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**Peer Review Group Report for Faculty of
Engineering & Computing**

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1. Faculty

1.1. FACTUAL OVERVIEW

1. The Faculty of Engineering and Computing is comprised of three schools: the School of Computing and the School of Electronic Engineering, both established in 1980 when the university began as NIHED, the National Institute of Higher Education, Dublin, and the School of Mechanical and Manufacturing Engineering, established in 1987. The faculty also hosts, or significantly participates in, several research centres and groups, some of which are major national research initiatives.
2. The Faculty of Engineering and Computing appointed its first Executive Dean, Prof Charles McCorkell, in July 2004. In August 2008, Mr Jim Dowling was appointed Dean for a period of two years. The faculty has two Associate Deans, an Associate Dean for Research and an Associate Dean for Education. The Dean is supported and advised in the management of the faculty by the Faculty Management Board (FMB) which includes the associate Deans and the Heads of Schools.
3. The Dean and FMB are assisted in the management and strategic development of research and education activities by two committees: the Faculty Research Committee (FRC), which oversees research activities in the faculty; and the Faculty Committee for Education (FCE) which oversees all teaching and learning activities (taught programmes and awards) in the faculty.
4. A Faculty Constitution is in the final stages of preparation and is due for ratification by the Faculty Management Board soon. The constitution articulates the goals and purposes of the faculty, e.g. "The goal of the faculty is to make a significant contribution to society, locally, nationally, and internationally through the capabilities of its graduates, the scholarly output and commercial derivatives of its research, professional influence, and continuing education and professional development."
5. The faculty is located in three adjacent, linked and relatively new buildings on the campus. Space allocated to each school is managed by that school. The space currently allocated is adequate although it has reduced by about 10 per cent in the period since the quality reviews of 2003-4, largely due to the fall in the undergraduate student population and some recent space rationalisation.
6. Total staff numbers in the faculty, with breakdown by school, are presented in Table 1.1. Academic staff numbers have declined in the past five years in each of the three constituent schools.

Table 1.1: Breakdown of staff within the faculty constituent schools

	CA	EE	MME	Faculty	Total
Dean				1	1
Professors	5	3	1		9
Associate Professors	3	4	0		7
Senior Lecturers	9	5	6		20
Lecturers	13	11	10		34
Technical Staff	5	8	10		23
Administration	1	2	1	7	11
Research Staff	37	27	6		70
Total	73	60	34		175

7. The decline in academic staff reflects the decline in undergraduate student numbers admitted to the faculty in recent years (see Table 1.2). The difficulties faced by the faculty in this regard are common to engineering- and technology-based units of higher education institutions in Ireland and elsewhere. The indications for the previous and current academic years are that the lowest point in undergraduate intake has passed, partly due to measures taken in the faculty and partly due to broader trends.

Table 1.2: Registered Undergraduate Students

Academic Year	Computing	Electronic	Mechanical	Total
2002-03	880	277	312	1462
2003-04	798	225	302	1325
2004-05	626	179	277	1082
2005-06	455	175	243	873
2006-07	408	151	229	788
2007-08	341	147	209	697
2008-09	389	174	185	748

8. The faculty has compensated in part for the loss of undergraduate students by increases in taught postgraduate student numbers, driven by substantial efforts in recruitment, international collaboration and the introduction of new programmes, and by the rise in recruitment of postgraduate research students, stimulated by the significant successes in securing research funding (see Tables 1.3 and 1.4).

Table 1.3: Registered Taught Postgraduate Students

Academic Year	Computing	Electronic	Mechanical	Total
2002-03	99	156	47	302
2003-04	143	190	54	387
2004-05	174	186	53	413
2005-06	158	185	53	396
2006-07	102	191	50	343
2007-08	138	226	47	411
2008-09	155	222	53	430

Table 1.4: Registered Research Postgraduate Students

Academic Year	Computing	Electronic	Mechanical	Total
2002-03	59	77	59	195
2003-04	72	74	70	216
2004-05	78	63	66	207
2005-06	85	62	65	212
2006-07	86	57	65	208
2007-08	88	62	74	224
2008-09	94	74	76	244

