THE BRITISH COMPUTER SOCIETY

GUIDELINES ON COURSE EXEMPTION & ACCREDITATION

INFORMATION FOR UNIVERSITIES AND COLLEGES

August 2001

CONTENTS

A copy of these Guidelines is available on the BCS web site at
http://www.bcs.org.uk/educ.htm

1 OVERVIEW OF EXEMPTION AND ACCREDITATION

1.1 INTRODUCTION

The British Computer Society, under its Royal Charter, is required to establish and maintain standards of professional competence, conduct and ethical practice for information systems practitioners. This duty includes the responsibility to develop and maintain standards for the educational foundation appropriate to people wishing to follow a career in information systems. The Society initially established the BCS Examination to provide an educational foundation for people wishing to undertake a career in computing or information systems and become members of the professional body. As the number and range of programmes at HND and degree level increased, a system of exemptions for appropriate courses was put in place to provide alternative routes to membership. The Society became a Nominated Body of the Engineering Council in 1990 and this system was extended to include accreditation at Chartered Engineer or Incorporated Engineer level. All exempt and accredited courses are expected to prepare students to become Corporate Members of the Society. In addition, accredited courses are expected to prepare students to become Chartered or Incorporated Engineers (CEng/IEng). The Society consequently undertakes a programme of visits to universities and other institutions that wish to seek exemptions (leading to Associate or Full Membership of the Society) or accreditation (leading additionally to CEng or IEng status).

The Society believes that preparation for a role as an information systems practitioner requires not only sound theoretical understanding and practical experience, but also full appreciation of the wider issues of ethical standards, legislative compliance and the social and economic implications of information systems practice. Therefore, in considering courses for exemption or accreditation, the Society looks for course content which specifically aims to give students an understanding of the professional issues relevant to their future working lives, as well as a sound academic grounding in the discipline.

This booklet describes the approach and content the Society would expect to find in courses put forward for exemption or accreditation. There is considerable similarity between the basic requirements for exemption and those for accreditation. However, the Society includes within its membership many practitioners whose background does not meet the requirements laid down by the Engineering Council for Chartered Engineers or Incorporated Engineers. When considering courses for exemption the Society is able to be more flexible than when considering courses for accreditation at CEng or IEng level.

Where there are small numbers of students on a course, the Society will not normally consider such courses for exemption or accreditation but will suggest that students apply for membership individually and chartered/incorporated status through the Individual Case Procedure route. If a named award with few students enrolled on it forms a pathway through a more general programme of study then the Society may well deal with such courses as part of the overall exemption/accreditation of that group of awards.

1.2 SARTOR EDITION 3

The Engineering Council publishes the criteria for accreditation in its *Standards and Routes to Registration* (SARTOR). The third edition of SARTOR introduces a number of changes in the requirements for achieving the status of Chartered Engineer and Incorporated Engineer compared with the requirements of the second edition of SARTOR. One of the changes is that the educational base for CEng is increased to four years of undergraduate education (based on the model of the MEng degree course) rather than the previous three year requirement. The requirement for IEng has been increased from two to three years.

1.3 SCOPE FOR CURRICULUM

The Society definition of Information Systems and Information Systems Engineering describes the criteria for exemption and accreditation, as quoted below:

*An **information system** is an application of computing and communications technology to meet a defined need. The purpose of such systems is to collect, process, store, transfer and disseminate information; collection and dissemination may be from and to persons as well as from and to measuring and control devices. The range of types of information system covers both hardware systems, with embedded software, and pure software systems which can be designed to be portable and hence have no specific hardware content, but their specification implies hardware implementation.*

The users of information systems require them to exhibit objectively observable attributes of any properly engineered system or artefact including fitness for purpose, range of functionality, economy and efficiency, reliability, cost effectiveness, security and safety, and life cycle support. The use for which an information system is intended has a bearing upon the way in which it is designed and constructed, but the inherent nature of such systems normally calls for an approach which falls within the SARTOR definition of engineering.

***Information systems engineering** is the application of engineering principles, founded on appropriate scientific and technological disciplines, to the creation, use and support of information systems for the solution of practical problems. As with other branches of engineering, this primarily involves the activities of specification, design, construction, testing, bringing into service, maintenance and enhancement, together with quality assurance applied to all of these. The scope includes hardware components (such as processors, networks and interface devices) and software components (including operating systems software, information structure software, communications protocols and application software). It also includes the design, development and use of standards and tools essential for the engineering of information systems.*

1.4 SUBJECT BENCHMARKING

The Society supports the Computing Benchmark Statement established by the Quality Assurance Agency for Higher Education (QAA) in that it is a broad statement about standards for the award of honours degrees in the computing area and it embraces the BCS definitions above. The subject benchmark defines the conceptual framework that gives computing its coherence and identity; it is about the intellectual capability and understanding that should be developed through the study of computing to honours degree level, the techniques and skills which are associated with developing understanding in computing, and the level and intellectual demand and challenge which is appropriate to honours degree study in computing. As such it forms an excellent framework which the Society and higher education can use in support of the exemption and accreditation process. The QAA's web site can be found at **www.qaa.ac.uk**

1.5 EXEMPTION

The Society, through its Academic Accreditation and Exemptions Committee, considers courses in relation to the Society's Examinations (which continue to provide a framework for the membership structure).

An ***exempt course*** is one which meets some or all of the educational requirements for membership of the Society. The levels of exemption possible are Certificate and Diploma at the level of an HND and the Professional Graduate Diploma at a level of an honours degree together with the Professional Project at HND or honours level as appropriate. Therefore, there are a number of different possible levels of exemption which may be sought for courses.

Exemption	**What it means**
Certificate & Diploma and	The course should involve at least two academic years of full-

Professional Project	time study or part-time equivalent in information systems for undergraduate courses or one calendar year for conversion masters courses. Courses which might meet the requirements for exemption include HNDs, joint honours courses, and conversion masters programmes.
Professional Graduate Diploma and PGD Project	This exemption normally applies to a Specialist (or Advanced) Masters programme. The course should provide in-depth study of at least one specialist area of information systems and build on the equivalent of at least a Certificate and Diploma course. The course should involve at least one academic year of full-time study (or equivalent) in information systems.
Full Exemption from Certificate, Diploma, Professional Graduate Diploma PGD Project	The course should provide breadth and depth in the area of information systems and should be influenced by relevant research and industry trends, with adequate theoretical underpinning. The course should involve at least three years of full-time study (or equivalent) with at least two-thirds within the information systems area.

All exempt courses are expected to prepare students to become members of the Society and must develop a disciplined approach to the practice of information systems, irrespective of the orientation of the course. Such an approach entails the application of underpinning theoretical principles and design skills and concepts to the analysis of problems, in order to develop practical, cost-effective solutions. The solutions should be designed so that they can be satisfactorily tested both through operational tests and/or by formal theoretically based methods. The course must ensure that students obtain a high level of technical proficiency and acquire sufficient knowledge of modern computer systems to enable them to relate to the operating practices in the field of information systems. All courses must have at least two-thirds information systems content, including underpinning subjects.

The Exemptions awarded to courses are described in terms of exemption from the component Parts of the BCS Professional Examination. This does not mean, however, that the BCS Professional Examination should be regarded as a template and the Society does not compare in detail the content of courses submitted for exemption with the Examination syllabus. The term information systems (IS) is used throughout this document as a general term to cover all such courses. To receive exemption, courses will be examined to ensure that they offer sufficient breadth of study, significant practical work, treatment of professional issues, and an emphasis on design.

The full academic requirement for Corporate Membership of the Society is a three-year honours degree. However, a range of academic qualifications provide a route to BCS Membership and full details can be found on the BCS website at http://www.bcs.org.uk

1.6 ACCREDITATION

The Society also considers courses in relation to the criteria described in SARTOR, which defines the routes to Chartered and Incorporated Engineer status.

The definitions of an ***accredited course*** are to be found in Section 4.2.1 of SARTOR Part 2. In brief, an accredited course meets, fully or in part, the specified criteria relating to the educational foundation for CEng or IEng.

The standard for CEng accreditation is a four-year MEng programme and the standard for IEng accreditation is an ordinary three-year degree programme. Courses which are not of the appropriate duration will need a further period of study (see section 3.2). These guidelines need, therefore, to be read in conjunction with SARTOR Parts 1 and 2. Graduates from courses with full accreditation are deemed to have satisfied the educational requirements for stage 1 registration at CEng or IEng level, as appropriate.

HND courses may be accredited as contributing to the academic requirement for IEng and BSc and BEng Honours degrees may be accredited as contributing to the academic requirement for CEng provided they demonstrate an appropriate engineering ethos and meet the appropriate standard on entry criteria. The criteria are basically the same as for fully accredited CEng or IEng degrees but with a lesser requirement in the areas of:

- the extent of project work
- the depth and range of specialist knowledge
- the breadth of the general education base, e.g. leadership and business awareness, risk, health and safety, environmental and political issues
- the extent of industrial relevance

In each case, further study is required to 'top up' the qualification. This period of further study is known as a 'Matching Section'.

While the requirements for accreditation are in some ways more tightly prescribed than those for exemption, it is accepted that a wide range of computing courses should be accredited, with differing emphasis towards, for example, computer science, computer systems engineering, software engineering or information systems. *In particular, it is expected that any undergraduate degree which gains full exemption will gain full or partial accreditation.* The following levels of accreditation may be granted.

