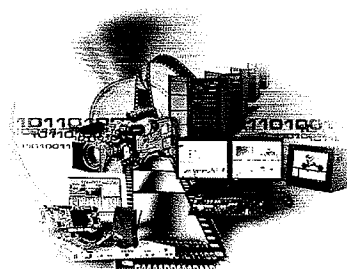


**Imperial College
London
Department of Computing**



USC Review of Computing

Review of Undergraduate Teaching
Assessor's Report

Carlo Ghezzi
Dipartimento di Elettronica e Informazione
Politecnico di Milano, Italy

26 December 2002

The Undergraduate Teaching Review took place on 10 December 2002. During the day, the committee had an opportunity to meet with all the stakeholders involved in this process: at college level, at department (faculty) level, and at the student level. The meeting added a lot to the material we had in our hands, which was sent to us prior to the meeting. In the end, I believe that we could get a very clear understanding of the status of Imperial College undergraduate teaching in computing. Hereafter I detail my evaluation by answering to the questions suggested in the template for assessors' reports that was given to us. I can also summarize it by saying that the program is of extremely high quality. It should be praised both for its objectives and for its realization. I was especially surprised and pleased to see how a prestigious research oriented university like Imperial College could state very ambitious quality goals in undergraduate teaching and could then invest high quality resources in its implementation.

Are educational objectives appropriate and are they achieved? Are the learning outcomes appropriate to the educational objectives and are they achieved?

The educational objectives are very appropriate. The initial core of basic courses covers all the fundamentals of computing as an engineering discipline. I very much share the philosophy behind the curriculum, which stresses principles and discipline over coverage of more volatile topics. Foundational studies, however, are complemented by substantial practical work through projects where students learn how principles are applied in the practical world of engineering. I believe that the essence of engineering work is exactly the ability to combine the rigor of foundational studies with their practical application in solving complex problems. Here students are clearly assisted in progressing along this path.

Do the curricula allow the learning outcomes to be achieved? What are the strengths and weaknesses?

The curricula are well designed and their goals are clearly articulated. They clearly reflect the research excellence of the Department in certain areas, such as Software Engineering and Artificial Intelligence. It is also clear that these are mostly oriented towards modern distributed architectures. Overall, these flavors result in very strong and modern curricula. The choice to concentrate laboratory activities in chunks where students can work full time on projects is an excellent one. It is a very nice way of achieving a "real world flavor" in the students' work organization. Students really have an opportunity to challenge the foundational concepts and methods they learn through a practical application. They also learn how to work in groups.

Are the assessment methods appropriate to the achievement of the learning outcomes? What are the strengths and weaknesses?

I believe they are. The extensive use of computer-aided assessment procedures allows for easy interaction and timely feedback to students. Students mentioned that sometimes the pace of the

learning and assessment process puts a lot of pressure on them. But they also acknowledged that the final results are quite positive. ("It is very hard, but it is worthwhile.")

Are the students adequately supported by the learning resources, study skills help, personal tutoring etc.? What are the strengths and weaknesses?

This has been the real surprise from my visit as an assessor. The careful and thoughtful plan of the whole educational process and its careful implementation really surprised me positively. Faculties and instructors show real care about students and their learning progress. A considerable amount of resources is allocated in the implementation. For example, the Department designed a number of computer aided support tools for managing tests and exams. They designed an "educational portal" which seems to provide lots of useful features both for students and teachers. Last, but certainly not least, the computing facilities provided by the Department are a real plus over other competing universities. Students are offered a state-of-the-art computing system for their daily work, and plans are in place to keep the system up-to-date as technology evolves. This competitive advantage should be preserved.

Are the procedures for maintaining and enhancing the quality of provision and the academic standards effective? What are the strengths and weaknesses?

I believe they are. In particular, I am sure that reviews of this kind are very important. They provide additional incentives to departments to set clear objectives for their activities and then allocate efforts to achieving such objectives.

