal during course	0	0	0
(g) Transfer onto another programme	0	0	0
Total sitting finals (*)	**43**	**74**	**59**
Awards			
(1st)	22	35	33
(2.1)	20	33	22
(2.2)	1	3	4
(3rd)	0	0	0
Ordinary (Exit award)	0	0	0
DipHE (Exit award)	0	0	0
Pass	0	0	0
Fail	0	1	0
Other – *project deferred	0	1	0
Total students graduating	**43**	**72**	**59**

(*) Note: This total should equal (a + b + c) - (d + e + f + g). [Normally d = c^{n}]
For further clarification please contact the IET Accreditation Department.

[Please provide annotations detailing any irregularities in the figures]

Mathematics and Computer Science *BSc and MSci* (GG14, GG41)

Most recent years of graduation:	**2007**	**2006**	**2005**
(a) Initial Entry	22	24	40
(b) Direct Entry/transfer into course	0	0	0
(c) Repeats from previous year (coming into this cohort)	1	1	0
(d) Repeats from this year (leaving the cohort)	0	0	0
(e) Fail during course (interrupted study)	1	1	1
(f) Withdrawal during course	0	0	0
(g) Transfer onto another programme	0	0	0
Total sitting finals (*)	**21**	**23**	**39**
Awards			
(1st)	9	12	14
(2.1)	6	7	13
(2.2)	4	3	11
(3rd)	2	1	1
Ordinary (Exit award)	0	0	0
Pass	0	0	0
Fail	0	0	0
Other – *deferred	1	1	0
Total students graduating	**21**	**23**	**39**

Title of award for *MSc*: Advanced Computing

Most recent years of graduation:	**2007**	**2006**	**2005**
(a) Entry	46	31	49
(b) Repeats from previous year (coming into this cohort)	0	1	0
(c) Fail during course	1	2	8
(d) Withdrawal during course	8*	2	3
(e) Transfer onto another programme	0	0	0
(f) Deferred	1	0	*1
Total sitting finals (*)	**36**	**26**	**37**
Awards			
Distinction	7	9	15
Pass	29	17	22
Fail	1	2	8
Other – deferred	1*	0	1
Total students graduating	**36**	**26**	**37**

*Deferral due to serious health problems of a close family member.
*Withdrawals primarily due to health or financial difficulties.

**Please note that the MSc Computing Science Specialist Pathway is in its first and as yet data such as above is not available.*

Additional Information for the BCS.

○ PROGRAMMES PRESENTED FOR REVIEW				
For each programme, or each set of programmes that form an integrated scheme, you should include a Section B.	Please tick the relevant boxes for the accreditation sought and note that many programmes will only partially meet the requirement. Please refer to Table 1.5 of the guidelines.			
Programme Title:	CITP	CEng	IEng	CSci
BEng (Hons) Computing	✓	✓ (Partial)		
MEng (Hons) Computing	✓	✓		
MEng (Hons) Computing (International Programme of Study)	✓	✓		
MEng (Hons) Computing (Computational Management)	✓	✓		
MEng (Hons) Computing (Software Engineering)	✓	✓		
MEng (Hons) Computing (Artificial Intelligence)	✓	✓		
BSc (Hons) Mathematics and Computer Science	✓	✓ (Partial)		
MSci (Hons) Mathematics and Computer Science	✓	✓		
MSc Advanced Computing	✓	✓ (Partial)		
MSc Computing Science (Specialist Pathway)	✓	✓ (Partial)		