Accreditation	**What it means**
CEng	The current benchmark for CEng is an MEng degree – a four year undergraduate programme that is broader than an honours degree programme, providing some multi-disciplinary education whilst retaining depth in traditional subject areas in order to provide an educational foundation for leadership, social and business awareness and for a wider appreciation of risk, environmental, health and safety, and political issues. There should be an individual, practical, research-based project and a practical problem-solving group project, the latter having industrial involvement. At least two-thirds of the course coverage should be within the information systems area.
Partial CEng	A BSc/BEng Honours degree may be accredited as contributing to the academic requirements for CEng. The course should demonstrate appropriate engineering ethos.
IEng	The benchmark for IEng is a BEng ordinary degree. A 3-year undergraduate programme that is broader than an HND programme, providing a more extended project, increased level of specialisation, greater industrial relevance, and a broader and more general educational course in order to provide an educational foundation for leadership, social and business awareness and for a wider appreciation of risk, environmental, health and safety, and political issues.
Partial IEng	HND courses may be accredited as contributing towards the academic requirements for IEng. The course should demonstrate appropriate engineering ethos.
Approval of course or programme	A course or part of a course may be granted approval as a complete Matching Section or as fulfilling part of a Matching Section requirement provided it is linked to a specific course and/or sets out the aims and objectives.

In addition, SARTOR sets out specific requirements for the content, structure and balance of courses needed to obtain full accreditation. Those for CEng appear in SARTOR Part 2, Section 4.1.1 at paragraph 14 whilst those for IEng appear in Part 2, Section 4.1.2 at paragraph 12.

2 CRITERIA OF EXEMPTION AND ACCREDITATION

In carrying out the exemption/accreditation process for courses, the Society looks at a range of issues which relate to the department in which the courses are operated as well as a range of course-specific issues.

2.1 DEPARTMENTAL ISSUES

The quality of a course depends not only on its content, syllabuses and assessment, but on the environment in which it is developed, implemented and improved.

2.1.1 Quality Assurance

The Society will require evidence of a commitment to ensuring and improving the quality of the course, as follows:

- a clear quality assurance framework at departmental and institutional level that is demonstrably used and followed
- procedures for the monitoring, review and evaluation of the teaching and assessment leading to action and change
- the involvement of the students in the monitoring and evaluation of the course
- clear roles for external examiners and for responding to comments from them
- syllabus and teaching materials kept up-to-date, including any distance learning material used in the delivery of the course
- where appropriate, a clear statement of how franchise arrangements are established and maintained, including control of the wording on transcripts

2.1.2 Staffing and R*esources*

The resources available to students must be adequate to fulfil the objectives of the course. Attention will be given to the following:

- development opportunities are available for staff to update their pedagogical, technical (subject-based), and administrative knowledge and skills, and are taken advantage of and that they have time to reflect and develop as scholars
- there are sufficient academic staff to deliver the courses, they are qualified, academically or through industrial experience, to a level higher than the courses which they teach and they have relevant research, consultancy or industrial experience
- a student : staff ratio is often used as an indicator of staff sufficiency. If the SSR is comparatively high, an explanation will be required of the steps being taken to reduce the pressures created
- administrative support is at a level which minimises the administrative load on academic staff
- technical staff are sufficient in number, are appropriately qualified, undertake regular technical and other forms of development, and play a part in planning and enhancing the technical resources
- students feel that they have adequate access to resources, including academic staff, when they are required
- computing hardware and software is appropriate and sufficient for both staff and students and that there is a policy for replacement and sufficient funding to implement it
- there is a policy for supporting students who have their own computers
- library facilities are adequate
- students are provided with appropriate pastoral and welfare care

2.2 COURSE ISSUES

In order to reduce the extra documentation required for a visit by the Society to the minimum, the Programme Specification produced for QAA should be used to provide much of the information required by the Society about the course under consideration. Full details of programme specifications can be found on QAA's website at www.qaa.ac.uk

2.2.1 Aims and Philosophy

Exempted and accredited courses may vary in emphasis and orientation and prepare students for different fields of information systems practice. Institutions should use the QAA Computing Benchmark to identify the areas covered by the course and make explicit reference to the Benchmark in describing the aims, objectives and learning outcomes of their courses. Full details of the Computing Benchmark can be found on QAA's web site at www.qaa.ac.uk

Only courses which contain at least two-thirds computing (as defined by the Benchmark) can be considered for exemption or accreditation.

For each course, information must be supplied showing entry requirements, actual entry standards shown as actual UCAS points or equivalent for the past two years.
Evidence will always be required showing that:

- the course is planned as a coherent whole
- each course is clearly documented and has achievable aims and objectives
- there is coherence in the choice of modules and an integrative theme
- the core of the course (as opposed to the options) addresses the Society's criteria for underpinning breadth
- appropriate means are used for assessment and it is sensibly balanced
- the design of the course has been influenced by research, industry and the professions
- the progression and award regulations are appropriate

2.2.2 Course Structure

All courses must develop a disciplined approach to the practice of information systems, irrespective of the orientation of the course. Such an approach entails the application of underpinning theoretical principles and design skills and concepts to the analysis of problems, in order to develop practical, cost-effective solutions. These should be designed so that they can be satisfactorily tested both through operational tests and/or by formal theoretically based methods. The course must ensure that students obtain a high level of technical proficiency and acquire sufficient knowledge of modern computer systems to enable them to relate to the operating practices in the field of information systems.

All submissions for exemption of courses should provide a clear statement of the units which have to be passed in order to achieve the award. Where there is a considerable amount of optionality, the minimum position must be made explicit, i.e. only the units which all students will pass. For this reason, institutions submitting a CATS-based course or scheme for exemption are expected to propose a package of core units which, in their opinion, satisfy the Society's criteria for underpinning breadth. The Society cannot undertake to consider every individual combination of units when looking at courses.

The Society does not wish to prescribe the content of courses. However, all courses will:

- provide sufficient breadth of coverage in appropriate computing topics to gain exemption from the Certificate and Diploma and/or sufficient depth of some topics to gain exemption from the Professional Graduate Diploma
- have a strong emphasis on design throughout the course and/or include the use of formal and semi-formal design methods
- provide coverage of the appropriate underlying theory and integrate this theory with practice

- have a range of assessments which are appropriate, are at the right level and are intellectually challenging
- show evidence of appropriate progression and graduation outcomes
- research should feed into the degree structure; this is usually evident by the availability of final year classes

Additional requirements for accreditation are set out below in section 3 of this document.

Specific evidence of coverage of Practical Applications/Engineering Applications is required for courses seeking exemption and accreditation. Advice on the interpretation of Practical Applications is given in Appendix I.

2.3 LEGAL, SOCIAL, ETHICAL AND PROFESSIONAL ISSUES

All courses must cover the legal obligations and regulations relating to the information systems professional, social and ethical implications of information systems development and the importance of professional bodies, including the role of codes of conduct and practice.

Students should understand the implications of the relevant statute laws which impact on the work of the information systems professional. It should be noted that as new laws are introduced at national and European level and acts are updated, such changes should be reflected in the curriculum. Examples of such laws are given below:

- Copyright and Patent
- Trade Secrets and Registered Design
- Computer Generated Evidence
- Data Protection
- Computer Misuse
- Data Transmission and Security
- Obscene Publications
- Health and Safety

The course should give students an awareness of external factors which may affect the work of the computer professional. These may vary according to the orientation of the course and the likely destination of students, but examples could include:

- acceptance of responsibility for work which affects the public well-being
- computer security
- principles of management
- industrial relations

Students should not perceive legal, social and professional issues as peripheral to, or less significant than, technical skills detailed in the syllabus. Topics which are not examined may be seen by students as unnecessary. The Society considers that adequate coverage of legal, social and professional issues is important in the assessment and examination of exempt or accredited courses and accepts that the requirements may be met in many ways.

Awareness of professional standards, codes of conduct and relevant legislation must not be separated from the practice of designing and implementing systems. Whilst it is appropriate for some of these issues to be addressed in separate modules, it is essential that these topics are integrated into the course.

The relevant legal, social and professional issues should be specifically detailed in the syllabus, mentioned in directions to students on practical assignments and sandwich placements, and not left to the discretion of individual teachers. Whilst legal, social and professional issues should pervade the course, the central issues of codes of practice, legislation and ethical standards are important to all information systems practitioners. Thus they should be addressed in core areas of the course rather than in options.

In gaining exemption and accreditation it is expected that the teaching staff demonstrate and maintain high professional standards in their own use and development of information

systems. Membership of a professional body would be one sign of such a commitment. The production and promulgation of codes of conduct for students, the displaying of notices relating to such things as copying software and virus protection are also signs of such a commitment. Encouragement of student membership is also regarded by the Society as a sign of a commitment to professional standards by the teaching unit.

[*The Learning and Teaching Support Network (LTSN) Centre for Information and Computer Sciences (LTSN-ICS) web site is useful source of information on the teaching of ethics and professional issues at: www.ics.ltsn.ac.uk/resources/ethics/*]

2.4 PROJECT WORK

All Projects

The task should be the development of an IT solution to a practical problem. This would include the production of a new piece of hardware or software. In the case of software this may be interpreted as some or all of a specification, design or implementation. In addition, in the case of a group project the technical report must clearly identify each individual's personal contribution and the assessment must be on a personal basis rather than for the group as a whole.