1.2 Main findings of Peer Review Group

1.2.1 ORGANISATION AND MANAGEMENT

1. Progress has been made in developing a cohesive structure for the faculty but this is still a work in progress; the faculty is still too close in its operations and in its ethos to three separate schools. There is scope for more sharing across several areas, including academic, technical, IT. Addressing any such weaknesses is undoubtedly made more difficult by the financial circumstances and the lack of headroom for investment.
2. The Peer Review Group (PRG) was surprised to learn that the faculty constitution was still being finalised five years after the faculty was formed. This weakness is exacerbated by the absence of an up-to-date university strategic plan – the current plan is dated 2006-8. It was also noted that the current plan was not spontaneously identified as providing direction to the faculty and its schools. Strategic planning processes across the organisation at school, faculty and university levels need strengthening.
3. We recognise that leadership in the faculty is critical. We noted that the Dean has been appointed for a short term of two years, making it difficult for him to complete any fundamental initiatives. The role of head of school working with the Dean is also critical, and here we noted the inconsistency that in one school in the faculty this position had been held by the same person for over twenty years, and, in another school, there had been four different heads of school in the past decade. This points to a need for the role of head of school to be defined more comprehensively and explicitly. The mechanisms for appointing and supporting the head of school need also to be improved.
4. In difficult and challenging times, individuals and groups within the faculty have made exceptional efforts to address problems and to maintain the innovativeness which DCU espouses. But it is not always clear how such effort is acknowledged by the faculty and university. The perceived difficulties in relationships between school and faculty were expressed to the PRG in various ways and with varying emphasis by academic staff members; such observations were often associated with concern about the allocation of resources. The mechanisms and structures for allocation of resources and particularly the provision of rewards and incentives to generate sustainable activities need to be revisited.
5. The faculty administration team is providing a high-quality service in finance, marketing, HR, examinations, timetabling and academic support. The physical distance between the schools has presented some challenges for the team, but they are actively seeking to maintain good communication links with all three schools. The team has been working in sometimes difficult circumstances; high turnover was put down to high workload. Some re-structuring in workloads is currently being considered, and it is recommended that this should be supported and encouraged. Clearer delineation of responsibilities between faculty and schools is also needed. Marketing is one area in which planning and operations should be concentrated at faculty level.
6. Morale across the faculty is generally high but there are local difficulties that need to be addressed. We heard of concerns about the inadequate support for career development for all categories of staff. We noted the efforts made in some schools to make the allocation of workload more transparent and to provide mentoring and other support to early-career academic and research staff. We saw, however, the need for the university to support this endeavour more strongly.

1.2.2 TEACHING AND LEARNING

1. The schools within the faculty have faced significant difficulties in recruitment for many of their undergraduate programmes but there is some evidence that the lowest point has been passed. Members of the faculty have contributed to this reversal by their innovation efforts. Trends in the higher education market in general also favour the faculty in its recruitment initiatives. A more active approach still needs to be taken at university and faculty level to boost undergraduate intake and quality and more consideration will need to be given to the possible impacts on the quality and quantity of recruitment of the possible reintroduction of university tuition fees in the future.
2. The decline in undergraduate student intake is compounded by the decline in the average level of achievement in the second-level system of those enrolling in the faculty's programmes. This, in turn, has contributed to the relatively low retention rates in this faculty. We recognise that this is being addressed in some ways at faculty and university levels but some of the momentum built up two-three years ago around this issue and, in particular, around support for first-year students may have been lost. It is a matter of particular concern, for example, that new undergraduate programmes whose introduction reflects a commendable innovation effort by those involved should have very high drop-out and failure rates in their first year of operation.
3. Also reflecting the challenges in undergraduate student recruitment, the schools in the Faculty of Engineering and Computing have undertaken rationalisation of programmes and modules and thus of the overall teaching effort. The total numbers of modules and credits delivered has been reduced to take account of reduced teaching resources. Teaching staff should be encouraged to see such reduction as an opportunity for continuing quality improvement.
4. The decline in undergraduate student numbers has been compensated in part through the introduction of new taught postgraduate programmes and corresponding increases in recruitment. Here too the results of these efforts have been varied. In some cases, postgraduate programmes have closed as others have opened. While this reflects a necessary and commendable flexibility, it also presents management and administration burdens. The greater emphasis on taught postgraduate programmes is a strategic issue for the faculty and the university and the faculty's and university's aims and objectives in this regards need to be more clearly articulated.
5. The PRG's meetings with graduates and students gave evidence of a high-quality student experience and a high level of satisfaction. This feedback, along with that of employers who expressed their satisfaction with the quality of graduates coming to them from the faculty, reflects great credit on the staff and ethos of the faculty and university.