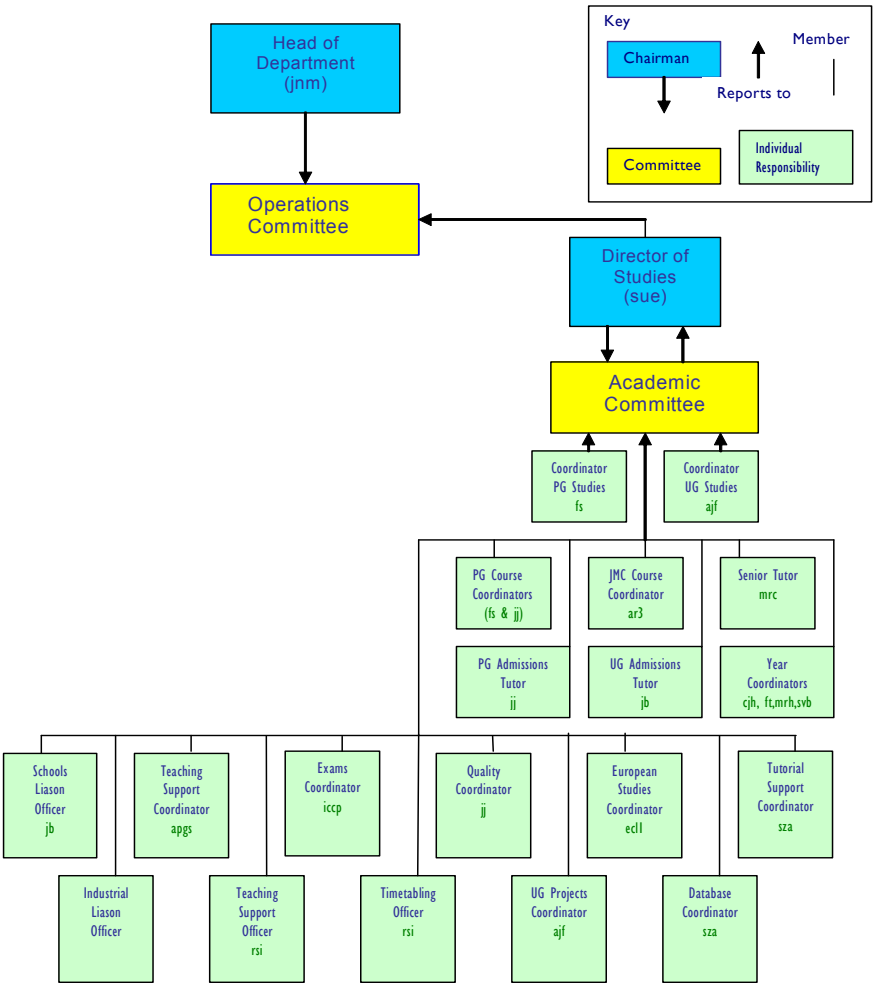
For each programme please provide the student intake for the current academic year

Programme Title:	**Current Intake 2007/ 8**
BEng (Hons) Computing	28
MEng (Hons) Computing	61
MEng (Hons) Computing (International Programme of Study)	2
MEng (Hons) Computing (Computational Management)	2
MEng (Hons) Computing (Software Engineering)	17
MEng (Hons) Computing (Artificial Intelligence)	8
BSc (Hons) Mathematics and Computer Science	7
MSci (Hons) Mathematics and Computer Science	10
MSc Advanced Computing	43
MSc Computing Science (Specialist Pathway)	9

○ A.1 QUALITY ASSURANCE	
A.1.6	If relevant, describe the arrangements for programme franchising and the controls over areas such as transcripts. **N/A**

○ A.2 LEARNING RESOURCES

A.2.1 Provide a brief description of the structure of the relevant departmental/faculty/school submitting programmes for accreditation



A.2.2 Academic Staff: Numbers in post

	Number	FTE	Comments
Professors/HoD	24	24	
SL / PL / Readers	22	22	
Lecturers	8	8	
Other Staff with custody of modules	9	9	Teaching Associates
Other Staff engaged in teaching support	90	90	Research Assistants – help run Tutorials and mark coursework this figure does not include PhD helpers or UTA who are undergraduate students employed to help 1st Year students with their maths and programming skills
Total FTEs	153	153	

	Students Numbers			
		Number	FTE	Comments
	Undergraduates (main degrees)	437	437	Includes Computing and JMC
	Undergraduates (service courses)	N/A	N/A	
	Taught Postgraduates	80	78	4 students are on the part time MSc Computing for Industry Degree
	Staff/Student Ratio (2/2/08)	Academics to Students = 1:10 Teaching Staff to students = 1:3.4		
	State how this ratio is determined.	Students = 80 + 437 = 517 Staff = 153 Ratio = 517 ÷ 153 = 3.4 There are 437 undergraduate Computing students and 80 postgraduate students in total; the ratio of 54 academics to undergraduate and postgraduate Computing students is approximately 1:10. The ratio of teaching staff to students is 437 undergraduate Computing students and 80 postgraduate students in total; the ratio of 153 teaching staff to undergraduate and postgraduate Computing students is approximately 1:3.4.		