A group design project with industrial relevance is required for full accreditation or may be part of a Matching Section (see Section 3.2). It is strongly recommended that such a project is multi-disciplinary in nature and, consequently, project work will often be best carried out in a working environment and be based on real industrial needs. The only proviso is that the project work should be sufficiently stretching and should be suitably monitored and assessed. While it may be preferable for group projects to be undertaken in industry and be subject to real industrial constraints rather than simulated academic ones, the assessment of the project should be kept separate from any assessment undertaken for the initial professional development requirements. Specific aspects that should normally be covered within a group project include the application and integration of:

- team working skills
- multi-disciplinary activities
- multi-function activities
- project management skills and quality control techniques and procedures
- written and verbal communication skills
- industrial relevance, i.e. the real world of the discipline
- industrial involvement, i.e. a real industrial problem

In all cases the performance of the individual must be assessed

The group project should always occur after the end of the second year (penultimate year) of any full-time three-year honours degree course and after the end of the third year for an MEng degree course. For a full-time HND course (or equivalent position in a part-time course) the project should occur at the end of the first year (penultimate year). This requirement is to ensure that the project is at the correct academic level, building upon knowledge and skills already required. Realistically there may not be time to carry out a group project as well as an individual project in the final year of a BEng (Hons) or HND course; in such cases the group project may need to be part of a Matching Section (see Section 3.2 of these Guidelines).

All practical projects submitted for exemption and accreditation should be real in the sense that the product should be aimed at users other than the author. A collection of course exercises, a literature search or a descriptive evaluation would not be suitable. The report should demonstrate an appropriate level of professional competence in the practical development of a suitable application, tool or similar product.

Projects must be passed at the first attempt to gain exemption and/or accreditation. Condonements and referrals are not permitted under any circumstance.

All projects must consist of a report, which clearly sets out both the problem and the objectives of the project, and must further include an in-depth investigation of the context, literature and other similar products. Projects must give a clear description of the life-cycle stages undertaken and must describe the use of appropriate tools to support the development process. A description of how verification and validation have been applied to each stage of the project must also be included. The project must include a critical appraisal indicating the rationale for design and implementation decisions, lessons learnt during the course of the project, and evaluation (with hindsight) of the product and the process of its production, including review of the plan and any deviations from it.

It is expected that all projects should include references and should contain technical documentation as Appendices.

When submitting a course for accreditation, the individual project may be a research project (see below).

Research Projects

Section 4.4.1 of SARTOR Edition 3, Part 2 indicates that MEng project work would include both an individual research project and a wider ranging group project with greater industrial involvement. The requirements for the individual research project are:

- elucidation of the problem or research area and the objectives of the project
- an in-depth investigation of the context/literature/other similar products
- a clear description of the research method being used
- a description of outcome of the project
- a critical appraisal of the project, indicating the rationale for the methods used, lessons learnt during the course of the project, and evaluation (with hindsight) of the outcome (including a review of the plan and any deviations from it)
- references

Additional Requirements

In addition, for each category of exemption and accreditation the following applies:

Exemption for Project: Certificate and Diploma, Partial IEng Accreditation – The project should involve 100 hours of individual work by each individual, it should emphasise design and be documented by a technical report.

Exemption for Project: Professional Graduate Diploma, Partial CEng Accreditation – The project should involve 150 hours of individual work by each individual and should exhibit a structured approach to information systems practice, involving a number of stages in the life cycle. The project must lead to a description of the process and the product; the product itself must exhibit the attributes of quality, reliability, timeliness and maintainability.

Full CEng Accreditation - A research project plus a group project involving a structure approach to information systems practice is acceptable.

Full IEng Accreditation: - A group project is mandatory.
Full CEng Accreditation: - A group project is mandatory and should be multi-disciplinary in nature.

The table below summarises the various requirements for projects for Exemption and Accreditation.

CRITERIA FOR PRACTICAL PROJECTS	Exemption Certificate + Diploma	Exemption Professional Graduate Diploma	Accreditation CEng	Accreditation IEng
The report on the project should include: • Elucidation of the problem and the objectives of the project • An in-depth investigation of the context/literature/other similar products • A clear description of the stages of the life cycle undertaken • A description of the use of appropriate tools to support the development process • A description of how verification and validation were applied at all stages • A critical appraisal of the project, indicating the rationale for design/implementation decisions, lessons learnt during the course of the project, and evaluation (with hindsight) of the product and the process of its production (including a review of the plan and any deviations from it) • In the case of group projects, a clear indication of the part played by the author in achieving the goals of the project • References • Appendices – technical documentation	√	√	√	√
The project should involve 100 hours of work by each individual.	√			√
The project should involve 150 hours of work by each individual.		√	√	
Two projects are required, one individual and one group.			√	
The task should be to develop an IT solution to a practical problem. This would include the production of a new piece of software which may be interpreted as some or all of a specification, design or implementation of software	√	√		
It should emphasise design and be documented by a technical report.	√			√
The project work may be part of a group project, but the technical report and assessment must clearly identify each individual's personal contribution.	√			
It should exhibit a structured approach to information systems practice, involving a number of stages in the life cycle.		√	√	√
The product must exhibit the attributes of quality, reliability, timeliness and maintainability.		√	√	
The project must lead to a description of the process and the product.		√	√	
The project must contribute significantly to the overall award classification		√	√	

For group projects, each student must clearly identify their contribution to the overall project, including a critical analysis of how the group functioned and the role(s) played by themselves. In addition the assessment must clearly identify each individual's personal contribution.			√	√
A group project must have an industrial involvement which might be in the form of the project being for industry or it might be that industry is involved in the definition of the project or in the assessment process.			√	√
A group project should normally be interdisciplinary in nature.			√	

3 ADDITIONAL REQUIREMENTS FOR ACCREDITATION

SARTOR identifies the perceived roles for Chartered and Incorporated Engineers as follows:

Chartered Engineers *are concerned primarily with the progress of technology through innovation, creativity and change. They develop and apply new technologies, promote advanced designs and design methods, introduce new and more efficient production techniques, and marketing and construction concepts, and pioneer new engineering services and management methods. They may be involved with the management of high-risk and resource intensive projects. Professional judgement is a key feature of their role, and allied to the assumption of responsibility for the direction of important tasks including the profitable management of industrial and commercial enterprises.*

The MEng provides broadening of the educational base by including non-technical material in order to provide a firm foundation for leadership in managerial, commercial, environmental and political contexts. Arrangements for achieving these aims will often take individuals away from their own departments and may thus broaden horizons and facilitate cross-disciplinary understanding and working. Industrial involvement is a major requirement of the MEng. This occurs naturally via any work-based activity or via the sandwich year present in some degree courses. One would expect rigorous and well-defined assessment procedures for any work-based learning and sandwich year activities.

Incorporated Engineers *act as exponents of today's technology and to this end they maintain and manage applications of current and developing technology at the highest efficiency. Incorporated Engineers require a detailed understanding of a recognised field of technology so that they can exercise independent technical judgement and management in that field. They provide, independently and as leaders, a significant influence on the overall effectiveness of the organisation in which they work, often in key operational management roles.*

3.1 ENTRY REQUIREMENTS

SARTOR Edition 3 establishes entry requirements for accredited courses. Full details of the requirements, including how to deal with such entrants as mature students, are set out in Annex B to Part 2, Section 4.1.1 in SARTOR. The requirements are specified as UCAS points, or equivalent, for a percentage of the intake. For an MEng the requirement is 24 UCAS points; for a BEng (Hons) it is 18 UCAS points; and for an IEng degree it is 10 UCAS points. For an HND or HNC course the standard EDEXCEL-BTEC or SQA-SCOTVEC requirements apply. The proportion of an intake which should have the specified points score is being phased in as follows:

- 50% being applicable to the intake year 1999/2000
- 60% being applicable to the intake year 2000/2001
- 70% being applicable to the intake year 2001/2002
- 80% being applicable to all entries thereafter

Please refer to the Engineering Council website for further details on entry standards: http://www.engc.org.uk/gateway/0/index0.html

3.1.1 Non-Standard Entry

All submissions for accreditation of courses should include an explicit statement on entry requirements.

It is expected that applications for accreditation of courses will offer an analysis of entrants by qualification in such a way as to identify the number of non-standard entrants, including students from courses where the early parts are franchised. SARTOR Edition 3 restricts the proportion of non-standard entrants to an accredited course to 30%. However, in the event of unusual circumstances occurring, a university should then put forward a case for special treatment to the Society. Strong supporting evidence will be required to support the case for equivalence to the standard SARTOR requires.

3.1.2 Entry with Advanced Standing

The Society is keen to encourage the use of APL (Accreditation of Prior Learning) and AWBL (Accreditation of Work-Based Learning), but their implementation procedures must be made explicit in the submission and must emphasise the quality assurance mechanisms.

It is possible for accreditation to be withdrawn if the number of students entering with advanced standing undermines the integrity of the course. The limit of 30% non-standard entry overall includes members of the cohort who enter with advanced standing. It should also be noted that to be covered by an accreditation decision students must complete at least half the course of study on the accredited course. Students admitted with advanced standing to the final year will not therefore be covered by any accreditation.

3.2 MATCHING SECTIONS

In order to bring a partially accredited three-year honours degree[1] up to the level required for full CEng accreditation, or a partially accredited HND up to the level required for full IEng accreditation, an additional year of full-time study, or part time equivalent, is required - the Matching Section.