1.2.3 RESEARCH

1. The faculty has experienced significant and remarkable growth in research activity and research income, staff, students and publications. The establishment of new research centres in the period since the last quality review and the increased research productivity of the faculty's academic staff deserve strong commendation. The faculty has done well to absorb the increased numbers and increasingly diversified research students and research staff.
2. The success in securing research funding has been focused on research centres which provide an environment for collaborative work, including for cross-faculty co-operation. But the PRG noted there were some issues about the relationship between centres and schools, specifically how

research success feeds into the core activities of the schools. Particularly given the current financial challenges, the ways research funding sources are targeted and the ways the income is distributed need to be constantly reviewed in order to provide sufficient incentives and rewards for continuing the research success.

3. At the time of this review, concerns were growing that it will be difficult to sustain this level of activity against increased competition for possibly reduced funding. We noted that a newly appointed Research Development Officer was due to take up her position in the faculty during the week of the PRG visit; this staff member will be responsible for identifying suitable research funding sources. The faculty has already identified the EU as a priority target for future research funding bids. The faculty and the university need to support schools and research centres in maintaining the strong record in competing for research funding.
4. It was noted that a further bottleneck in sustaining the recent levels of research activity may be in the difficulties recruiting suitable postgraduates and post-doctoral researchers. These difficulties have contributed to delays of up to one year in starting projects. The level of international and particularly non-EU recruitment also presents particular administrative challenges for the research centres and the university.
5. The schools in the faculty have identified several research areas each that are given strategic priority and the university and faculty have identified sustainability as a key research theme. However, it was noted that the Faculty Research Committee has been much more occupied with constitutional and organisational issues than with substantive research content issues. The strong attention given to possible funding streams seemed to indicate a degree of opportunism in research strategy, but it was also noted that faculty members have been active in the EU's development of its research agendas, seeking to influence their content towards areas of demonstrable social and scientific need in which they have strength and interest. The PRG was told, for example, that machine translation is specifically mentioned in current EU framework research programmes and that sensor technology is the subject of a forthcoming Brussels conference – both of these are particular research strengths in the faculty.
6. The information provided on research supervision showed that this responsibility was unevenly distributed among academic staff, with very wide variations between the most and the least active. While the workload allocation schemes may take account of this, particular efforts will need to be made to ensure early-career staff members receive encouragement and mentoring in their supervision of research students. Post-doctoral research staff need a clearer career structure; the PRG was told that work on this framework is well advanced and that there are university-level modules available for postgraduates and post-docs to support their teaching and tutoring. Although post-docs are generally contracted to research centres, the means have sometimes been found to employ them through schools on teaching, and such initiatives also help address the perceived tension in relations between schools and research centres.
7. In the PRG's meetings with research students it was noted that some of the individuals were encountering each other for the first time. The students' strong affiliation with research centre or research group may well be a strength, but it can also be a weakness if it inhibits to co-operation, collaboration and networking. The excessive fragmentation of the research community reduces the opportunities for possible synergies and for sharing of information and experience. In a time of increasing transdisciplinarity, this deficiency needs to be addressed, including through the provision of shared social space and faculty-level seminars and workshops.

1.2.4 COMMUNITY RELATIONS

1. The INTRA programme represents a key strength of the university in terms of the student experience and of linking the university with the wider community. However, competition in this area from other universities is increasing and the external circumstances are increasingly difficult. Students on programmes in the faculty have sometimes not been successfully placed. It is essential that university, faculty and schools ensure that the INTRA programme is well supported and maintained and that renewed efforts are made to at least match competition in this area, including from higher education institutions offering employers longer placements.
2. The PRG noted that faculty staff have been active in community-based initiatives to improve awareness of and broaden access to engineering and technology studies at university level.