	Academic Staff: Membership of Professional Bodies						
	Number of staff CITP/MBCS/FBCS	CITP		MBCS		FBCS	
	Number of CEng/IEng/CSci	CEng		IEng		CSci	
	Membership of other Professional Bodies: *Please state which Institution(s) and number of staff members.* Number of BCS Student Members (if known)						

A.2.3	**Academic Staff: Career Details**
	In an attached appendix, please provide brief career details of Department academic staff. Please indicate qualifications, academic experience, professional membership, industrial and commercial experience, research interests, and recent major publications. (*2 A4 pages maximum per person)* *Please see Appendix C*

A.2.4	**Support Staff (numbers of)**	
	Secretarial	*9*
	Administrative	*5*
	Hardware Support	*9*
	Software Support	
	Other	Teaching Associate Support Staff: = 10 Research Associates: = 90 PhD Students (eligible to provide teaching support) = 186
	Total	**309**

○ B.3 PROGRAMME STRUCTURES AND REQUIREMENTS, LEVELS, COURSES, CREDITS, AND AWARDS

B.3.2 Sandwich Placements – *if applicable*

Provide details of the nature and extent of this component, the steps taken to integrate the placement with the programme, the supervisory arrangements and the assessment details

All Meng programmes have a six month industrial placement. For details on this see section 4.7. There is no provision in any of the degree programmes for students to interrupt their studies for a sandwich placement.

B.3.3 Franchise arrangements – *if applicable* Refer to BCS Guidelines Appendix II **N/A**

Indicate the Institution where franchised, and the proportion of the programme studied at that Institution

B.3.4 Distance Learning – *if applicable* Refer to BCS Guidelines Appendix II **N/A**

Provide details of the distance learning component including the quality assurance procedures, the supervisory arrangements and the assessment methods in place.

○ B.4 LEGAL, SOCIAL, ETHICAL AND PROFESSIONAL ISSUES

○ Refer to BCS Guidelines Appendix I

B.4.1 Explicitly detail where legal, social, ethical and professional issues are **taught** in the core material of the programme and specifically identify where these areas are **assessed**.

During the first week of induction legal, ethical, social and professional behaviour is covered in an initial lecture given to new students. At its end the students are required to complete and sign the form below committing themselves to abide by codes of practice set by the College.

Imperial College Department of Computing New User Form

First name(s):	**Family name:**	**Title:**	**Username:**
Room no:	**Phone no:**	**Start date:**	**Leaving date:**

Please tick one of the following:

Academic staff	**Administrative staff**	**CSG staff**	**Research assistant**
Secretary	**Teaching assistant**	**Technician**	**Visitor**
PhD student	**Undergraduate student**	**Postgraduate student**	**Other**

Please state your research group, course of study, or any other supplementary information:

Your supervisor or tutor should sign below to authorise your application:

Name:	**Signature:**

Please read the conditions of use and sign at the end:

1. Use of the computing facilities (including the network) must be for the purpose of University research, teaching, coursework or associated administration only. No work of a commercial nature or for reward may be performed on these facilities.

2. Other than any statutory obligation the College will not be liable for any loss, damage or inconvenience arising directly or indirectly from the use of any computing facility provided and/or managed by the College.

3. It is and will be the USER's responsibility to comply with all statutory and other provisions, regulations, rules and Notes of Guidance for the time being in force and applicable to the field of computer systems and information.

4. The COMPUTER MISUSE ACT 1990 makes provision for securing computer material against unauthorised access or modification, and for connected purposes. USERS are required to familiarise themselves with and undertake not to act in breach of the provisions of the said Act. It is an offence to access a computer for which permission has not been granted. It is also an offence to facilitate unauthorised access by, for example, disclosing an authorised Login Name/password combination to any other individual.