Annex A of Part 2, Section 4.1.1 of SARTOR Edition 3 sets out the requirements for Matching Sections for Chartered Engineer. Annex A of Part 2, Section 4.1.2 of SARTOR Edition 3 sets out the requirements for Matching Sections for Incorporated Engineer.

The BCS recognises that Matching Sections will be achieved by different routes, for example via work-based learning, a period of academic study, or through a combination of both.

3.2.1 Key Elements of a Matching Section

Matching Sections must be flexible to meet the varying needs of differing industrial partners and individuals. However, any CEng or IEng Matching Section must comply with the following parameters set out in SARTOR 3:

- Specialist knowledge should be increased to meet the wider range and increased depth required to satisfy the full educational base specifications

- Broader and more general studies, both within and outside engineering and including non-technical subjects should be covered to provide the foundation for leadership, social and business awareness. The development of enhanced management skills and further studies in subjects such as law, finance, risk assessment, health, safety and environmental issues should be covered as required.

- Project work should be extended from the individual technical projects completed earlier and include within the Matching Section a wide-ranging group project centred on real business needs and preferably involving an industrial, commercial or public sector organisation. Ideally the project should have a cross-disciplinary or international flavour.

[1] Four years in Scotland

- ❖ Industry should ideally be involved in the design, and preferably also the delivery, of Matching Sections, to provide commercial and technical relevance

3.2.2. CEng Matching Section

Examples of courses which an institution might put forward as CEng Matching Sections include:

- Postgraduate programmes specifically designed to bridge between a three-year honours degree and the requirements for full accreditation

- Masters or Postgraduate Diploma programmes, particularly those which integrate technology and IS business management or which lead to a specialist sub-discipline

- IGDS or Teaching Company Associate Schemes

3.2.3. IEng Matching Section

Examples of courses which an institution might put forward as IEng Matching Sections include:

- Programmes designed to bridge between a part-accredited HND and the requirements for full accreditation

- Edexcel-BTEC Professional Development Qualification programmes, particularly those which integrate technology and IS business management or which lead to a specialist sub-discipline

3.2.4. General Guidance on the Content of an Academic Matching Section

Since there will be variations in the education base of the partially accredited first qualification, the Matching Sections will also vary accordingly. It is therefore important that the guidance given by the Society is not overly prescriptive.

The BCS guidance on course content is that an academic Matching Section should contain the following minimum elements:

- Increased specialist knowledge 10%
- Technical broadening 10%
- Non-technical broadening 20%
- Group project 10%

The project work required could be extended from any individual technical projects completed earlier to include a wide-ranging group design project centred on real business needs and preferably involving an industrial, commercial or public sector organisation. It is recognised that a group project often occurs as part of an HND. Nevertheless, it remains important to ensure that the group project is at an appropriate level. Ideally the group project would have a cross-disciplinary or international flavour. The group project work need not be derived from a project which is separate from other work tasks. It may be preferable for the submission to arise from actual project work undertaken in industry with real constraints

The Engineering Council advises that an assessed sandwich placement might contribute up to 30% of the requirements of a Matching Section, primarily through the non-technical aspects of the group project. A suitable sandwich placement could therefore be approved by the BCS during the review of a course for partial IEng or CEng accreditation. If an HEI then wishes to design a Matching Section to accompany this particular sandwich course the Matching Section element could be reduced proportionately.

3.2.5. Nature of the Matching Section

The percentages quoted in Section 3.2.4 are intentionally broad to allow the Matching Section to dovetail with the existing educational qualification it is intended to match.

An academic institution may wish to present a course which is intended to match a partially accredited CEng or IEng course from within its own institution or a designated course from another specified institution.

Alternatively, a course could be intended as a generic Matching Section. In this case the Matching Section would have to offer students a sufficient choice of subjects to provide the increased specialist knowledge required. Additionally, for a course to be considered suitable as a generic Matching Section it would be necessary for individual students to demonstrate that the technical deepening requirement had been achieved by building on earlier undergraduate studies, and it would be incumbent on the university to counsel students accordingly.

The BCS may decide that a course does not fulfil all the requirements of a Matching Section. In this case the subsequent visit report will detail which requirements have been met and which are still to be attained.

The BCS will expect an HEI running an academic Matching Section to provide guidance to students as to how the Matching Section fulfils the individual student's requirements

If your Institution intends to present a Matching Section for approval please supply additional information as detailed in Appendix IV

4 REGULATIONS

4.1 PROVISIONAL EXEMPTION AND ACCREDITATION

Courses are exempted/accredited only when at least one cohort of students has graduated, since it is the final standard achieved which determines whether the course is appropriate for exemption or accreditation. Provisional exemption and accreditation may be granted for new courses or programmes which seem likely to meet the appropriate criteria but which have not yet produced graduates. It is not a guarantee of future exemption/accreditation but is given only where the Society is confident that the course is likely to meet its objectives and to merit future consideration. Provisional status will not be for a period longer than the course length and more commonly will only be granted for one intake. The registration position of students accepted onto provisional courses is protected even if the provisional status is not subsequently confirmed.

Confirmation of provisional status should occur when the first cohort graduates. Institutions should provide the Society with a documentary submission typically containing final year examination papers and samples of final year projects. It is possible for exemption to be backdated in certain circumstances. Accreditation will only rarely be backdated.

4.2 90 DAY RULE

There are occasions when the exemption or accreditation is subject to further action being taken by the institution. Where this is the case, the Society will normally give notice of this and require the institution to respond to the request for action within a specified period,

usually within 90 days of receiving the final version of the report. The institution should provide the additional information in the form of a documentary submission which will be reviewed by the visiting panel. Should the institution fail to provide the necessary documentation within the specified time period, the accreditation/exemption will not normally be granted.

4.3 MAXIMUM PERIOD

The maximum period of exemption and accreditation is five years. If concerns about the present operation of the course, or uncertainties about its future, have been noted during the visit, a shorter period of exemption or accreditation may be granted.

4.4 INDIVIDUAL EXEMPTION

It should be noted that there are a number of routes to BCS Corporate Membership for applicants who have not gained an exempt award. One such route is via Individual Exemption, which is available to applicants whose course does not meet in full the requirements for exemption or has not been considered by the Society. Cases are assessed on an individual basis, and for this reason success is not guaranteed.

4.5 INDIVIDUAL CASE PROCEDURE

Just as there are routes to Corporate Membership for applicants who do not already hold exempt awards, so there are routes to Chartered and Incorporated Engineer status for applicants whose awards are not accredited. Such applications are considered for Engineering Council registration via the Individual Case Procedure. The candidate's educational profile is assessed, and as a result of this assessment one of the following recommendations is made to the Engineering Council:

- full exemption from the Engineering Council Examinations - this means that the candidate's qualifications are considered to be equivalent to an accredited qualification
- a "top-up" of a number of papers from the Engineering Council Examination - this may be recommended because there is a specific area missing from the candidate's education, or because there is insufficient evidence about the engineering content of the qualifications
- the candidate's subsequent training and experience should be considered to determine whether it has compensated for any lack of engineering content in the educational profile.
- the Mature Candidate Route - this route is recommended if there is little or no evidence of an engineering education, or if the candidate's qualifications were awarded a long time ago

5 THE PROCESS

5.1 APPLYING FOR EXEMPTION OR ACCREDITATION

The Society has a rolling programme of visits to institutions to consider courses for exemption and accreditation. Institutions included in the programme are normally visited every five years and are contacted by the Society when a visit is due. Visits would usually consider the entire range of relevant courses offered at the institution.

For institutions seeking exemption or accreditation from the Society for the first time, the following steps will be taken:

- the institution discusses the process and the courses to be considered with the Education Department at BCS Headquarters
- the Society arranges an advisory visit by an assessor. A brief report is usually produced for use by the Society and the institution. The report will contain information about any issues which would need to be addressed before a full visit could take place
- if the Society is satisfied that it is appropriate, a full visit is arranged when it can be fitted into the programme

5.2 VISITS TO INSTITUTIONS

For each visit a visiting panel is established. A typical panel has five members and is supported by a member of the BCS Secretariat. At least two members of every Accreditation Panel are members of the Academic Accreditation and Exemptions Committee (AAEC), which is the body responsible for making decisions to grant exemption and accreditation. The remaining panel members are drawn from a register of assessors held by the Society. Members of the Committee and of the Register of Assessors are Members or Fellows of the Society working in education and industry and a visiting panel contains both industry representatives and academics.

The visit usually lasts one day. The programme for the visit is developed through discussions between the Education Department at BCS Headquarters and the panel chair. Before the visit, the Institution must provide the Society with the documentation as outlined in Appendix III.

The Society recognises that changes to courses may be introduced in between the visits to an institution. If major changes are introduced it may be necessary to revisit the institution to ensure that exemption or accreditation can continue. A number of different arrangements may be made and the advice of the Education Department should be sought in such situations. Some possibilities are:

- a documentary submission only, if the institution has been visited previously and is operating other exempt or accredited courses. This is unlikely to be appropriate for a major revision where full exemption or accreditation is sought
- a small-scale visit to the Institution, normally involving two members of the AAEC, together with a member of the BCS secretariat
- a meeting in lieu of a visit, if there is no need to inspect resources. This can be especially convenient for overseas institutions whose representatives are in the UK for other purposes. Meetings can be arranged in London, Swindon or another mutually convenient location
- an advisory visit to provide guidance which does not lead directly to a formal decision

Unfortunately, the Society cannot bear the cost of small-scale visits or meetings of this nature, and will therefore expect its travel and accommodation costs to be met by the Institution.