Perhaps the only minor criticism I have is that the written material which was given to us prior to the meeting could only partially support the extremely positive view that resulted from the visit. It was useful to go back to it after the visit, but provided only little help before. The concise summaries of the programs were more useful than the big volume "Undergraduate Studies Committee Report". Perhaps an access to the Department's portal would have been more useful.

Imperial College

Review of Undergraduate Teaching in the Department of Computing December 2002

Assessment Report – Brian Holloway, IBM UK Laboratories

Executive Summary

Imperial College is renowned as a research focused university and for the strength of its research departments. The Department of Computing (DoC), which enjoys a 5* rating in the Research Assessment Exercise (RAE), is no exception, so it was gratifying to find that the provision of undergraduate teaching within the department had not been compromised in any way. In my view the MEng degree course is among the best, arguably the best, within the UK and offers an undergraduate experience in this field that is second to none.

The course structure, content and management of teaching are all excellent with some best practice observed in the automation of records and testing. There is obviously a high work ethos within the department, with intense pressure on the students, yet their attitudes are very positive. The staff are well respected and morale appears to be high. Facilities are excellent if a little cramped.

There are no serious deficiencies that warrant immediate corrective action by the Undergraduate Studies Committee. Comments, observations and recommendations resulting from this assessment may be useful to further refine what is already an excellent undergraduate teaching system. Staff can be justifiably proud of the department and should be congratulated on their achievement.

Assessment Scope and Details

The assessment was conducted in December 2002 by reviewing the Undergraduate Studies Committee Report with associated papers supplied by the Department of Computing and via a visit to the department on December 10th. During the visit both staff and student representatives were interviewed and facilities inspected.

The assessment covered the main undergraduate degrees within the department, the BEng and MEng including its specialist variants. In addition the Department of Computing elements of the joint Maths with Computing (JMC) degree and the Information Systems Engineering (ICE) degree, run by Electrical and Electronic Engineering, were considered.

Observations, Comments and Recommendations

I have chosen to record my observations, comments and recommendations under the detailed headings outlined in section 2.7 of the "Procedures for the Review of Existing Undergraduate Courses" issued by the Undergraduate Studies Committee.

(a) Course Objectives

The stated overall department/course objectives as listed in section 1.1 of the DoC report are excellent but would be a more accurate reflection of the courses by adding a reference to Industrial Experience in bullet 8 and the addition of 2 more bullets as follows:

9. Develop interpersonal skills to ensure students are effective in whatever future roles they undertake.

10. Provide an appreciation of current and emerging technologies in an industrial or commercial context.

(b) Course Design

No issues with course design however some students felt that they would like to see a wider choice of options in the humanities courses. There was some concern that the language options presented a far higher (unfair) workload than the non-language options.

(c) Course Structure

The courses provide a good mix of compulsory modules in the early years to provide a solid foundation followed by a broad menu of advanced modules in the final years allowing an element of specialisation. The integrated Laboratory work seeks to complement the foundation work with final year project work aligned to the advanced options studied.

(d) Balance between core and optional material

As stated above, a good balance between essential foundation material and more advanced optional modules. Both staff and students felt that there is adequate opportunity to make sensible informed choices and students appreciate the flexibility displayed within the department on arranging and re-arranging options.

(e) Balance between theory and practice

No issues.

(f) Syllabus

While it would appear that the content and quality of what is taught in the department is under excellent management control by the Academic Committee the inputs to this process appear to be somewhat restricted, relying on the views of students returning from placements and the personal interests of academic and research staff. The department has not had success with running a formal industrial advisory panel and is clearly self sufficient at present. However, given their excellent network of industrial and research contacts it is surprising that they do not take advantage of this to solicit some occasional external crosscheck of their syllabus.

Recommendation: *That the Academic Committee solicit the views of industry and other institutions when considering the appropriateness of its curriculum.*

(g) Student workload

Both staff and students acknowledged that the courses in the department carry a high workload that can result in intense pressure at times. Most students agreed it was manageable, given the flexibility and support in the department. In a sense it is what they expected of Imperial College, they appreciate the stretch and had made the personal choice not to go to a "party university".