2. Constituent Schools

2.1 School of Computing

2.1.1 FACTUAL OVERVIEW

1. The School of Computing at Dublin City University was established in 1980. The school delivers third and fourth-level education programmes mainly in the areas of computing, IT and software engineering and conducts research in a number of research areas.
2. The School of Computing has 30 permanent academic staff, 1 temporary full-time academic staff, 0.5 temporary part-time academic staff, 37 research staff (temporary), 5 permanent technical staff and 1 permanent administrative staff member. Since 2002 the school has experienced a 30% drop in academic staff numbers and an increase in research staff from 3 to 37. The other categories of staff have remained relatively steady, though the administrative staff has dropped by 0.5 full-time equivalent in this same period.
3. The school currently offers two core undergraduate BSc degree programmes, Computer Applications and Enterprise Computing, and offers the BSc in Quantitative Finance in conjunction with the DCU Business School and the School of Mathematical Sciences and also participates in the International Foundation Certificate. The BSc in Enterprise Computing is a newly introduced programme and has been designed to offer a more business IT-focussed education, compared to the software engineering-based Computer Applications programme. The school has seen a sharp drop in undergraduate numbers (from 880 in 2002 to 389 in 2008), a trend common in this discipline across most developed countries. The school has instituted a number of measures to assist, support and encourage first-year Computer Application students. Nevertheless, student retention remains a persistent problem, including at the end of the first year of the new undergraduate programme.
4. The school has introduced five new postgraduate taught courses since 2003, including innovative programmes such as the Masters in Security and Forensic Computing and the increased numbers of students on postgraduate programmes somewhat (but not wholly) offset the decline in student numbers on the long-running Computer Applications undergraduate programme. Offering the Masters in Security and Forensic Computing and the Masters in Software Engineering on a part-time basis has further boosted their attraction to students. Recruitment to the Graduate Diploma in IT has been extended to experienced professionals as well as to its traditional graduate market and this has also proved attractive to students. On the other hand, the school has also responded to indications of weak student interest, choosing not to run three of its Masters programmes in the past two academic years. The school plans to add a further taught Masters programme aligned with the school's research activity during the 2009/10 academic year.
5. Academic members of staff are research-active in four main areas: Dependable Systems; Modelling and Scientific Computing; Information Management; Language and Intelligence. The school has a range of research activities across a range of different topic areas, and is host (or joint host) to two major Science Foundation Ireland Centres for Science, Engineering and Technology (SFI CSETs), namely Clarity and CNGL, and is a partner in another CSET (Lero). The school plays a key role in two university designated research centres (UDRCs) and hosts one other national research centre (National Centre for Language Technology - NCLT).

6. Research activity has grown strongly during the recent investments in research via various Irish governmental agencies, and the School of Computing has been successful both within DCU and nationally in competing for such funds. The total research funding attracted by the school in 2008 was €3,561,000 (exchequer - €2,698,000; non-exchequer - €863,000), up from a total of €714,000 in 2004. The school is currently targeting non-exchequer (EU) funding with notable success. In line with this increased investment, research staff and postgraduate numbers have increased. Research staff has grown from three in 2002 to 37 and research postgraduate numbers from 59 in 2002 to 94 in 2008, with a notable increase in the proportion of PhD students among these postgraduates.
7. There has also been a significant activity as shown by various other standard research metrics since 2004, including 9 authored books, 15 edited books, 39 book chapters, 164 refereed journal articles, 450 conference paper presentations, 180 workshop paper presentations, 34 invited presentations and 15 keynote presentations. Various school members also act as editorial and review board members, conference committee members and conference organisation roles (including DCU-hosted conferences). The school has hosted 17 conferences, workshops or summer schools in this period.
8. The school engages in a variety of outreach programmes directed at pre-university students, through the school's ComputeTY initiative, a large annual undertaking, the Education and Outreach work of the SFI CSETs, internships for undergraduates and secondary teachers, the DCU Centre for Talented Youth in Ireland (CTYI), the All Ireland Linguistics Olympiad, the Irish Computer Programming Olympiad, the International Olympiad in Informatics and the International Computer Camp for blind and vision-impaired students.
9. The total space envelope of the school currently is 3186 m², almost identical to its allocation in 2003 (3180 m²). The usage of this space has changed markedly in the period 2003 to 2009, however, driven largely by the change in the balance of taught students and research postgraduates and the increased research activity, including development of a number of major research centres. As is common in most DCU schools there is no shared "community" space, and this will be mentioned further below.
10. The management of the school is based on the following structures:
 - the Head of School (HoS) has overall management responsibility for the school, and is the line manager for all of the school's staff and reports to the Dean of the Faculty
 - the School Meeting is the school's forum for the ratification of policy changes and general information exchange; it generally meets once per month
 - each taught programme delivered by the school has a programme chair and a programme board; programme chairs are appointed by the HoS but programme boards report directly to the Faculty Committee for Education and through that committee to the university's Academic Council
 - the school's Undergraduate Teaching Committee oversees the school's undergraduate teaching
 - the school's Postgraduate Teaching Committee oversees the school's postgraduate teaching
 - the school's Research Committee oversees the school's research activities including the academic progression of postgraduate research students
11. Members of the school also participate in university- and faculty-level committees, notably the Faculty Management Board, the Faculty Committee for Education and the Faculty Research Committee.