5.3 THE VISIT REPORT

A detailed report will be written following the visit, summarising the discussions that took place and the views put forward by the visiting panel and the institution. The report serves the dual purpose of informing the AAEC about the course, and informing the academic institution of the views of the Accreditation Panel. Formally, the report makes recommendations to the AAEC. Some of the recommendations may concern changes which are desirable if the course is to retain or be granted exemption in future. A draft report is sent to the Department for comment on factual content, before the report goes to the AAEC. The

response of the institution to these recommendations will be taken into account by the AAEC in considering the continuing status of the course.

Once the report has been agreed by the AAEC, a full copy of the approved report, together with a letter stating the main terms of the decision, is sent to the Vice-Chancellor or Director of the institution and also to the school or department. The decision is not given until the AAEC has approved the report, and so there may be a delay between the visit and the decision; in most cases this should not exceed six months.

5.4 ARRANGEMENTS FOR THE DAY OF THE VISIT

Please give details of the room and the building to which the visiting party should report on arrival.

Please supply a map of the campus indicating where parking is available. If parking permits are needed, please contact the Education Department in good time to arrange the permits.

The Education Department will propose a programme for the visit once the documentation has been reviewed. The programme will be designed to allow the Panel appropriate time to review all the courses offered for consideration. The Society seeks to restrict the visit to a single day, where possible, but a visit up to two days in length may be necessary if a great many courses are put forward.

Choice of Room

Please note that it is difficult for the Panel to have to move rooms during the course of the day as they will have quantities of documentation and overnight bags with them. It is most helpful if they could be based in the same room for all of the day except the tour of facilities and lunch. If the room chosen is too small to accommodate a meeting with students from all courses, further accommodation may be required for this meeting. It is essential that the main room can be locked while the panel are touring facilities, and it should include a telephone with an outside line in case of necessity. It is also more efficient if the base room can be sited within easy reach of toilet facilities.

If the visit is being undertaken jointly with another institution (such as the Institution of Electrical Engineers, IEE), the arrangements may be different and more than one room may be required for all or part of the day. We will notify you if this is the case.

5.5 JOINT VISITS WITH OTHER ENGINEERING INSTITUTIONS

Some courses may be appropriate for accreditation by both the British Computer Society and another Institution (e.g. IEE). Joint accreditation visits can be arranged with the lead being taken by one of the institutions selected by the department(s) being visited.

Departments interested in a joint visit should contact both bodies. Because of the difficulty in reconciling visit schedules, it is advisable to discuss joint visit plans well in advance of the proposed date of the event.

5.6 LIST OF EXEMPTED AND ACCREDITED COURSES

Lists of exempt and accredited courses will be available on the BCS website: www.bcs.org.uk

5.7 FEES AND CHARGES

Visits will only be made to institutions which are Educational Affiliates of the Society and which are up to date with their subscription payments. The annual affiliate fee for educational institutions covers the cost of a quinquennial visit to the institution. For additional visits, the Education Department should be consulted about fees and charges.

5.8 CONFIDENTIALITY

The Society treats the work of the Academic Accreditation and Exemptions Committee as confidential. No reports, or minutes of meetings, will be shown to anyone unless they are a member of the committee or of the accreditation panel, or a representative of the Society secretariat, or the Engineering Council.

No restrictions are placed on the use of the report by the Institution to which it is sent.

APPENDIX I PRACTICAL APPLICATIONS (AND ENGINEERING APPLICATIONS I AND 2 - EA1 AND EA2)

Introduction

Before each visit the Society requests documentation about the courses under consideration (see Appendix III). The information called for includes a statement on the Practical Applications content of the course as appropriate. The intention of this appendix is to provide a framework which may assist in mapping Practical Applications (PA) requirements into information systems courses.

The range of courses which may be exempted or accredited by the Society calls for a range of interpretations of PA. Rigid definitions have been consciously avoided because they would seldom have universal validity and would be inappropriate in a discipline which is subject to very rapid change. The Society intends that exemption and accreditation criteria should be "interpreted flexibly in such a manner as will not discourage well-considered educational experimentation".

SARTOR requires that accredited courses should give adequate attention to the "Engineering Applications" described in the Finniston Report "Engineering Our Future" (I980). Finniston defined four "Engineering Applications", and proposed that EA1 and EA2 should form part of degree courses in engineering disciplines. SARTOR makes this a condition of accreditation.

The description set out in the section on PA below, covers the requirements for EA1 and EA2 for accredited courses.

Practical Applications

Information systems is a discipline or study based on sound underpinning theories together with the practical application of methods and techniques. As a result, courses seeking exemption or accreditation are required to exhibit that they are based on a sound theoretical foundation and at the same time are practically based. The practical elements and approach are captured under the heading Practical Applications (PA), and are a requirement for all exempt and accredited courses.

Information systems are inherently concerned with the manipulation of information which is itself abstract, by the use of components and tools, some of which are abstract, to represent that information in a form which may have physical or visible substance. The Society expects all courses seeking exemption or accreditation to equip their students with practical experience of the use of relevant components and tools. Some of these are common to all courses which deal with information systems. Others vary according to the orientation of the course.

The practice of information systems may embrace a range of specialisms. The processes undertaken therefore vary. For this reason, although some tools are essential items in the "tool kit" of all information systems practitioners, the precise content of that tool kit must vary according to the branch of information systems practised. In keeping with the abstract nature of the material which the information systems practitioner handles, some of the tools used are logical and intellectual tools and techniques rather than physical ones.

The Society identifies some components of this tool-kit to which all should be introduced. These include the necessary intellectual tools of the trade, for example:

- an understanding of the applications fields in which information systems skills will be exercised
- underlying theory, including appropriate theoretical underpinnings
- design as a concept and as a practical process
- project management
- technical and economic decision-making in a commercial context

- quality and fitness for purpose
- professionalism

Laboratory practice in the use of a tool kit is an essential feature of PA provision in any information systems course, whatever its orientation and emphasis. Basic tools for use in the PA content of all information systems courses might be software packages, testing software, documentation techniques for designing/implementing systems or from which others will work. Beyond this, the tools and components on the workbench used for PA will vary according to the character of the course. In an educational programme with a software engineering emphasis, PA content might place emphasis on the use of languages, operating systems, reasoning tools, design tools, HCI tools, and configuration control tools. Courses with an emphasis on systems analysis and design might place greater importance on techniques for obtaining and structuring information, data analysis, modelling methods, design and analysis tools, and HCI. Where a course is expected to address predominantly engineering, scientific or numerical applications, the toolkit might emphasise mathematical modelling, numerical algorithms and simulation. In a hardware oriented course, the tool kit might include integrated circuit design, measuring and display instruments, logic analysers, performance measurement tools and techniques and low level programming.

In addition to the tool kit requirements, the requirements of PA can be more broadly stated as, "The application of professional analysis and design to the solution of practical problems of information systems and processes. Emphasis on the relevance of theory and analysis including the ability to develop and use theoretical models from which the behaviour of computer applications can be predicted. Each course should embody and integrate theoretical, practical and project work commensurate with the level of study being pursued."

The Society expects students to be concerned with design from the very beginning of an information systems course, and a growing understanding of design should be developed as PA activities are undertaken. The design of information systems must be based on sound theory and analysis, and on the use of models, where appropriate, to forecast the behaviour of computer applications.

The design of information systems must meet market needs, a knowledge of which is important. The characteristics which the Society looks for in exempting or accrediting courses include the commercial and economic implementation of technical decision making - taking account of legislation, management principles and professional responsibility.

Students should be exposed to the interplay between market needs and technological possibility, and between quality and cost. For this reason, there is a need for academic staff to maintain active links with industry, and for these links to permeate the taught course.

The Society expects a substantial project to be a major contribution to the PA content of the course. It is expected to be a practical problem-solving project, and it is desirable that it should meet a real need in an industrial or research project context and have an identifiable customer other than the student. In the project students are expected to apply the skills and tools to which they have been introduced through the PA content of the course, and also to use the theoretical principles taught.

Group work of various kinds - not only practical project work undertaken by a group - may also make an important contribution to PA, particularly since the ability to work within a team, to lead a team, and to liaise with a "client", may be regarded as important aspects of practical problem solving for an information systems professional.

In addition to project and group work, the PA content of information systems engineering courses should include:

- familiarity with and use of formal and semi-formal design methods
- familiarity with software support environments
- tools and techniques for the management of projects
- attention to the quality, reliability, timeliness and maintainability of the systems produced

PA is expected to pervade the whole educational programme, whatever its length and level. The integration of theory and practice, the habit of giving careful attention to design, and the awareness of the need to fulfil needs and specifications should be a part of the course from the beginning.

PA is an essential element of a course seeking exemption or accreditation. It is essential that courses seeking exemption or accreditation embrace the spirit of PA as set out above. The submission document must show where the various elements of PA are met.

