

DEPARTMENT OF COMPUTER SCIENCE
UNIVERSITY COLLEGE LONDON

TEACHING AND LEARNING STRATEGY

SEPTEMBER 2003



OVERVIEW AND CONTEXT

COMPUTER SCIENCE

Computer science is a discipline concerned with the study and development of computer-based technologies and the mathematical underpinnings that relate to those technologies. The development of such technologies has had the most profound and rapid effects on the ways in which society, commerce, industry, academia and government operate. Consequently, an active engagement in the educational development of new researchers and practitioners in this field is necessarily key to the educational and financial wellbeing of any multi-disciplinary HEI.

As a young and highly dynamic subject, computer science has yet to entrench itself in academic orthodoxy, and is open to influences and collaboration with areas as disparate as mathematics, psychology, art and design, architecture, linguistics, physics, and engineering (to name but a few). The study of computer science requires knowledge and practical expertise that span science, engineering, and art and the profound role of computers in shaping society and their sheer ubiquity means that engineering professionalism is as important as scholarship.

The QAA subject benchmark statement for computing succinctly places computer science into context:

Computing can claim characteristics that, while present in other disciplines, are rarely present in such quantities and combinations. Besides being ubiquitous and diversely applied, Computing promotes innovation and creativity assisted by rapid technological change; it requires a disciplined approach to problem solving that brings with it an expectation of high quality; it approaches design and development through selection from a wide range of alternative possibilities justified by carefully crafted arguments based on insight; it controls complexity first through abstraction and simplification, and then by the integration of components. Above all, it is a product of human ingenuity, and provides major intellectual challenges; yet this limits neither the scope of Computing nor the complexity of the application domains addressed.

DOCUMENT OVERVIEW

The computer science department runs a number of taught programmes, from undergraduate through conversion MSc to advanced MSc and MRes, detailed in appendix A. They vary in their specialisms, the teaching methods employed and the nature of the material covered.

This document seeks to outline our fundamental approach to teaching and learning, the rationale behind it, actions we propose, and means by which we believe we should be judged.

We begin with a SWOT analysis, followed by a more detailed examination of strategic matters in teaching and learning.

SWOT ANALYSIS

STRENGTHS

The department of computer science has a portfolio of taught courses ranging from undergraduate to advanced MSc and MRes. Each programme within this portfolio is supported by an enthusiastic subset of the staff and, following recent changes, has become part of a more coherent whole.

Levels of student recruitment and the standard of our intake are good across the broad range of our courses. Our standard undergraduate offer is AAB (with A in mathematics). Our postgraduate application profile is significantly upward, with, for example, the MSc DCNDS achieving in excess of 500 applications for 30 places this year, and the MSc CS with around the same number of applications for 55 places. A consequence of this has been a decision to expand numbers on our existing MSc programmes, which has been achieved without diminution of standards. There is an increasing number of overseas students both applying for and being accepted onto all our programmes.

We have a broad range of expertise amongst our staff; the diversity and depth of our research activities provide a solid foundation for teaching across the discipline and its applications.

WEAKNESSES

Recruitment of academic staff in key areas has proved to be difficult. Thus, although we have always managed to recruit staff with good research records or potential, we remain understaffed in some systems-related areas where teaching demand is high.

Lack of resourcing for courses, both in terms of academic staff and space, remains an issue.

Our current SSR is substantially higher than desirable and on an upward profile. At 16.7, it is the highest in the Engineering Sciences faculty (24% above the norm) and is 35% higher than the College norm. At the same time, our research income is 22% above the College norm, indicating potential overload in staff.

Expenditure per student is close to being the lowest in the faculty at £4700 per student (undercut only by EE at £4600), some 22% below the faculty norm and 25% below the College norm.

Space allocated per student is 33% below the college norm, and 48% below the faculty norm, also being the lowest in the faculty. Space per member of academic staff is 8% below the college norm and 35% below faculty norm and is the second lowest in the faculty. At the same time, income per square metre is by some way the highest in the faculty, at 33% above college norm and 68% above faculty norm.

The proportion of women in our intake is low, reflecting a subject-wide problem.

OPPORTUNITIES

With the arrival of a new senior management team and a change in the roles of other members of staff, there are opportunities and the will to take radical decisions on restructuring and to bring in new ways of teaching and learning, to the benefit of students and staff. This process has started and we will monitor its progress over the course of the coming year.