5. The USER is required to respect the copyright of all material and software made available by the College and third parties. This requirement is laid out in the COPYRIGHT, DESIGNS and PATENTS ACT 1988 which makes it an offence for USERS to copy copyright materials including software without the permission of the owner of the copyright.

6. USERS are required to familiarise themselves with and undertake not to act in breach of any requirement of the DATA PROTECTION ACT 1984. The Act is "To regulate the use of automatically processed information relating to individuals and the provisions of services in respect of such information". In brief, all persons using computers to hold data about living individuals are, with very few exceptions, required to register that fact either directly with the Data Protection Registrar or via the institute to which they are attached. Users are required to comply with the Data Protection Principles. The USER may incur severe penalties for failure to either register or comply with the principles and may be held legally responsible for any liability arising from that failure. USERS should check to see if their computer files hold personal data and if so register. The following requirements apply to student use of personal data:

i) Student USERS must not construct or maintain computer files of personal data for use in connection with their academic studies/research without the express authority of an appropriate member of staff.
ii) When giving such authority, the member of staff should make the student aware of the Act's requirement, inform them that they must abide by the Data Protection Principles, and of the appropriate level of security arrangements which should attach to a particular set of personal data.

7. Whilst the College takes appropriate security measures against unauthorised access to, alteration, disclosure, destruction or accidental loss of personal or other data it does not operate a high security system and cannot and does not give any warranties or undertakings to the USER about security or confidentiality of data, personal or other. The same applies to other material submitted to or processed on facilities provided or managed by the College or otherwise deposited at or left on its premises.

8. Although the College takes reasonable care to prevent the corruption of information the College cannot and does not give any warranties or undertakings to the USER about the integrity of information.

9. The College reserves the right to withdraw permission to use the facilities provided and take any other relevant action in the event of any abuse of the facilities by the USER.

10. The use of a Login Name and knowledge of its associated password is restricted to the individual to whom it has been assigned.

11. USERS should note that assignment of permission to use the Computing Facilities will result in their name and address being stored in computerised form for use in administrative and mailing purposes.

12. Computing resources, such as workstations, printers, the network and the facilities associated with it (e.g. e-mail, World Wide Web (WWW), bulletin boards, databases), but not excluding any other part of the College computing system, are to be used for research, teaching, coursework or associated administrative purposes only. They must not be used to display, store or transmit text or images which could be considered offensive, for example material of a sexual, pornographic, racially abusive, libelous or terrorist nature. In particular a very serious view will be taken of the misuse of e-mail (harassment, forging of e-mail signatures), or the posting to bulletin boards or WWWs (College or external) of material that is illegal, offensive, of a terrorist nature, or likely to bring the college into disrepute. Contravention of these rules may also be an offence under the Criminal Justice and Public Order Act 1994 or the Race Relations Act 1976. The electronic transmission of "chain-letters" and unsolicited "junk" mail is also unacceptable.

SIGNING THIS FORM INDICATES YOU FULLY ACCEPT THESE CONDITIONS

Name:	**Signature:**	**Date:**

Computing Support Group (help@doc, 'phone 48383)

In the 1st Year all students are expected to attend the Professional Issues course. It consists of six one hour lectures and three tutorials and is assessed though a series of written coursework assignments.

C164 Professional Issues

Aims:
To introduce students to the organisational, ethical and legal contexts in which professional computing practitioners work.

Syllabus:
Professional Institutions: The role of professional institutions and their characteristics, the development and structure of the engineering profession, the origins and role of the Engineering Council, professional codes of conduct and codes of good practice (in particular those of the British Computer Society).

Legal Framework for the Software Professional: Intellectual Property Rights - Law of Confidence, Copyright, Designs and Patents Act; the Thefts Acts and their limitations, Computer Misuse Act; Data protection Acts; Plagiarism.

Students in their third year do a mandatory course entitled Software Engineering – Methods a brief syllabus of which can be seen below. It is assessed by written reports and a presentation.

C302 Software Engineering – Methods syllabus

'This course features state-of-the-art methods in software engineering practices from a managerial, technical, and ethical perspective.

First we present prominent and well proven agile and iterative development techniques, focusing on management and some programming aspects: we discuss the methods Scrum, Extreme Programming, the Unified Process, and Evolutionary Project Management and explore the history and utility of these methods.