APPENDIX II – FRANCHISED COURSES, STUDY ABROAD AND DISTANCE LEARNING

FRANCHISED COURSES

There are two main types of franchising arrangement which the Society is asked to consider: the first is where part of a course (often the first year) is franchised to another centre, and the students from the franchised centre join the course at the franchising centre with advanced standing; the second is where the whole of a course is franchised.

PARTIAL FRANCHISING

Where the first part of a course is franchised to another centre, it is expected that:

- the panel will, on the occasion of their visit to the franchising centre, meet some staff from the franchised centre
- a documentary submission will be provided specifically to cover the franchise arrangements which will explain:
  - the nature of the franchise
  - course documentation, if different
  - resource details
  - quality assurance arrangements
  - procedures for promoting the integration of the courses and students
  - examples of assessments from the franchised centre, if different
- a visit to the franchised centre will only occur if there is any doubt in the minds of the panel members
- if a franchise occurs between visits a documentary submission is required covering the material listed above

For a student joining an exempt or accredited course from a franchised centre, it is necessary for them to spend a specified minimum period at the awarding institution in order that they qualify as part of the cohort of students who gain exemption or accreditation.

In the case of courses gaining full exemption or full or partial accreditation for CEng or full IEng accreditation it is necessary for the student to spend the two final (full-time or equivalent) taught years at the awarding institution. For courses with exemption from certificate and diploma, from partial IEng or from the advanced professional diploma it is necessary that at least the final half of the taught part of the course be studied at the awarding institution.

TOTAL FRANCHISING

In the case where a whole course is franchised, and exemption or accreditation is sought for students studying at the franchised centre, the course will be treated as separate from the franchising institution and a full evaluation will take place, namely:

- a panel will visit the franchised centre (even if the centre is outside the UK)
- a documentary submission will be provided in accordance with the normal requirements with an extra section specifically to cover the franchise arrangements which will explain:
  - the nature of the franchise
  - course documentation
  - quality assurance arrangements
  - format of certificates and transcripts
- if the franchised centre has been recently visited, only a documentary submission may be required

The franchised centre will be required to become an Educational Affiliate of the Society. The timing of visits to franchised centres does not need to be linked to a visit to the franchising centre, and separate reports will be written, but it should be noted that the Society reserves the right to withdraw exemption or accreditation from a course at a franchising centre, if it finds itself unable to exempt or accredit the same course at a franchised centre. In

accordance with Society practice, if the franchised centre is not in the UK, the cost of the visit will be met by the centre.

COURSES INVOLVING STUDY OUTSIDE THE UK

Courses involving study overseas fall into two categories for exemption and accreditation purposes.

If the period of study in another institution is optional and is additional to the award obtained by not taking up the option, then the award of the home institution can be considered without reference to the period of study abroad.

If there is a period of study in another institution which contributes to the award in question and is an integral part of the award, then the rules for franchising as set out above apply. Exceptions may occasionally be made, if the Society is satisfied that the content and standard of the course of study undertaken by students is equivalent to that at the home university. The Society will need to be satisfied with quality assurance procedures. Please consult the Education Department on what evidence will be required in such cases.

An international dimension in courses is encouraged providing that the basic criteria are met. The nature of the international dimension varies according to the aims and objectives and nature of the course. Some of the following may be present:

- language teaching
- teaching about the business environment in the chosen country
- students spending a period (varying from three months to a year) on an approved programme of study at an academic establishment outside the UK
- students spending their industrial placement year in a company outside the UK
- exchange students spending a period at the institution in the UK

If students spend their industrial placement year in a company outside the UK, the Society will look for preparation before, supervision during, and evidence of building on the experience after the placement (as would be the case with a sandwich placement in the UK). If the final year project is based in the overseas company, the Society will require the UK institution to monitor the academic aspects as well as industry standards in the report.

If there are exchange students spending a period at the institution in the UK, the Society will expect to receive details of the background of the students, any bridging course/induction to UK, and recruitment criteria, e.g. is their previous course accredited? In particular, assurance is needed that there will be no dilution of cohort standards for UK students.

DISTANCE LEARNING

A. Introduction

The BCS will consider for exemption and accreditation, distance learning courses offered by an institution where the institution is in the UK or overseas, called the home institution, and the students taking the distance learning courses are resident in the UK or overseas. The home institution is responsible for ensuring that distance learning programmes are designed, delivered and assessed so that the academic standards of the awards are demonstrably comparable with the awards offered directly.

In considering distance learning courses, the BCS will pay particular attention to areas which are directly affected by the distance learning aspect i.e.: the methods of delivery, the provision of tutorial support, the extent and nature of practical activities (including group work), the supervision of projects, the methods of assessment, access to library and computing facilities, student involvement with course monitoring and review, and the involvement of external examiners.

B. HEI Submission

Full details of the course content and structure will be required as specified in the BCS Guidelines on Course Exemption and Accreditation. The home institution should also supply information highlighting the differences in provision between courses delivered directly at the host site and those delivered by distance learning.

The following additional information should be included as an appended submission to your main application, and your responses should indicate how the distance learning provision differs from the delivery at the home institution:

1 General Information

1.1 Course title

1.2 The date the distance learning provision commenced

1.3 The location(s) where the course is delivered

1.4 The number of students currently studying at each location

2 Support Structure

2.1 Detail the procedure for approving and reviewing any local support centre employed in delivering the programme. Describe the quality control systems which cover the regular monitoring and review of the performances of local agents, tutors and those conducting teaching at a distance

2.2 Provide details of the learning resources and the support and guidance made available directly to students from the home institution; any assumed or required to be in place at the location of the student; and any to be obtained by the student. Identify the support provided on an individual basis and on the basis of a local or networked group

2.3 Describe the lines of communication to be employed. The Society may wish to see evidence of this interchange.

2.4 Provide details of the procedure for monitoring data on student progress, and evidence that students are provided with regular feedback on their performance in relation to the stated learning outcomes of their course.

2.5 Detail the mechanism for appropriate and realistic student representation

3 Staff

3.1 Provide brief details of the quality, level and number of staff involved with the delivery of these courses. Where courses are supported by staff at overseas institutions the qualifications and experience of the staff involved would need to be equivalent to staff with similar responsibility on the home institution's programmes.

4 Study Materials

Provide information to show that the:

- Materials supplied are comprehensive and of good quality
- Have quality assurance processes in place to assure the quality of the materials.
- Students have access to current research in the field

- Students have a familiarity with, and access to, a range of material beyond standard course texts
- Adequate field testing of learning materials has been carried out

5 Computing Resources

5.1 Provide information to show that the computing resources are sufficient to support student numbers, and that appropriate software is available.

5.2 Where students provide their own equipment describe the measures in place to ensure that these students have appropriate systems available to them.

6. Assessment

6.1 Detail the quality assurance procedures in place to ensure that assessment in the distance learning programme is at the same level as any equivalent course delivered by the home institution. If assessment differs from that provided at the home institution this would need to be justified and assurance provided that assessment is at the same standard and is unbiased in favour of either group of students

6.2 Provide details of the security/monitoring arrangements for any locally administered assessment, including coursework

6.3 Provide assurance that appropriate processes are in place to guard against plagiarism

6.4 Provide details of external examiner arrangements, including access to the assessed coursework and examination scripts of students

7 Course Related Issues

Provide:

7.1 Evidence that coursework is adequate and that there are sufficient resources to support it, for example access to appropriate software including CASE tools and to library facilities

7.2 Evidence of adequate supervision of project work

7.3 Evidence that the application of engineering principles is demonstrated in practical work

7.4 Identification of minimum academic prerequisites for the programme relevant to the country of delivery

7.5 Information on the language of instruction and assessment (if delivered outside the UK)

APPENDIX III

HEI APPLICATION FOR BCS EXEMPTION AND ACCREDITATION

As far as possible the HEI Application Form has been designed to allow institutions to present information in a similar format to that required by Quality Assurance Agency as Programme Specifications documents. This is particularly the case with Section B of the Application Form relating to Course Issues. The BCS does, however, require specific additional information not requested by QAA and you must ensure that each of the questions in the application form is addressed.

The HEI Application Form can be downloaded electronically from the BCS Education web page.

SECTION A: Overview

This section deals with institutional and departmental matters, and should be completed for each department putting forward courses for accreditation and exemption. Please address these questions directly and do not provide irrelevant information.

SECTION B: Course Issues

This section must be completed for each course submitted for exemption and accreditation. However, we understand that separate courses may be part of a common scheme; if so, the scheme should be detailed in a single section. Provided a document is clearly cross-referenced, it is not necessary to repeat common aspects of a number of courses within a scheme or, indeed, a number of schemes.

GUIDANCE ON PRESENTING THE DOCUMENTS

On completion, a copy of the main submission document should be sent to the BCS electronically.

To enable easy reference of this documentation by Panel members during the visit you should also supply seven hard copies of the submission document together with the appendices, at least eight weeks before the visit. An additional hard copy should be kept by the HEI in reserve for emergencies. Documents should be bound in slide, heat or comb binder format, and not presented loose in ring binders or box files.

Please number the pages of the finished submission, including examiners' reports, examination papers and any other material. If you supply module catalogues for modular schemes, please make sure these also have page numbers. Failure to number pages makes the Panel's task significantly more difficult.

References to web pages are not acceptable on their own, as Panel members do not have time to browse websites.

If documents are not received within eight weeks of a visit, or do not adhere to these guidelines, the Society reserves the right to postpone the visit.