In the near future, we expect to be able to offer an advanced MSc in Software Systems Engineering since this is the only of our major research groups without its own MSc. There is considerable further potential in computer science to expand our range of programmes, and considerable interest from within College to contribute to such programmes, which would raise extra revenue for College. However, as the SSR and other figures indicate, such activities cannot happen without appropriate total-cost-of-ownership resourcing from College both to seed the activities and to allow them to run.

This year, we have admitted some students from non-traditional backgrounds – those arriving having done access courses rather than A' levels. We will monitor their progress closely, to determine whether there is an opportunity to broaden access and increase the levels of motivation and quality of our students.

In the coming year, we will seek to make better use of our research fellows in the teaching process, both to benefit the department, and as a career development move that will expose more of our research fellows to the teaching process and, hopefully, impact career choices.

THREATS

Staff overload remains a significant issue, and the trend in SSR cannot be allowed to persist without damaging the quality of education on offer.

Academic pay relative to computer science professionals and academics abroad is a significant issue, as is the cost of living in London. This affects everything from recruitment of PhD students and research fellows through to recruitment of senior professors, technical staff, and administrators. In the same way, growing student debt is a disincentive to those students who might previously have been expected to follow an academic career pathway, as well as a more basic threat to their studies as a consequence of the necessity to work.

There is talk of a change in the unit of resource as a consequence of the widespread failure of universities (including UCL) to pass on the benefits of the previous regrading of computer science as a laboratory subject to the departments concerned. The laboratory status is fully merited in our case, and its loss will have a substantial impact on the headline surplus generated by computer science.

Following a significant problem with AS level maths and the bursting of the dot com bubble, there has been a significant decline in the numbers of students applying to UCL to do computer science, albeit from an inordinately high number (1600 for 55 places at the peak), to one that is merely extremely high (800 for 55 places). This change is partly a consequence of action on our part to reduce the numbers of applications by tightening our advertised admissions criteria, and partly a consequence of a change in the market, though it is unclear whether this change is merely a blip, a correction in an overinflated market, or a trend. Regardless, our admissions criteria have held up and the grades obtained by incoming students have in fact increased. However, the market-based change remains a potential threat and we will continue to monitor the situation.

There is a threat to the programmes we offer from A' level grade inflation and consequent loss of discriminative utility, particularly within mathematics. In common with many other subject areas, we are finding that A' level is becoming an increasingly poor predictor of performance in computer science in general and programming in particular. Further possible changes in the A' level system will have a significant impact on student recruitment and the suitability of our early years courses for the intake we receive. We will monitor this situation and maintain a dialogue with schools.

TEACHING AND LEARNING AIMS

The overall aim of the department of computer science is to maintain and seek to enhance the quality of the student learning experience. In doing this, we will address the fundamental scientific, engineering, and mathematical tenets of the subject together with relevant practical and professional training, we will seek to ensure that our assessment procedures are fair and relevant, and we will seek both to respond to changes in technological trends and to drive change in the educational environment.

TEACHING

1. We will address underlying systems' issues in computing, their mathematical basis, and their practical application.
2. We will seek to ensure that there is an appropriate balance between theory and practice, by providing opportunities for practical application of skills, and by addressing professional issues and transferable skills. We will cultivate a scientific and engineering ethos.
3. We will place these issues in a broader context; allowing undergraduate students the opportunity to take a coherent set of option courses outside the department and ensuring appropriate industrial involvement. The latter applies particularly to advanced MScs, for example.
4. As a research-led institution, we will commit to the provision of specialist courses and options, delivered by experts. Likewise we will use the foreknowledge that active research brings to introduce issues into the mainstream of our teaching that we believe to be of future importance.
5. There will be progression throughout our programmes, with later modules extending and building on those delivered earlier.
6. We will address the above points in a manner that reflects our distinctive experimental approach to Computer Science.

STUDENT EXPERIENCE

1. We will emphasise autonomous student-centred learning, and seek to develop the critical analysis and problem-solving skills based on a strong foundation that characterize lifelong learners.
2. We will seek to challenge each individual, taking account of their abilities, and not neglecting those at the more gifted end of the scale.
3. We will seek to ensure efficiency of delivery of teaching and learning, with appropriate and timely feedback and quality (but *not* uniformity) of delivery. We will seek to promote diversity in this delivery, moving away from a uniform culture of lecturing.
4. We will seek to ensure that there are mechanisms by which students have the ability to inform us of their experiences and to feed back issues they may have. We will consider any such feedback in reflecting on our course provision.
5. We will seek to ensure that pastoral provision is suited to the needs of our students.