One point of possible concern was the JMC and ISE students, straddling two departments and receiving 60% of their work from department A and another 60% from department B. While this may be just a student perception there appeared to be some problems with lack of coordination between departments leading to coincident deadlines and overlapping coursework schedules.

Recommendation: *That the Academic Committee examine the schedules of the JMC and ISE courses to ensure there is overall coordination of coursework.*

(h) Tutorial provision

The tutorial system appears to be working well although staff complained that accommodating 8 tutees in a tutorial office designed for 4 could be uncomfortable.

(i) Interaction with Industry/profession

The 4 year MEng course includes a 6 month compulsory industrial training placement and the department has excellent contacts and arrangements for placing students and managing the process. Those on the BEng, JMC and ISE courses are encouraged to seek vacation employment experience although it is not clear how effective this is. While it is probably not appropriate to mandate relevant summer

vacation employment, establishing a departmental record of student's vacation employment might encourage more to participate and provide a resource to which later cohorts might refer.

Feedback from the students indicated that the professional issues lectures could benefit from more external speakers, although some doubt was expressed on attendance numbers for non examined lectures. Again, given the department's connections with industry and financial institutions it would appear that it is missing an opportunity to attract guest speakers.

Recommendation: *That the department seek more external input into its professional issues series of lectures.*

(j) Staff student interaction

While the department management are concerned over the Staff/Student ratio, aggravated by the difficulties of attracting staff due to the high cost of living in London etc, the innovative use of teaching assistants and automation result in a very sound teaching system and the staff/student ratio does not appear to be an issue.

There appeared to be a healthy mutual respect between academic staff, assistants and students with adequate opportunities for access and interaction. In addition the department is fortunate to have some staff that apply a high degree of pastoral care, constantly monitoring performance records and attendance so any irregularities can be resolved before serious issues arise.

There were comments from the students that sometimes coursework was returned too late to be of any value in preparation for exams.

(k) Year abroad schemes

A small number of students partake in schemes to study at an overseas university. Numbers are limited, particularly for exchange schemes as the demand to come to London exceeds the demand in the other direction. Each case is essentially handled as a "one off", the department may need to develop these options into more standard course offerings should year abroad schemes become more popular.

(l) Career prospects

Excellent, no issues.

(m) Failure rates

No concerns. The high level of pro-active pastoral care in the department probably prevents the failure rate from being higher.

(n) Facilities for undergraduate teaching

The teaching rooms and lecture theatres visited were of a high standard and equipped with the very latest audio/video facilities and interactive whiteboards. I'm aware there are other less well equipped rooms, however the overall standard is high. The main concern is the overall space allocation for the department resulting in overcrowding in lectures and tutorials and imposing limitations on spontaneous activities. Space is also a limiting factor on any future growth plans for the department. While space is undoubtedly an issue Imperial College compares favourably with other universities I have visited.

Of particular concern is the lack of common room facilities for students, or any space where they can meet or congregate between lectures. While not strictly a teaching issue the effects of this lack of provision on student well-being, staff/student relationships and the overall health of the department should not be overlooked.

Recommendation: *That the department provide some space where students can relax and congregate between lectures.*

(o) Use of new/innovative technology in teaching

The department makes extensive use of teaching assistants and research students to relieve the workload from academic staff. It has also developed systems for automatically testing work assignments, which appear to work well.

The students were extremely complementary about the worksheet style of teaching adopted by some lecturers. This involves examples being worked in class and leads to a better understanding of the issues during the lecture. They would like to see its use extended.

Recommendation: *That the Academic Committee investigate the more widespread use of worksheet style teaching.*

(p) Availability of adequate/modern resources

The department has an impressive array of state of the art computing facilities with a generous allocation of student workstations. The equipment is upgraded frequently and maintained by an in-house IT support department that includes student part-time employees.