On the more technical side as explore what solutions are currently available that aid implementers in achieving quality assurance of their code. We mostly study an approach of annotating source code with integrity constraints (object invariance, pre- and post-conditions etc) and survey some of the freeware tool support that is available at present. If time permits, we will give a brief introduction to the CASE tool Rational Rose.

On the purely professional side, we identify some professional issues that may not have managerial or technical solutions. Notably we ask which problems have an ethical dimension and try to identify what an `ethical dimension' is. We offer some exploration tools that help in recognizing and assessing ethical dilemmas and we apply these tools to some case studies.

Expected learning outcomes:

- Students will understand the core values and practices of key agile and iterative development methods; be familiar with their history (invention and cornerstone projects), and appreciate the advantages and trade-offs of these methods.

- Students will be competent in judging which agile development methods can be ``mixed,'' and to what extent, on a successfully managed project.

- Students will know what technological support is currently available for support of software quality assurance in implementation work. Notably they will be able to download and use tools for annotating Java and C# programs with integrity constraints such as object invariance and pre- and post-conditions for methods.

- Students will be able to recognise ethical problems in their private and professional sphere; they will avoid common but flawed ethical reasoning and will realize that ethical problems are typically far from having a 'unique' or 'optimal' solution.

- Students will be able to actively engage in ethical reasoning through realistic case studies; in doing so, they will be able to use basic ethical theories as tools for exploring dilemmas.

In the 3rd year students also study the core course below:

BSO819 – Organisations and Management Processes for Computing

This course provides students a macro perspective on organizations. It introduces them to theoretical and empirical work that helps understand why organizations and people that comprise them behave as they do. It enhances their understanding of how organizations can be managed effectively in a rapidly changing environment. The course focuses on two aspects of managing organizations. First, it sheds light on how an organization's goals, strategies, structure, technology and external environment relate to each other and that this relationship is critical to the performance and effectiveness of an organization. Second, it emphasizes the challenges managers face in managing internal dynamic processes in an organization including the role of culture, managing change, decision making processes, managing work in groups and teams, and power and politics. These processes have a significant impact on organizational performance.

COURSE OBJECTIVE

(I) Knowledge

Students will be able to draw on concepts from Organization Theory to explore the nature of organizations today and to understand and diagnose organizational needs and problems that emerge as organizations strive to stay competitive in a rapidly changing context. More specifically, students will develop an understanding of the following:

- How organizations can be designed and structured to function effectively in an increasingly volatile and unpredictable external environment
- Challenges of managing internal organizational dynamics emerging from culture, processes of change, decision making, inter-group and intra-group conflict, power and politics

(II) Skills

The course will enhance students' ability to:

- Apply theoretical concepts to real life organizational scenarios through the use of case studies in class
- Develop analytical skills in identifying, diagnosing and evaluating key organizational issues

LEARNING OUTCOMES

On the completion of this course, students will have developed an understanding of:

- How organizations operate as open systems
- The contingent factors influencing organization structure and design
- Internal dynamic processes in an organization that are critical in reinforcing organization strategies and structure
- Organization Theory in action as students will be able apply theoretical concepts to real life organizational scenarios

TEACHING METHODS
The teaching method in this course involves a combination of lectures and analyses of cases encouraging active class participation.

ASSESSMENT
The assessment comprises one exam that carries 100% marks. However, during the course, there will be quizzes and practice questions provided so that students have the opportunity to evaluate their learning and understanding of concepts.

SYLLABUS AND COURSE OUTLINE

Week 2 Introduction to the course
Historical background of organization theory
Video: Modern Times by Charlie Chaplin

Week 3 The external environment and organization structure
Readings: How to cure a Behemoth's Blues?
Inside Sam's $100 billion growth machine

Week 4 Organization goals, strategy, and organization structure
Case: Marks and Spencer

Week 5 Technology (work processes) and designing organization structure
Exercise: Bistro Technology

Week 6 Organization structure alternatives
Case: Oticon
Reading: Waterman, R., Peters, T., & Phillips, J. 1980. Structure is not organization. Business Horizons, June 1980: 14-26