CURRICULUM DESIGN

Over the past ten months, we have been engaged in a process of curriculum review and redesign, with aim of achieving greater coherence. This process is still in progress, and we expect to implement further changes, in particular to the early years of the undergraduate course. The following represent the founding principles on which we have designed our programme structure.

1. Each programme will be internally coherent, with an appropriate mixture of theory, practical skills, and professional development.
2. Each programme will be leading edge in terms of material, should be intellectually stimulating and should be the subject of regular review to ensure that it remains so. Advances in knowledge gained through research and scholarship within the department will feed into this process, and outside insight from external bodies will be used to enhance this process.
3. Programmes will be designed in such a way as to ensure that the learning experience has breadth as well as depth, by utilizing a range of learning and assessment methods and by setting work in context.
4. All programmes will emphasise active (student-centred) approaches to learning, challenging the prevailing culture where it conflicts with this.
5. Early years of undergraduate programmes will be tailored to suit the prevailing interface with schools through A' levels or their replacement.
6. We will continue to provide current, interesting, and challenging courses for ancillary students (the B400 series), expanding this range where there are new opportunities and demand, and where appropriate resources can be secured.
7. We will continue to seek opportunities for expanding the International programme, though we will not prioritise this in the short term.
8. Programmes and modules will be designed and delivered efficiently, making optimum use of staff resources. The sharing of modules between overlapping programmes has been a key aspect of our revisions to date; however, the increasing numbers of students and increasing interrelationship between courses is causing some difficulties with timetabling.
9. Each student will have ready access to both pastoral support and support on taught material through a combination of tutorials, problem classes, and lecturer availability. The latter have recently been introduced, in order to enhance the learning culture of early years undergraduates; we will monitor their effectiveness and expand their use where appropriate.
10. We will follow the developments in SARTOR/UK-SPEC and review our programmes accordingly, for accreditation purposes.
11. In considering changes to the undergraduate curriculum, we will consult with the key departments whose students will be most affected by any change (most notably Mathematics, EE, and SLAIS), to ensure that any changes are appropriate and can be effected smoothly.

KEY ACTION POINTS

1. We will monitor changes that have been made to the curriculum to date, most notably the changes effected to the 3rd and 4th years, and the introduction of Research Fellow (RF)-based teaching. Also, advanced MSc courses have changed their structures, and these will be monitored. [2003-4].
2. We will re-examine the undergraduate curriculum, to see how it is possible to introduce some diversity in programming languages, in order to allow students to abstract the key points of programming as opposed to learning a particular language. [2003-4]
3. Our systems teaching has faced some difficulties in the past few years, with students lacking an appreciation of its importance in the early years. We are committed to the provision of high-quality and compulsory systems teaching, but feel that the time may be right to reassess the point at which it is taught in our undergraduate programme [2003-4]
4. Likewise, concurrency is only taught in the 3rd year. Given changes in the industry, in which concurrency is vital, we believe that we should re-examine its place within the curriculum and seek to bring it forward in time. [2003-4]
5. We will re-examine mathematics provision across all our programmes [2003-4]
6. We will examine other possible sources of collaboration within College, but we will absolutely not commit resources to additional provision without total cost recovery in both the startup and running phases of courses.

MODES OF DELIVERY

The department is currently in a transitional phase, in which we are keen to move from a lecture-based culture to one in which there is a more active approach to learning and a wider range of modes of delivery. We recognise that this transition cannot be achieved instantaneously and that we will have to satisfy a range of constituencies (students, staff, external bodies, etc.) that the changes we introduce are both pedagogically advantageous and tend to maintain or increase the overall standard of our programmes.

1. The main mode of delivery for primary material will remain the lecture. However, it is noticeable that, in comparison to our closest comparable institution, Imperial, we rely more heavily on lectures as the mode of delivery for primary material.
2. We believe that an over-reliance on lectures has contributed to a student culture of passive reception rather than active engagement, particularly in the early years. It is a medium term objective to seek to change this culture, in part by adding greater diversity of delivery. This will occur at two levels: by ensuring top-level curriculum design considers this, and by encouraging individual staff to consider different modes of delivery, and then to share that experience with others. Appropriate staff development opportunities will further be utilized in encouraging a culture of openness in thinking about delivery; feedback will be used to seek to influence this provision.
3. In order to facilitate self-directed learning, we will continue to explore ways of allowing students to acquire skills that are appropriate to this type of learning, such as task setting, time management, and research skills. We will utilise Peer Assisted Learning in areas in which we believe it to be most effective.
4. Members of the department of computer science have been involved in developing innovative but pedagogically grounded online forms of delivery and assessment, and the department has resourced this. We will continue to seek funding for this work, and will continue to contribute to the College's e-learning activities.