There are clearly significant advantages for the department in running its own IT systems, which are tailored to the admin, teaching and research needs. Additionally there are benefits in a computing department having to wrestle with the complexities and issues associated with running a "real world" IT service which would otherwise not be apparent in a pure academic environment. Both academic staff and students made strong representations to the panel that their computing systems remain under departmental control.

Recommendation: *That the department retains control of its computing systems.*

Concluding Remarks

The department of Computing appears to enjoy a high degree of autonomy on its financial affairs allowing it to make its own choices on investments in teaching staff, resources, facilities and computer equipment. I suspect many computing departments in the UK would be envious of this situation. The extensive use of teaching assistants and the investments in automation for testing and student records are successful models that may find application elsewhere as best practice.

The inclusion of a full six-month industrial experience module in the MEng course has a profound influence on the maturity and employability of Imperial College Computing graduates and is another example of best practice.

Success breed's success and it should not be forgotten that the undergraduate intake to the department is of the highest calibre, so it is not surprising that exceptional results are achieved. However there is little doubt that the undergraduate teaching within the department is best of breed and gives its students an extremely fine learning experience.

Review of Undergraduate Teaching in Computing, December 2002

I am highly impressed with the quality of undergraduate teaching in Computing at Imperial College. As far as I was able to determine from the documentation provided and through speaking with staff and students, the conception and delivery of the degree programmes under review are outstanding in essentially all respects. I have only a few minor points of criticism, listed below. Overall, the Department of Computing deserves to be highly commended.

The structure of the degree programmes are coherent, with a good choice of material to achieve the stated learning outcomes. The course is up-to-date, taking account of recent developments in this fast-moving field. The teaching is of a high standard and is delivered professionally to an excellent group of students with appropriate means of assessment. It is clear that the staff take teaching seriously and enjoy it. Students are likewise enthusiastic, willing to work hard and eager to learn. There are mechanisms for recognizing problems and dealing with them that appear to work well. The industrial placement in the MEng course appears to be extremely successful, with an excellent and diverse selection of opportunities, students learning a great deal from their placement, and companies very happy to be involved. The Department provides excellent and well-managed computing facilities for teaching that seem ideal for the purpose, with the flexibility required to support specialist courses, including bespoke software and hardware facilities.

In the first year, the practice of having a programming exercise due each week, in addition to other work -- rather than, say, every fortnight -- appeared to me at first to be possibly problematic, since it demands very prompt marking from tutors and leaves students no breathing space, making it difficult for weaker students to keep up with the pace and very hard for students who fall behind to catch up. I was delighted to see that it seems to work extremely well in practice. An important factor in this is an excellent automated testing system, leaving tutors relatively little residual marking work to do, and superb pastoral care. The exercises are interesting, and the result is that students learn a lot of material quickly and well.

Students did report occasional problems with work being marked within the two week official time limit in later years.

I am slightly concerned by the lack of escape routes for less able students and students who lose interest during the course. In particular, I was surprised to learn that an MEng student failing in year 4 cannot be awarded a BEng, even at Pass level, despite the fact that essentially all the work required for a BEng has been completed. Luckily, according to the information I have it seems that so far very few students have actually got caught in this trap.

A significant minority of students take advantage of the opportunity to take Humanities courses. An unexplained anomaly here is that in years 1 and 2 students may take a language course, but other Humanities courses are excluded at this point.

There is a "buddy" system whereby first-year students are assigned a

student from second or third year to help with settling in at university.

This does not appear to be very effective, with very little contact between student and buddy. If the Department thinks this system is important and useful -- I'm not sure that it is -- perhaps something could be done to make it work better.

Finally, space is obviously a serious problem. The accomodation is very cramped and is a severe restriction on possibilities for expansion.

Donald Sannella

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Review of Imperial College Computing Undergraduate Degrees

Prof. Steve R Wilbur, UCL
December 2002

Summary

The Computing programmes are really excellent in content, delivery and outcome. Resource levels are very good. It is important that any financial changes being considered by the College should not reduce equipment or teaching staff levels, and that increases in student numbers be matched by resource increases, including space. The JMC programme also appears to be excellent, sharing computing provision with the Computing degrees.