12. Until late 2002, a school manager was in place to handle day-to-day aspects of the school's management. Since the then school manager left the post has been vacant. The Peer Review Group in the last quality review recommended that a new school manager be appointed. This has not happened and the school believes this lack of support places a serious burden on those in leadership, drawing activity and energy away from the more creative and strategic aspects of school management.

2.1.2 Main findings of PRG: School of Computing

2. 1.2.1 ORGANISATION AND MANAGEMENT

1. The changes in student population and overall number, mentioned above, constituted a very large “shock to the system” for the School of Computing over the past seven or eight years. The school essentially suffered a double blow, very rapidly going from a rather secure financial position to one of substantial deficit and also seeing the academic attainment levels of applicants to its undergraduate programmes decrease substantially. This latter issue has had knock-on effects for teaching and learning (specifically progression and retention), to be discussed below.
2. In this environment the overwhelming challenge to the school management has been to re-stabilise the financial position. Much hard and successful work has been done by the school to adapt and expand its undergraduate degree portfolio to attract a broader range of students and to adapt and expand its taught postgraduate portfolio to increase numbers in this stream. These developments have involved serious reflection on the programmes offered, including retirement of various programmes. The school is to be commended on this effort, which appears to be reaping rewards, at least in terms of more stable and partially recovered student numbers. In particular, the Head of School and the programme development teams have made great efforts to realise these developments, and have shown leadership and enterprise to respond to such significant and immediate threats.
3. Technical support in the school is of an excellent calibre, with very highly motivated and dedicated technical staff and undoubtedly this support enables the practical realisation of the developments referred to above. The technical staff identify very strongly with the school and this, along with their abilities, makes this staff group a key strength. The academic teaching staff seem genuinely dedicated to teaching and to the welfare of the students under their charge.
4. The school committees and school representation on faculty and other university committees operate with varying degrees of success. The staff indicated that engagement with the Faculty Education Committee was a generally collegial and positive experience, but the regular functioning of various other school-based committees seemed less reliable in terms of frequency of meetings and distribution of information and consultation with colleagues. The school has engaged successfully with other schools outside the faculty in developing new taught programmes (and also in research programmes), as indicated above, and is keen to engage further in such ventures, both within and beyond the Faculty of Engineering and Computing.
5. The general level of engagement with the faculty is rather low, and the school retains a strong individual identity. The absence of faculty engagement and identity appears to affect the nature and awareness of strategic planning and direction in the school. The school sees itself as a key contributor to formulating and implementing the Faculty of Engineering and Computing strategic plan. However, the strong school-based identity and the relatively weaker faculty-based identity must affect strategic engagement at faculty and higher levels and this was evident in the

meeting with staff where little awareness or interest was shown in such strategic issues. The budgeting process also operates through the faculty structure and the Head of School expressed serious concerns about the transparency of the allocation process within the faculty, about the communication with him around the process and about the specific financial information needed to run the school and to plan in the short to medium term.