KEY ACTION POINTS:

1. We will ask targeted module leaders to produce action plans addressing challenge and diversity [2004]
2. We will explore developments in the area of Personal Development Plans (PDPs) with those responsible for initiating college-wide policies in this area. [2003-5]
3. In order to facilitate the development of research skills, we will explore ways in which access to online research resources can be improved. [2003]
4. We will debate the introduction of different modes of learning into the early years of the undergraduate course, and seek to identify mechanisms that will allow their introduction into the later years where student-centredness is key to employability. [2003-4]

ASSESSMENT

A corollary of the cultural change discussed in terms of modes of delivery is the need to re-examine the ways in which we assess students to ensure that we continue accurately to measure their abilities. The following points capture the elements we believe we must balance in devising appropriate assessment strategies.

1. We will ensure that the teaching committee devises effective procedures for discussing, approving, and reviewing assessment strategies for programmes. We will further ensure that there is consistent implementation of appropriate, rigorous, assessment practices that ensure that appropriate standards are maintained across our programmes, that individual student performance can be judged, and that such performance can be reported to the student in a way that is consistent with the Data Protection Act and which is timely.
2. We will ensure that each module has clear and achievable learning outcomes and that the assessment process is designed to assess the extent to which students have met these.
3. The principles on which we base our assessment methodology and the forms of assessment will be made explicit to students (and external examiners) via information on the web. However, we expect that, across the range of our courses, our assessment will vary along dimensions of type (diagnostic, formative, summative), membership (individual, group), and mode (written, practical, individual oral, group oral), and that students will participate in a range of different forms of assessment within this space.
4. Although plagiarism is a fact of life for many university departments, we have been increasingly successful in discouraging it within Computer Science, and we aim to continue to build on this success. In order to make progress towards the target of totally plagiarism-free programmes, we will seek to create a learning-oriented culture in which the value of participation is appreciated; we will ensure that students fully appreciate our position on plagiarism; we will select assessment methodologies that discourage plagiarism; and we will continue to improve our procedures to ensure rapid detection of plagiarism followed by swift and effective response.
5. Where there has been a breach of examination regulations, we will consider the matter according to College guidelines. Internally, this means that we will convene a panel with responsibility for assessing the merits of individual cases against students.
6. We will put into place effective procedures to ensure that the scheduling of assessment is reasonable in terms of student load and that, as a consequence, it can form a proper part of the learning process.
7. We will ensure that there are processes in place for the efficient creation of examinations and the early elimination of errors. At present we have such a system, but we will review it in the coming year to determine whether it can be improved.
8. We will ensure that there is appropriate moderation of marks and clear and consistent marking guidelines and moderation procedure for those elements of our assessment that involve many staff (e.g. projects).
9. We will publish schemes of award for all our programmes and rules for progression on undergraduate programmes.

10. We will disseminate good practice in the area of assessment arising internally, externally, and from the QAA codes of practice and LTSN resources.
11. We will monitor progression rates and, where necessary, seek to improve these by balancing provision of additional resources to those that need them with a student-centred approach to learning and an absolute desire to maintain standards.

KEY ACTION POINTS

1. We will document and review the methods of assessment used within each of our programmes to ensure proper diversity [2004]
2. We will ensure that the information intended for students and external examiners outlined above is available via the web in an accessible manner [2003-]
3. We will continue to update our documentation relating to plagiarism to ensure that the latest procedures for dealing with it are widely disseminated [2003-]
4. We will review the procedure for setting examination papers [2003-4]
5. Having invested significant effort in establishing and refining an automated marks processing system, we will seek to secure its future in the interim before it becomes clear that the new College SIS system can fulfil our requirements in this regard. [2003-]

STAFFING AND RESOURCING

In order effectively to deliver the programmes we have, it is obviously essential that we recruit and retain staff who are enthusiastic about teaching and who understand the department's mission in this respect. Thus it is essential that we ensure that teaching is clearly seen to be a rewarding activity, valued by the department and the college in and of itself.