Week 7 Organizational culture
Reading: : Goffee, R. & Jones, G. 1996. What holds he modern company together. Harvard Business review, Nov-Dec: 133-148
Video: Tom Peters

Week 8 Managing organizational change
Reading: Nadler, D. & Tushman, M. 1989. Organizational frame bending: Principles for managing reorientation. Academy of Management Executive, 3(3): 194-204
Reading: Reading: Kotter, 1995. Why transformation efforts fail?. Harvard Business Review, Mar-Apr:
Case: The mystery of the performance difference

Week 9 Decision-making processes
Video: The Challenger Disaster

Week 10 Managing group dynamics and team working
Reading: Katz, N. 2001. Sports teams as a model for workplace teams: Lessons and liabilities

In the 4th Year students can choose an optional course entitled:

C442 Management - Economics and Law

To investigate the principles of macro-economic theory and their effectiveness in practice and the economic climate in which management decisions have to be taken. To impart a basic practical knowledge of law.

National income: definition, evaluation, equilibrium positions. Investment. The business cycle. Objectives of government policy. Monetary and fiscal policies. Foreign trade and its impact. The English legal system. The law of tort: duties, obligations, liabilities, negligence. The intellectual property law: the law of patents, trade and service marks, protecting and exploring rights. Business start up - issues to consider on starting a small hi-tech business.

○ **B.5 PROFESSIONAL PROJECT(S)** Refer to BCS Guidelines Section 2.2.7
B.5.1 Provide your project guidance notes to students as an attached document.
See DVD.
B.5.5 Detail any formal mechanisms in place to ensure that the final project meets BCS requirements. If this is covered in the project guidance notes, please provide a reference here
There is no formal mechanism for ensuring that the project meets BCS requirements, although each of the stated BCS criteria are consistent with our guidelines and criteria for assessment.
B.5.6 Please supply samples of final year project reports for each programme. These should be sent with the documentation and offer a range of abilities including some bare passes. Include the individual marking sheets with each project and also details of the marking scheme. A maximum of 16 project reports (across all programmes) should be sent with the submission.

See DVD.

○ B.6 ADMISSION OF STUDENTS

B.6.2 Study at non-UK universities – if applicable

Refer to BCS Guidelines Appendix II

If students are permitted to study at non-UK universities during part of the programme please state:

- % of students following this route
- timing of the study in the context of their programme
- permitted duration
- assessment arrangements by non-UK universities
- arrangements for monitoring student progress and the impact of such arrangements on the coverage of core material

MEng Computing (International Programme of Study) G402 provides development of linguistic and technical skills through a programme of engineering study in the UK and abroad at a participating institution. All courses have a two-year common study period. To give maximum flexibility students may transfer between courses, within the Computing Integrated Engineering Study Scheme, at any time within that period. All students will initially be registered on the MEng Computing course. Current participating exchange institutions are: **France** ENST (Telecomm Paris) and ENSIMAG (INP Grenoble); **Germany** TU Karlsruhe and RWTH-Aachen; **Switzerland** ETH Zurich; **USA** University of California.

There are between 0 and 3 students a year who actually go abroad.

Students following the MEng Computing (International Programme of Study) spend either the first two terms of their third year abroad or their entire fourth year abroad in a recognised institution of higher education, with which Imperial College has an exchange arrangement).

Procedure for ensuring quality on International placements for students on MEng Computing (International Programme) degree.

There is an academic member of staff who has responsibility for International placements called the International Coordinator.

We only send students to a small number of institutions which we have good contacts, are comparable to us, and we have visited.

The academic programme undertaken by each student is agreed between the host institution, our Department (via the International Coordinator) and the student.

The international Coordinator and the personal tutor keep regular contact with the student throughout the exchange. It is normal practice to visit the student.

The student must either write up their individual project in English or provide a summary in English. We jointly examine the project with the host institution. We informally assess the project to ensure that standards are consistent with ours.

We use our experience with the host institution (including the project marking) to interpret the marks received from the host institution. This is done by a subcommittee of the Departmental Examiners Committee normally consisting of the Director of Studies, International Coordinator and the Senior Tutor.

The student's year and entire results are considered at the next scheduled Examiner's meeting.