Although the External Examiners were satisfied with the ISE degrees it was difficult from the material provided to determine its main themes. EEE have recently taken over management of this programme and it was not clear what the computer equipment and teaching support levels are.

Management of student tutorials and coursework, and the automated marking of programming coursework were exemplary and should be considered for use where relevant in other departments.

Scope

This review covered the undergraduate degrees in Computing. These are the BEng/MEng in Computing, the BEng/MEng in Information Systems Engineering (ISE) and the BSc/MSci Joint Mathematics and Computing (JMC) programmes.

Educational Objectives

These are stated to include: computing foundations, mathematical underpinnings, appreciation of changes to state of art, developing critical independent scholarship, engineering issues of systems and professional issues. These objectives are comprehensively achieved in a family of premier programmes. The Computing programmes are the best I have come across giving a broad engineering and systems approach, together with thorough practical and industrial relevance. The JMC programmes, like many joint courses, load students more than single honours programmes, but nonetheless provides good balance and meet the same objectives. The ISE programme was more difficult to assess since its management has recently passed to EEE and the first two years are mostly taught by EEE. There is a potential danger that computing resources and staff expertise in EEE to support this programme may fall short of the excellence in the core years of the Computing programmes.

Learning Outcomes

Students appear to get an enormous amount from the programmes. During the first year tremendous effort is put into ensuring students can program and that over the first two years they thoroughly understand core material. This is confirmed by the feedback from employers and students. This understanding is put into context for MEng students in their period in industry before embarking on more advanced and near-research subjects. Transferable skills are developed at various stages in the programmes through presentations to peers, group working, etc.. Individual projects and possible interaction with research groups develop critical independent scholarship. Whilst there is good coverage of professional issues, a broader appreciation particularly in the legal, ethical and social issues surrounding computing might be addressed in future. There does seem to be some material on this but it needs to be regularly reviewed.

Curricula

The Computing curricula are excellent and match the objectives well. The use of the Department's Academic Committee to review themes and/or years regularly leads to a very strong programme with the rapid introduction of important new courses at the senior end coupled with possible migration of materials to earlier years. Although the weeding out of less popular courses could lead to the loss of core courses this does not seem to have happened. The distinction at the

end of the second year between BEng and MEng programmes means that greater depth and leading edge/research emphasis can be given for MEng courses.

Similar comments apply to the BSc/MSci JMC programme although it is more difficult to assess the student load on this programme. The goals seem clear and consistent with the curriculum.

The ISE programme appears less integrated than the others. It comprises a mixture of electronics (analogue and digital), software engineering and a la carte optional topics. I am sure that students can find useful and coherent pathways through this programme but unlike the other programmes its overall theme is much less clear. At first I thought it was likely to be about Business Information Systems, but the strong electronics flavour contradicted that. Perhaps Industrial Systems Engineering might be the theme, but there are no core courses on Systems Engineering. I believe an internal review and re-design of this programme would be useful. This could also ensure that there is no mismatch between the first two years of this programme and third and fourth year Computing options.

Assessment

Assessment of students has been very well thought out and implemented. Programming teaching can be a problem especially for large classes. An automated test and marking system has been developed which is very successful and should be emulated elsewhere. It provides students with a test suite before hand-in and other tests are carried out after submission. Prompt feedback is given in tutorials.

The coursework weighting is generally lower than in many other similar programmes, but they are tending to reduce the weighting and rely more on terminal assessments to counter the growing problem of plagiarism. It appears IC is leading here.

Student Support

Student support is well thought out and implemented and is appreciated by the students. Particular attention is paid in the first year to ensure that maths and programming skills are sound. This is done through special programming and maths tutorials in addition to laboratory sessions with teaching assistants. Although supported labs are provided in the second year too they do not appear to be so necessary.