1. It is clear that the department has considerable potential to raise additional revenue through teaching and research income. It is a key objective that we will seek to expand the numbers of staff both to strengthen existing fields and to broaden our activities within this cognate area. We are pursuing the creation of a new advanced MSc in Software Systems Engineering and have obtained permission to appoint at a senior level within this area. We will seek to ensure that the course that eventually emerges enhances our core provision without undue effects on staff load, but it is reasonable to suppose that the load will increase and that our SSR will worsen.
2. Likewise, we will continually seek to challenge and reward staff at all levels in order to address problems of retention. We recognize that workloads and problems of retention are particularly severe for administrative staff, with a significant rate of churn leading to additional stress on those remaining.
3. The department will continue to support the integration of new staff members both by ensuring that they have a reduced initial lecture load and by providing mentors from within the senior staff.
4. The department recognizes the need to train research fellows and PhD students engaged in teaching activities, and will continue to work with EPD and others to ensure that this is the case.
5. Availability of laboratory space has proved to be a significant bar to the expansion of our programmes. The provision of the new building has largely addressed this issue for the time being, and we are planning to scheme to ensure state-of-the-art provision, subject to appropriate resourcing.
6. We will continue to press the College to ensure that efficient administrative procedures are in place; most notably, we will seek to be early adopters of the new Student Information System (SIS), which we intend to use to replace our existing system for collating and presenting examination marks.
7. Realising that it represents our external face as well as the primary means of internal communication for course-related information, we have resourced a radical change in our web presence by engaging consultants external to the department. We will continue to ensure that appropriate funds are allocated to this activity, and that the information remains current.

KEY ACTION POINTS

1. We will continue to press for extra resourcing, to reflect the expansion in our courses or student numbers. [2003-]
2. We will seek ways of rewarding staff appropriately, and will press College for regrading where appropriate, in spite of the College-wide grade freeze. We believe this to be essential to retain good staff and in the long term interests of the College [2003-]

3. We will analyse the provision of training to RFs that has been instituted [2003]
4. We will track the SIS activities [2003-]
5. We will continue to review our web presence, in conjunction with our external partners, and to ensure that appropriate resources are committed to this activity. [2003-]

THE RELATIONSHIP BETWEEN TEACHING AND RESEARCH

The Computer Science department is a highly research-active department, which subscribes wholeheartedly to the view that there is a strong link between research activity and the ability to deliver forward-looking programmes in an authoritative way. Likewise, the breadth of research interests in the department corresponds to a breadth in teaching expertise. The relationship is not, necessarily, a simple one however:

1. There is both a synergy and a tension between teaching and research activities. We currently make extensive use of research expertise both on advanced MSc courses and the corresponding fourth year options courses that are taught in common with them. We will continue to do this, using input from research to guide curriculum development as well as constantly to enhance and update taught material
2. The tension between teaching and research arises from the fact that teaching is undervalued in terms of promotion prospects and that new staff are fast to perceive this. We will seek to enhance the status of learning and teaching as a core component of the career for academic staff in our research-led department and will seek to ensure that all staff take on the departmental culture of teaching as a pleasure rather than a burden, whilst balancing this against the need to press forward in enhancing research quality.
3. One research group, the software systems engineering group, currently do not have their own advanced MSc. This is currently being addressed through the CTA mechanism, and we believe that this programme will form an excellent complement to the remainder of core provision.

KEY ACTION POINTS

1. We will continue to push research insight into teaching. We have recently appointed a new professor of Networked Systems, and expect to appoint a professor in the Software Systems Engineering field in the very near future. We will use the external insight these new appointments bring to seek to review the direction of our more advanced courses. [2003-]
2. We will seek to ensure that new staff are aware of their obligations as regards teaching and integrate well with the prevailing culture of teaching within the department. [2003-]
3. We will design the MSc in Software Systems Engineering should funding be forthcoming [2004]
4. Given a full suite of advanced MSc programmes, we will examine the plausibility of offering a general advanced MSc programme with modules to be drawn from across the range of advanced modules that we will have in place. [2004-]

GOOD PRACTICE

The dissemination of good practice is an individual and collective responsibility, since it encapsulates ways in which we can reflect, learn, and improve upon the teaching and learning experience within the department. It should, and does, flow from a sense of shared academic values, but is something on which it is always possible to improve.