HEI APPLICATION FOR BCS EXEMPTION AND ACCREDITATION

SECTION A: OVERVIEW

Name and address of Institution	
Web Address	
Department(s) visited and Department Head(s)	
Contact Name (for visit) **Telephone Number** **E-mail Address**	

COURSES PRESENTED FOR REVIEW:

Course Title	**Exemption/Accreditation sought**

A.1. DEPARTMENT STRUCTURE

Provide a brief description of the relevant Department/Faculty/School structure involved in the accreditation visit.

A. 2. QUALITY ASSURANCE

Submit **brief** answers for this section, or append one copy of the University Quality Handbook making specific cross references in each of the sections below, or cut and paste sections from the Handbook.

A.2.1. Provide details of the Departmental QA management structure & procedures.
A.2.2. Indicate the relationship between the Department/Faculty/School QA procedures and the University.
A.2.3. Detail the procedures for course design, review and improvement, and the mechanisms for obtaining student input.
A.2.4. Explain how the syllabus and teaching materials are kept up to date.
A.2.5. Provide information on the QA of assessment including awards.

A.2.6. Describe the role of the External Examiner in the QA process and provide details of the follow-up and feedback processes.
A.2.7. Describe the mechanisms for student feedback.
A.2.8. If relevant describe the arrangements for course franchising and the controls over areas such as transcripts.
A.2.9. Give the date of the last QAA review and the rating achieved.

A.3. STAFF

A.3.1. Academic Staff (numbers of)					
Department Head	Chair	Promoted Lecturers♣	Other Lecturers	Research Staff	Total

A.3.2. Staff/Student Ratio:		State how this ratio is determined:	

♣ i.e. Senior or Principal Lecturers in the old & new universities respectively

A.3.3. Academic Staff Membership of Professional Bodies	
Number of BCS Members and Fellows	
Number of CEng/IEng	
Membership of other Professional Bodies: [please state which Institution(s) and number of staff members]	
Number of BCS Student Members	

Please provide an Appendix giving brief career details of Department academic staff. Please indicate qualifications, academic experience, professional membership, industrial & commercial experience, research interests & recent major publications.

A.3.4. Support Staff (numbers of)					
Secretarial	Administrative	Hardware Support	Software Support	Other	Total

A.3.5. Provide brief details of the qualifications of the technical support staff

A.3.6. Staff Development
Provide brief details of the development policies for all staff & how these are implemented, and information on the staff appraisal scheme.

A.3.7. Staff Training

Specify the training available and how this is funded. Include induction training for new staff.

A.4. RESOURCES

A.4.1. Computing Facilities

A.4.1.1. Computing Laboratories

Provide details of the Departmental facilities available for the students on the courses under review, and for each named laboratory supply the following information:

- Hours of access (in term time and vacation)
- Available hardware
- Available software provision including CASE tools
- Number of available seats
- Whether the laboratories are specifically dedicated to particular student years/groups

Provide details of other computing facilities used by students on the courses under consideration, e.g. in another department, or within common institutional facilities.

A.4.1.2. Ratio of Laboratory Computers per Student

State the ratio of computers per student.

A.4.1.3. Staff Computing Resources

Detail the computing resources available for Departmental staff.

A.4.1.4. Replacement Policy

State the policy for updating and replacing hardware and software, and details of the annual funding available for each.

A.4.1.5. Personal Computers

State the policy for supporting students who use their own computers.

A.4.2. Library

Provide the following information:

- Annual Departmental spend on books
- Annual Departmental spend on journals and the number of relevant journals available
- Mechanisms for managing books in high demand
- Access hours in term time and vacation
- Student access to relevant sources of information including CD-ROMs, Web, library catalogues, etc

A.4.3. Student Support

Provide brief details of the pastoral and welfare support available to students.

A.5. RESEARCH

Please answer section A.5. briefly in less than 1000 words

A.5.1. Provide details of the key research areas.
A.5.2. The date of the last RAE and the grade achieved.
A.5.3. The proportion of staff who are currently research active.
A.5.4. Describe the procedures/processes that feed the research work into the courses under consideration.

A.6. INDUSTRIAL LIAISON

Please answer section A.6. briefly in less than 1000 words

A.6.1. Indicate how industrial input to course design and delivery is implemented.
A.6.2. List the links the Department currently has with commerce and industry.
A.6.3. Indicate what formal mechanisms are in place to ensure that the courses under consideration are influenced by commercial and industrial links.

SECTION B: COURSE ISSUES

This section is designed around a QAA format for Programme Specification. If you have prepared a current Programme Specification for QAA we would appreciate it if you could cut and paste the information into this form. Alternatively, you can submit the Programme Specification documents as Appendices, clearly cross-referenced in this form. However, please note that for BCS exemption and accreditation purposes additional information is required in this section. The items marked with an asterisk are not specifically included in the QAA Programme Specification.

The information detailed below is required for each course or integrated group of courses submitted (a named route within a degree scheme is regarded as a 'course' for the purposes of these guidelines). It should be based on the academic experience of the first cohort for which exemption and accreditation is sought, taking into account any changes that are envisaged within the next five years.

B.1. COURSE DATA

B.1.1.	**Awarding institution**	
B.1.2	**Teaching institution**	
B.1.3.	**Programme accredited by**	
B.1.4.	**Final award**	
B.1.5.	**Programme title**	
B.1.6.	**UCAS code**	
B.1.7.	**Relevant QAA subject benchmarking group(s)**	
B.1.8.	*** Date course first offered**	**Date of last revision**
B.1.9.	*** Mode(s) of study & course duration**	
B.1.10.	*** Student intake to course for current academic year**	
B.1.11.	***Name & position of current External Examiner**	
B.1.12.	***Accreditation/exemption sought**	
B.1.13.	***Department(s) responsible for the course**	

B.2. EDUCATIONAL AIMS AND PHILOSOPHY OF THE PROGRAMME

Provide details of the course aims, objectives and philosophy and relate these to the QAA Computing Benchmarking Statement.

B.3. INTENDED LEARNING OUTCOMES

The programme provides opportunities for students to develop and demonstrate knowledge and

understanding, skills, qualities and other attributes in the following areas:

B.4. PROGRAMME STRUCTURES AND REQUIREMENTS, LEVELS, MODULES, CREDITS AND AWARDS

B.4.1. Include a high-level outline diagram of the course structure to include the following: Levels, Modules (indicating compulsory & option modules), Credits and Awards Provide a syllabus, showing prerequisites, for each course unit or module, bound as an Appendix.
B.4.2. *Sandwich Placements - if applicable Provide details of the nature & extent of this component, the steps taken to integrate the placement with the course, the supervisory arrangements and the assessment details.
B.4.3. *Franchise arrangements - if applicable Indicate the Institution where franchised, and the proportion of the course studied.
B.4.4. *Distance Learning - if applicable Provide details of the distance learning component including the quality assurance procedures, the supervisory arrangements and the assessment methods in place.

B.5. LEGAL, SOCIAL, ETHICAL AND PROFESSIONAL ISSUES

B.5.1. *Detail where legal, social, ethical and professional issues are taught and assessed within the course.
**B.5.2. ***Provide brief details of staff and student involvement in the activities of professional societies.

B.6. PRACTICAL APPLICATIONS / ENGINEERING APPLICATIONS

***Indicate how coverage of Practical Applications is achieved [as detailed in Appendix I of the BCS Guidelines on Course Exemption & Accreditation], and provide a matrix which identifies the modules covering the various elements of the tool kit** *Please supply some examples of current practical assignments. These should be bound separately as an Appendix.

B.7. PROFESSIONAL PROJECT(S)

[For full CEng or IEng accreditation give details of both the individual project and the group project]

B.7.1. *Specify whether the course contains an individual and/or a group project.
**B.7.2. ***Detail the project specification or provide your project guidance notes to students as an Appendix .
**B.7.3. ***Explain how projects are allocated, organised and supervised.

B.7.4. *List 8 recent project titles, with one brief sentence of explanation.
B.7.5. ***Indicate the approximate time students are expected to devote to the project.
B.7.6. ***Explain how the project is assessed. If the project is team based indicate whether assessment is on an individual or team basis. If the latter state how the individual contribution is assessed.
B.7.7. ***Detail any formal mechanisms in place to ensure that the final project meets BCS requirements.

Please supply samples of final year project reports. These should be sent with the documentation and offer a spread of abilities including some bare passes. Include the individual marking sheets with each project and also details of the marking scheme.

B.8. CRITERIA FOR ADMISSION

B.8.1. Published Entry Requirements

Provide details of the published entry requirements for each course.