A powerful teaching support system allowing staff to access details of tutees progress, to input coursework marks and to indicate tutorial attendance is excellent. It allows the departmental tutor to identify students who are at risk and quiz or support such students in a timely fashion avoiding unnecessary drop-outs or failures.

Apparently because of general lack of space the students' common room has recently had to be used for staff offices. Although space is a serious problem, the benefits to the educational processes of a nearby informal gathering place should not be undervalued.

Quality Assurance

The department's Academic Committee has high-level responsibility for QA on these programmes. It carries out periodic reviews of themes and years and these appear to be very effective. Earlier comments have indicated that support for teaching and learning is to a very high standard leading to a high quality programme with excellent outcomes.

The broad curriculum is excellent. However, I did find difficulty on the public web pages of identifying the detailed syllabi of many courses. I understand there is greater detail on the intranet, but the syllabi I saw were often very brief and vague. Whilst one of the strengths of the department's approach is regular review and adjustment, it is important that the course specifications are available to ensure that coverage is appropriate.

With large classes marking consistency can be a problem especially when several markers are used. Similarly, the marking of individual projects can result in wide mark variations due to the range of markers. The Computing Department has addressed these problems and markers are

given training as well as having round-table discussions to clarify marking schemes. For projects a hierarchical team approach is used to ensure reasonable comparability is achieved across all projects.

Good Practice

I consider the following to be particularly good.

- Use of automated submission of programming coursework, with provision of test-suites for student use and for marking.
- Use of an automated system for tutors to record tutees' attendance and input and review coursework marks. Immediate feedback of absences or defaulting to the undergraduate tutor allows rapid and timely intervention to avoid drop-outs and failures.
- Careful attention has been paid to supporting students in the school/university transition and ensuring that core programming and mathematical skills are acquired. It is important that proper funding be maintained to ensure appropriate levels of tutorial, laboratory and marking support for early programming courses.
- The use of senior students as part of the computing support service in the department is excellent. It results in students having a sense of involvement, gives them an understanding of the engineering trade-offs in providing a service, and also gives staff excellent direct feedback on student needs.

Review Process

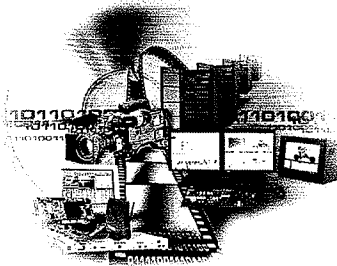
The scope of this review included the Computing, ISE and JMC undergraduate programmes. Our visit focussed on the offerings of the Computing department. Insights into the JMC programme were gained through the documentation provided, a member of staff of Mathematics and a student on the JMC programme. The ISE programme was similarly covered except no-one from EEE was present to talk about ISE.

Although it would make rather more work for the review panel, I felt with hindsight that the JMC and ISE programmes should have been covered in similar depth to the Computing programmes. Because the JMC programme is more tightly integrated this was less of a problem, but resourcing, syllabus and support issues on the ISE programme were not really covered. It may be that in future a two-day visit is needed for such a range of programmes so that aspects of Mathematics and EEE provision can be covered too.

It would have been useful to have included an independent "local" on the panel to provide a chair for the general sessions and to provide first-hand impressions to USC of comparability of subject offerings and processes. This might allow very rapid dissemination of good practice.

Prof. Steve R Wilbur
University College London
8th January 2003

**Imperial College
London
Department of Computing**



Reply to USC Review Computing

Reply to USC Review of Computing.

The Department of Computing was very pleased with the reports of the external assessors appointed by the USC. They appear to have been most impressed with both the content and the delivery of our undergraduate programmes. A quote from each of the reviewers underlines this:

"I can summarize it by saying that the program is of extremely high quality." Professor Carlo Ghezzi (Milano)

"In my view the MEng degree course is among the best, arguably the best, within the UK and offers an undergraduate experience in this field that is second to none." Brian Holloway (IBM)

"the conception and delivery of the degree programmes under review are outstanding in essentially all respects" Professor Donald Sanella (Edinburgh)

"The Computing programmes are really excellent in content, delivery and outcome." Professor Steve Wilbur (UCL)

Each reviewer had minor areas of criticism. We discuss each review's criticism in turn.