1. Good practice in teaching is reinforced by the use of several mechanisms: the checking of coursework and exam setting and assessment; the process of student feedback, and the Staff Student Consultative Committee; and the use of peer observation. At present, levels of student feedback through course questionnaires are poor. We recognise that there is scope to ensure that the effectiveness of this entire process is improved and will continue to hold discussions and to seek to ensure that mechanisms are in place to make it so.
2. The department will continue to encourage its more senior members to become involved in external examining in a wide range of institutions, not just those drawn from our immediate competitors. Likewise, we will seek to employ external examiners of appropriate standing from a range of institutions. In this way, we expect to benefit from exchange of ideas about good practice.
3. The department is committed to ensuring that it complies with the requirements of: the Race Relations Act 2000, the Special Educational Needs and Disability Act 2001, the College's equal opportunities and widening participation policies, and the relevant QAA benchmarking standards. So far as professional practice is concerned, the department takes advice from various professional bodies and is seeking to establish an advisory board drawn from industry from whose experience they can benefit.
4. The department will undergo a re-accreditation of its programmes by the BCS and IEE in 2005/6. At this point, we will seek accreditation of the MSc in Intelligent Systems, the MSci in Computer Science (International Programme), and the new MSc in Software Systems Engineering should it be in place by that date.

KEY ACTION POINTS

1. We appreciate that we could do better in internal dissemination of good practice, and we will put procedure into place that allow this to happen more effectively [2004]
2. We will collect information on external examining, and will seek to identify opportunities for senior staff to participate [2003-]
3. We will further analyse the provisions of relevant law and policy and will ensure that we comply with legal requirements and policy, though in the latter case, we reserve the right to derogate for good reason. If necessary, we will ensure that administrative and other staff are appropriately trained in order to allow us to fulfill our obligations [2003-].

SOCIAL INCLUSION

Naively, the alternative to social inclusion is social exclusion; a situation in which those with the potential to achieve most (in both relative and absolute terms) are excluded from consideration simply as a consequence of their backgrounds or disabilities. This department is determined to recruit from those that we believe will thrive to the greatest extent within our department. Non-standard academic backgrounds are not a bar to admission; however, we will need to be convinced that everyone attending has an appropriate absolute level of academic ability at entry, in order to be sure that they are able to benefit from the experience we offer.

1. We have started a process to explore whether those with non-'A' level backgrounds can successfully broaden our student base. We will monitor the progress of this. We will not reduce the standards of our courses in order to accommodate students from non-traditional backgrounds, and the appropriate provision of resources remains an issue.
2. By far and away our greatest problem with social inclusion is that our intake, particularly at undergraduate level, is overwhelmingly male. The department has started a process of consultation with schools to determine whether and how it can hope to redress this imbalance. It remains a key objective to explore ways in which the department, together with the appropriate professional bodies and other similar institutions, can help address this issue.
3. We will identify and assess students with impairments including physical and mobility difficulties, hearing impairments, visual impairments, specific learning difficulties including dyslexia, and other medical conditions. This process will take place both at the point of application and if students become (aware of being) disabled during the course of the programme. Our experience of this to date has been that such assessment often leads to a rather individual perspective on the ways in which provision should be tailored for the student. Other than general principles covered by law, therefore, we will not seek to plan in a generic way for the presence of disabled students and we will continue to tailor provision in an appropriate way for the student, in consultation both with the student themselves and external advice.
4. We will actively seek the input of disabled students in the development and review of the physical environment and of our programmes.
5. We will communicate information about provision for disabled students to the appropriate staff in a timely and clear way, and will organize appropriate induction for the students concerned.

KEY ACTION POINTS

1. Over the coming year, we will seek to press the issue of young women in computer science, by meeting with appropriate schools, professional bodies and colleagues from other institutions in order to formulate an action plan. [2003]
2. We will actively seek advice on the suitability of our academic provision for disabled people, ideally from disabled students. [2004-]
3. We will seek advice in assessing potential problems with physical accessibility and space issues within the new building. [2003-4]

STRATEGY REVIEW PROCESS

This strategy is intended to be a living document, subject to regular review and change in the light of experience, technical and pedagogical developments, and informed comment.

1. The department will monitor and review developments in the College and Faculty teaching and learning strategies and will actively engage in helping develop them further.
2. The department will review its own teaching and learning strategy annually, before the point at which changes to the curriculum must be notified to College. Both the departmental management committee and the teaching committee will seek to identify new objectives and will assess progress towards meeting those objectives set in the previous year.
3. We will, further, submit our revised teaching and learning strategy to the Faculty for review.