B.8.2. *Actual Entry statistics for the last two intakes

Provide details of the actual entry statistics for the last two intakes broken down into the following categories:
This information is not required for MSc courses

	***Intake Numbers* Year:**	**Percentage of cohort**	***Intake Number Year:***	**Percentage of cohort**
A/AS levels / AVCE / SQA Advanced Highers				
BTEC / SCOTVEC ND				
BTEC / SCOTVEC HND				
GNVQs				
Foundation course / Access				
Mature Entry				
Overseas students				
Others				
Total				

B.8.3. ***Average 'A' Level points** *This information is not required for MSc courses* Provide details of the mean average A/AS/AVCE/SQA Advanced Higher level points scored over the last 2 years.	**Year:**	**Year:**
B.8.4. *For accreditation purposes under SARTOR Please indicate the percentage of the last 2 student intakes meeting the entry requirements specified in SARTOR 3rd Edition. Refer to Engineering Council web site for current details at: ***http://www.engc.org.uk/gateway/0/index0.html***	**Year:**	**Year:**

B.8.5. *Advanced Standing – if applicable If students are permitted to enter the course with Advanced Standing state at which stages they may enter and the maximum % of a cohort permitted to do so.
B.8.6. ****Study at non-UK universities – if applicable* If students are permitted to study at non-UK universities during part of the course please state: • % of students following this route

• timing of the study in the context of their course • 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
B.8.7. *****Exchange Students – if applicable*** State whether Exchange students are permitted to enrol for specified periods within the course. If so, please detail: • % of students • duration involved

B.9. REGULATION OF ASSESSMENT

B.9.1. Detail the conditions governing progression from one year to the next within the course.
B.9.2. Detail the conditions governing the final award.
B.9.3. *****Indicate how much of the course as a whole and the final award is assessed by: • Written examinations • End of unit tests • Course assignments and practical work • Major project • Other (e.g. sandwich placements)
B.9.4. ***** List those modules which contribute to the final award, detailing % of coursework and examination.
B.9.5. *****If Accredited Prior Learning (APL)/Accredited Work Based Learning (AWPL) contributes to the assessment of individual students give details.
B.9.6. *****Describe what is deemed to constitute a pass in percentage terms, and to what extent marginal failures can be condoned or retrieved (e.g. by resits or repeats).
B.9.7. *****State whether there is a requirement for students to pass practical and examined components of units separately.
B.9.8. *****State whether a pass in a major final-year project is required to achieve the award, and if so whether this has to be attained at the first attempt.
B.9.9. *****Supply examination papers for each unit that contributes to the award, bound separately as Appendix F.1.
B.9.10. *****External Examiners' reports for the past two years should also be supplied as an Appendix together with copies of the Department's response to any concerns or issues raised in the reports.

B.10. GRADUATION

*Supply the results for the last 2 cohorts to graduate, indicating graduation year

Entry Routes	**Year:**	**Year:**
Initial Entry		

Transfer into course		
Fail during course		
Withdrawal during course		
Total sitting finals		

Awards	**Year:**	**Year:**
Honours Degree		
Honours (1st)		
Honours (2.1)		
Honours (2.2)		
Honours (3rd)		
Ordinary (Exit award)		
DipHE (Exit award)		
Pass		
Fail		
Other – please specify		
MSc		
MSc		
PgD		
PgC		
Fail		
HND		
Pass		
Fail		

APPENDICES

Please label all appendices clearly with a title and reference number. If there are logical groupings please bind sections together as one appendix document e.g. the course syllabuses for the MSc programmes.

Checklist of Appendices		
Ref. No	**Name**	**Indicate by tick if appended**
	Department Academic Staff – brief career details	
	Undergraduate Course Syllabus Postgraduate Course Syllabus HND Course Syllabus	
	Written Examination Papers for each module contributing to the final award	
	Some examples of current practical assignments	
	External Examiners' Reports + responses	
	Samples of final year project reports, with individual marking sheets for each project and also details of the marking scheme	

The following appendices may be supplied in addition to the main document:

	QAA Programme Specification for [*course title*] - **paper & electronic copy required**	
	Project Guidance Notes to Students	
	University Quality Handbook - QA procedures	

APPENDIX IV – MATCHING SECTION SUBMISSION

If your Institution intends to present a Matching Section for approval please supply the following information, which is in addition to that required in the standard HEI Application Form for BCS Accreditation and Exemption:

i. Identify how the course meets the following Matching Sections requirements as stipulated in SARTOR 3, in each case providing details of the contributory modules:

   a. Increased specialist knowledge
   b. Technical broadening
   c. Non-technical broadening e.g. managerial, commercial, health & safety, environmental, political & legal
   d. Group Project. A multidisciplinary group design project centred on real business needs and preferably involving industrial and commercial companies.

ii. A Matching Section is expected to be an additional year of full time study or the part time equivalent. Please indicate the time spent on each of the four areas above as a percentage of the full year of study.

iii. Demonstrate how industry is involved in the design and/or delivery of the Matching Section

iv State whether the course is intended to match a partially accredited IEng/CEng course within the same HEI; at another specified HEI; or whether the course is intended as a generic Matching Section

v The BCS will expect the HEI to provide guidance to students as to how the Matching Section fulfils the individual student's requirements. Provide details of the explicit mechanism that will be used to achieve this in terms of student selection and the subsequent advisory services to students

APPENDIX V – APPEALS PROCEDURE

REQUEST FOR A REVIEW OF A BCS ACADEMIC ACCREDITATION AND EXEMPTIONS COMMITTEE DECISION

1. Introduction

This document outlines the grounds and procedures for handling appeals from academic institutions that have been the subject of an accreditation assessment. The academic institution, represented by an authorised representative, is entitled to appeal for a review of the decisions contained in the final approved accreditation report or letter.

2. Grounds for an Appeal

2.1 Evidence of administrative, procedural or other irregularity in the conduct of the accreditation visit.

2.2 Evidence of administrative, procedural or other irregularity in the conduct of the Board or Committee Meeting responsible for reaching an accreditation decision.

2.3 Evidence of new information available which could influence the accreditation decision, and which was not and could not have been available at the time of the visit.

3. Procedure for Lodging an Appeal

3.1 Written notice of intent to lodge an appeal should be sent to the BCS Registrar within 30 days of receipt of the final approved report and accreditation decisions.

3.2 A detailed written submission stating the grounds for seeking a review, together with a fee of £500, should be submitted to the BCS Registrar within 90 days of receipt of the final approved report and accreditation decisions. This fee will be returned if the appeal is successful, and may otherwise be returned at the discretion of the Appeal Panel.

3.3 Appeals submitted outside the time scales specified above will normally be ruled invalid.

4. Preparation for the Appeal Panel Meeting

4.1 Receipt of the appeal submission will be acknowledged.

4.2 If the grounds for the appeal appear to fall within the criteria outlined in section 2, the BCS Registrar will convene a meeting of the Appeal Panel.

4.3 An appeal can be withdrawn at any stage. The fee (as detailed in section 3.2) may be returned at the discretion of the Appeal Panel.

5. Appeal Panel Membership

5.1 The membership of the Appeal Panel is as follows:

- Four Corporate Institution Members, knowledgeable about the accreditation process, with one member nominated to act as Chair.
- An external representative from the academic community, e.g. a member of EPC (Engineering Professors' Council) or CPHC (Conference of Professors & Heads of Computing).
- The BCS Registrar will act as Secretary to the Appeal Panel, but is not eligible to vote and does not count towards the quorum.

5.2 Members of the Appeal Panel must not have been involved in the original accreditation decision nor have any involvement with the appellant academic institution.

5.3 The appellant will be notified of the composition of the Appeal Panel. Any objection to the composition of the Panel should be supported in writing.

5.4 The quorum shall be three Appeal Panel Members, excluding the Secretariat officer, and should include the external representative from the academic community.

6. Additional Representation at the Appeal Panel Meeting

6.1 Two representatives from the appellant academic institution will be invited to attend the meeting.

6.2 The Academic Accreditation and Exemptions Committee will normally be represented by the Committee Chair (or nominee) and the Chair of the visit team.

7. Written Evidence

7.1 Papers for the meeting of the Appeal Panel will be made available only to Panel members, the BCS Registrar, the Chair of the Academic Accreditation and Exemptions Committee, the Chair of the accreditation visit team, and to the appellant.

The Papers will include:
- the Guidelines document on course accreditation
- the appellant's letter of appeal together with any supporting documentation
- the original request for accreditation
- the visit report and decision letter
- additional information supplied by the Chair of the Academic Accreditation and Exemptions Committee concerning the original decision of the Academic Accreditation and Exemptions Committee

7.2 Further evidence tabled at the meeting will not normally be considered.

8. Procedure for the Appeal Panel Meeting

8.1 The Appeal Panel procedure will be as follows:
- private discussion by the Appeal Panel and consideration of the written evidence
- oral evidence from the appellant
- oral evidence from the Chair of the Academic Accreditation and Exemptions Committee
- joint question and answer session
- private discussion by the Appeal Panel on the evidence provided

8.2 All decisions of the Appeal Panel shall be by majority vote of the members.

9. Possible Outcomes of the Appeal

9.1 The original accreditation visit decision is upheld and the appeal is dismissed.

9.2 The appellant's appeal is upheld and the Academic Accreditation and Exemptions Committee is asked to reconsider its decision with the following possible outcomes:

- The Academic Accreditation and Exemptions Committee changes its original decision in line with the recommendations of the Appeal Panel.
- The Academic Accreditation and Exemptions Committee reaffirms it's original decision, and this is upheld by the Professional Formation Board.
- The Professional Formation Board takes action to annul the decision of the Academic Accreditation and Exemptions Committee and changes the decision in line with the recommendations of the Appeal Panel.

9.3 Once the decision has been made the BCS Registrar will notify the appellant. If the decision is to uphold the appeal an amended accreditation decision letter will be reissued.

9.4 There is no further right of appeal against the decision of the Appeal Panel.

10. Confidentiality of Proceedings

It is a requirement that all those involved in the appeals process, including the Academic Accreditation and Exemptions Committee, and where necessary the Professional Formation Board, treat all the information as confidential.