Professor Carlo Ghezzi felt that the written documentation provided wasn't the most helpful form of documentation and access to our intranet would have been useful. We feel that he is undoubtedly correct. In this day of intranets it would have been much more helpful if we had been required to provide a much shorter document together with access to our intranet.

Brian Holloway from IBM had a variety of comments and recommendations. Tackling each suggestion in turn:

1. That we add two objectives to our Course Specification. We have done this.
2. That we should solicit the views of industry and other institutions when considering the appropriateness of curriculum. In addition to the role of the USC review itself, we do this on a regular basis with the companies and our students through the industrial placements scheme, and by comparison and consultation with other institutions at which our staff are external examiners.
3. That we should take care that the JMC and ISE coursework schedules are coordinated. There hasn't been a problem with the ISE students; the JMC second year students recently had a problem and we have instituted JMC only staff student meetings to ensure better coordination.
4. That we should seek external input into our professional issues series of lectures. The Department has tried on several times to obtain good external lectures. Unfortunately, our experience has not been good. Despite clear guidelines, external speakers tend to provide too much of a sales pitch without sufficient technical detail. Our approach is therefore to include talks from company speakers out of lecture hours. This has worked well with companies from our placements scheme and is a good compromise.
5. That coursework sometimes gets returned late. We are aware of this problem. A subcommittee of the Academic Committee has made a number of suggestions to try to

alleviate the problem. Although we will only be able to assess these measures at the end of the year, informal indications seem to indicate that the changes have helped.

6. That the Department should provide a Student Common Room. As far as we know, our students are the only ones without a departmental common room. This is something we very much regret. It is the result of a severe shortage of space in the Department.
7. That Academic Committee investigate the more widespread use of worksheet style teaching. Teaching techniques are very individual. Whenever an individual finds a successful technique this is discussed at Academic Committee. Those members of staff who think it appropriate to their teaching may then adopt it. This specific technique has been most successful when used by the person who first tried it and others have now also tried it.
8. That the Department retain control over its Computing systems. Our Computing systems are our laboratories as in other engineering departments: through them we build up local expertise and experience thereby enabling us to provide leading edge experimental systems to our students. The computer labs are configured to provide the practical components of our courses and clearly need to be under our control.

Professor Don Sanella made the following comments:

1. the same point as Brian Holloways's 5th point.
2. He is also concerned that a student registered on an MEng programme, who fails to meet the requirements for an MEng degree, but who fulfills all requirements for the BEng except that of being registered on the BEng degree, may leave Imperial with no qualification at all. We believe that this is because the College wishes to avoid the view of the BEng degree as a failed MEng degree. However, we too believe this is harsh. A BEng Pass degree is already a 'failed' BEng honours degree. We therefore see little reason why the MEng cannot also result in a BEng Pass degree.
3. Professor Sanella commented that the buddy system doesn't seem to be very effective and was not convinced that it is necessary. This is a union rather than a departmental activity. We provide the support at the students request.
4. Finally Professor Sanella noted that we have a severe shortage of space.

Professor Wilbur made the following comments:

1. He felt that the committee did not have enough time to assess the joint degrees to the same depth as the single honours degrees. In particular he was concerned that ISE students may not receive excellent Computing instruction when provided by EEE. As The ISE degree programmes are the responsibility of EEE, we feel that these remarks could be taken up by the USC to review their degree programmes. As to the JMC programmes they have been reviewed in both the Maths and the Computing reviews. Neither saw any serious problems.
2. He is also concerned about the lack of space and the inability for him to access our intranet to get the information he actually wished to see.
3. Finally he would have liked to have a "local" staff member on the panel to provide guidance. We believe that this proposal makes good sense.