APPENDIX A

UNDERGRADUATE PROGRAMMES

- BSc Computer Science
- MSci Computer Science
- MSci Computer Science (International Programme)

- BSc and MSci Mathematics and Computer Science (in conjunction with the Department of Mathematics)
- *BSc and MSci Computer Science with Mathematics (last entry to these programmes was in 2001/02)*
- *BSc and MSci Computer Science with Electronic Engineering (last entry 2001/02)*
- *BSc and MSci Computer Science with Cognitive Science (last entry 2000/01)*

GRADUATE TAUGHT PROGRAMMES

- MSc Computer Science
- MSc Data Communications, Networks and Distributed Systems
- MSc Vision, Imaging and Virtual Environments
- MSc Intelligent Systems
- MRes Computer Vision, Image Processing, Graphics and Simulation

GRADUATE RESEARCH PROGRAMMES

- MPhil and PhD
- EngD Virtual Environments, Imaging and Visualisation (in conjunction with the Bartlett School)

APPENDIX B

FACULTY/DEPARTMENTAL STATISTICS - JULY 2003		ENGINEERING SCIENCES										Faculty Total	TOTAL ACADEMIC DEPTS:
Ref	Description	Year of data / result	Biochemical Engineering	Chemical Engineering	Civil and Environmental Engineering	Computer Science	Electronic and Electrical Engineering	Geomatic Engineering	Mechanical Engineering	Medical Physics and Bio-Engineering			
1	Student / staff data												
1.1	HEFCE staff data												
1.1.1	Academic FTE	2002-03	11.0	13.0	20.8	28.9	28.9	9.0	16.4	9.2	137.2	1,247.4	
1.1.2	Acad Related FTE	2002-03	4.0	2.2	1.0	10.6	4.0	2.5	3.0	1.0	29.1	219.7	
1.1.3	Technical FTE	2002-03	4.7	5.3	10.0	0.0	6.0	1.0	9.0	1.0	37.0	247.4	
1.1.4	Clinical FTE	2002-03	2.0	3.0	4.3	9.5	4.6	2.0	4.0	2.0	30.4	245.0	
1.2	Student data												
1.2.1	Student Load - 2000/01	2000/01	162.43	172.33	197.26	413.66	361.66	64.61	301.86	63.48	1,726.82	14,521.61	
1.2.2	Student Load - 2001/02	2001/02	173.23	162.80	192.53	466.90	394.02	47.80	295.13	64.74	1,788.03	14,792.04	
	UG	2002-03	95.94	113.48	143.59	306.41	262.93	6.96	199.07	22.45	1,150.83	10,982.05	
	PGT	2002-03	22.41	14.05	24.88	112.49	108.33	36.48	44.22	21.12	383.98	2,673.20	
	PGR	2002-03	62.31	30.00	17.42	64.42	88.30	8.50	21.12	20.00	312.23	1,900.97	
1.2.3	Student Load - 2002/03		180.66	157.53	185.89	483.32	459.64	51.94	264.41	63.65	1,847.04	15,576.22	
2	Student / staff Performance Indicators												
2.1	Overseas FTE as % of Total Student Load												
2.1.1	Ratio for :	2000/01	18.1%	29.3%	42.2%	15.5%	21.9%	22.0%	23.2%	15.0%	23.1%	15.7%	
2.1.2	Ratio for :	2001/02	22.9%	30.2%	41.0%	20.7%	32.0%	32.9%	25.6%	18.4%	27.5%	17.1%	
2.1.3	Ratio for :	2002/03	25.9%	35.3%	42.0%	23.5%	37.9%	23.7%	31.6%	17.6%	31.4%	16.6%	
2.2	Student/Staff Ratio												
2.2.1	Student/Staff Ratio	2000/01	13.5	11.5	9.1	14.5	13.1	8.7	13.1	6.4	12.0	10.5	
2.2.2	Student/Staff Ratio	2001/02	14.4	12.5	7.9	14.9	12.2	5.3	12.7	7.9	11.7	10.7	
2.2.3	Student/Staff Ratio	2002/03	16.4	12.1	8.9	16.7	15.9	5.8	16.1	6.9	13.5	12.4	
3	Income Performance Indicators												
3.1.1	Total Income per HEFCE Acad. Staff FTE (0000)	2000/01	342.4	162.4	162.0	261.6	248.7	142.0	201.0	342.8	229.3	201.0	
3.1.2	Total Income per HEFCE Acad. Staff FTE (0000)	2001/02	304.0	223.8	144.2	246.8	244.3	121.1	204.3	308.3	222.0	207.6	
3.1.3	Total Income per HEFCE Acad. Staff FTE (0000)	2002/03	401.5	252.7	168.0	291.4	278.0	125.0	248.1	291.7	259.1	241.6	
3.2.1	Teaching Income per HEFCE Acad. Staff FTE (0000)	2000/01	85.5	82.6	71.5	95.0	88.1	66.1	92.6	41.4	83.1	65.0	
3.2.2	Teaching Income per HEFCE Acad. Staff FTE (0000)	2001/02	96.2	92.3	61.3	105.6	91.5	44.8	93.8	54.4	85.6	70.3	
3.2.3	Teaching Income per HEFCE Acad. Staff FTE (0000)	2002/03	116.4	97.4	75.5	123.4	123.6	46.0	128.9	46.7	103.6	84.2	
3.3.1	Research Income per HEFCE Acad. Staff FTE (0000)	2000/01	196.1	32.9	32.6	96.5	71.4	34.4	31.2	227.8	72.9	74.6	
3.3.2	Research Income per HEFCE Acad. Staff FTE (0000)	2001/02	98.0	65.1	34.0	83.3	69.7	46.4	41.7	188.9	75.0	74.7	
3.3.3	Research Income per HEFCE Acad. Staff FTE (0000)	2002/03	94.6	75.8	44.4	104.1	82.6	41.2	37.4	127.8	79.9	85.2	
3.4.1	Research overheads per HEFCE Acad. Staff FTE (0000)	2000/01	23.7	5.0	6.2	14.8	9.1	2.8	5.5	23.4	10.5	8.8	
3.4.2	Research overheads per HEFCE Acad. Staff FTE (0000)	2001/02	17.1	8.4	5.0	14.0	12.1	7.9	12.0	19.9	11.6	9.2	
3.4.3	Research overheads per HEFCE Acad. Staff FTE (0000)	2002/03	6.2	14.8	11.2	17.5	12.8	7.3	6.7	20.1	12.6	9.9	
3.5	QR rating (RAE 2001)		5*	5*	5	5	5	4	5	5	n/a	n/a	
4	Expenditure Performance Indicator												
4.1.1	Departmental expenditure per student FTE (0000)	2000/01	5.8	5.6	8.2	5.4	5.7	9.5	5.9	10.8	6.3	6.4	
4.1.2	Departmental expenditure per student FTE (0000)	2001/02	5.8	6.3	9.5	4.9	5.3	13.6	6.3	9.7	6.3	6.4	
4.1.3	Departmental expenditure per student FTE (0000)	2002/03	5.9	6.6	9.1	4.7	4.6	13.0	5.7	11.2	6.0	6.3	
5	Space data												
5.1	Space allocated (sq m)	2000/01	2266.74	1589.09	3788.73	2709.94	3546.55	755.57	4993.47	1042.84	20712.93	125635.56	
5.2	Space allocated (sq m)	2001/02	2448.23	1805.50	2927.85	2709.94	3546.55	755.57	4993.47	1042.84	20030.95	128101.35	
5.3	Space allocated (sq m)	2002/03	2440.00	1646.73	2928.05	2626.66	3516.14	755.57	3962.47	1205.36	19000.90	125671.66	
6	Space related Performance Indicators												
6.1.1	Total income (0000) per sq m	2000/01	1.8	1.5	0.9	2.8	1.9	1.4	0.9	2.7	1.6	2.4	
6.1.2	Total income (0000) per sq m	2001/02	1.5	1.8	1.2	2.9	2.2	1.4	0.9	2.4	1.7	2.2	
6.1.3	Total income (0000) per sq m	2002/03	1.6	2.0	1.2	3.2	2.3	1.5	1.0	2.2	1.8	2.4	
6.2.1	Space (sq m) per student FTE	2000/01	14.1	9.2	19.2	6.5	9.8	11.7	16.6	19.5	12.0	6.7	
6.2.2	Space (sq m) per student FTE	2001/02	14.1	9.9	15.2	5.8	9.0	15.8	17.5	16.1	11.2	5.2	
6.2.3	Space (sq m) per student FTE	2002/03	13.5	10.5	15.8	5.4	7.6	14.6	15.0	18.9	10.3	6.0	
6.3.1	Space (sq m) per HEFCE Acad. Staff FTE	2000/01	190.6	105.9	174.8	95.1	128.3	102.1	217.1	125.6	144.3	91.1	
6.3.2	Space (sq m) per HEFCE Acad. Staff FTE	2001/02	204.0	123.6	120.0	86.6	109.8	84.0	222.9	127.2	131.3	92.7	
6.3.3	Space (sq m) per HEFCE Acad. Staff FTE	2002/03	221.8	126.7	140.8	90.9	121.7	84.0	241.6	131.0	139.1	99.0	