6. However, more than any other single aspect of the review experience, it was clear to the visiting panel that at present there is a severe breakdown of professional relationships between certain members of the school, particularly in the relationship of some academic staff to the Head of School and/or the head of school position. It was clear from various meetings with the school staff and Head of School that the morale of many staff is very low. This issue was brought home most clearly in the general meeting with staff. Many of the academic staff present (a minority of the overall complement in the school) voiced their concerns loud and clear. This discontent was manifested in a variety of ways, including an expressed feeling that the school had lost its direction in terms of development and was losing its excellent reputation due to falling student numbers and pressures on progression and retention. Related to this, there was clear resentment at the move away from what is perceived as the school's previous undergraduate "hard core" computing expertise and reputation to "softer" areas, such as the new degree in Enterprise Computing.
7. The staff in question felt that there was no clear plan, at school, faculty or university level, and that the only imperative for the school was to balance the budget, with all previous contributions of the school to DCU apparently forgotten. In addition, disquiet was expressed about the methods and transparency of teaching load allocations. This appears to exacerbate an already fraught situation for some staff.
8. The working atmosphere in the school is poor and must contribute to the morale problems mentioned above, both for the staff with various concerns and for any occupant of the head of school role, who will perceive a lack of support from disillusioned colleagues. In turn, the present atmosphere makes the role of head of school very difficult to fill, and it is also unclear if there is sufficient, or indeed any, recognition of this fact, or suitable support for the head of school role at school, faculty or university levels.
9. The PRG found that urgent intervention is required in order to try to retrieve this situation, and this will be the subject of recommendations below. Regardless of the precise methods, however, a key element and first step of any intervention will be strong and visible show of support for the head of school position, from both faculty and university acting with a coordinated plan, and with due sensitivity to the legitimate concerns of the school staff. This issue is of paramount importance for the school and the faculty. The PRG believes that the success of the School of Computing is of crucial importance to both DCU and the Faculty of Engineering and Computing.

2.1.2.2 TEACHING AND LEARNING

1. The PRG's meetings with undergraduate and postgraduate students gave quite different perspectives and so will be described separately.
2. Undergraduate: The experience of three undergraduate students (2nd, 3rd and 4th years from CA and EC degrees) was very positive and would support the view that the technical support and dedication of staff to teaching are excellent. These students had no real knowledge of the faculty and identified strongly with the school. They seemed very happy in general with teaching, laboratories, access to equipment, standard of equipment, the INTRA programme, and the

broader DCU experience. These undergraduates appeared to have no inkling of any of the morale issues mentioned above. The students were aware of issues around progression and retention and they are appreciative of the various supports that the school and university have put in place to help them. The students expressed some worries about piling up of deadlines which could be alleviated by cooperation between module coordinators.

3. Postgraduate: The postgraduate students interviewed (final year, 2nd and 1st year, including current/former PG representatives) displayed considerably more heterogeneous experiences. Again, there was little evidence of a faculty identity, but two of the postgraduates were involved in the major research centres and their identity was apparently stronger with the research centre than with the school. Postgraduate students in different research groups seem to be quite isolated from those in other groups, with little or no interaction, especially for those in the large groups in big centres. The postgraduates in such large groups did not seem to be aware of any of the staff morale issues, while those in smaller groups seemed to be troubled by them. The spread of knowledge of such issues into the student population could have serious implications for the school, with impacts on the quality of the student experience. Some students intimated that they and colleagues viewed the process of transfer from MSc to PhD as a tough and nerve-racking experience and even have concerns around whether staff divisions can spill over into this process.
4. The challenge of declining academic standards among those entering undergraduate programmes is one in which support from the faculty, perhaps in the form of a clear plan with timed targets to raise entry standards and/or development of joint programmes with other schools in the faculty, could be very helpful for the school. In terms of retention, it seems that some undergraduate students were rather unclear what they were signing up to when they applied, and this explained some of the early withdrawals. This could perhaps be addressed by clearer indications of programme content in promotional materials.
5. Issues raised by the meeting with postgraduate students include the absence of a defining school identity across the postgraduate population and the absence of a common social space in which to develop same. The postgraduates indicated that in many (or most) cases they do not recognise other fellow postgraduates in the school and pass each other in the corridor with little or no interaction. They socialise with their immediate fellow group members in most cases; for smaller groups this can lead to isolation.

2.1.2.3 RESEARCH

1. The research activity of the school seems to be very strong. School members have been very successful in attracting funds both nationally and internationally and the research metrics all show strong growth in the past 7-8 years. The PRG is concerned about the sustainability of these large research efforts if the current levels of (particularly Irish exchequer) funding begin to drop substantially. Careful planning and support at the school and faculty levels (with appropriate university input and support) are required to ensure that the school can maintain its activities and equipment and infrastructure base. This should be based around a clear roadmap. The faculty lost a temporary research officer position which the school had found very useful in assisting with grant preparation and related functions. It is to be hoped that the recently recruited research development officer at faculty level can help the school cope with the difficulties to be expected in the domestic funding environment.
2. The PRG is also concerned about the relations between research centres and the school core teaching and other staff, including technical support and especially head of school. The

reductions in undergraduate numbers and academic staffing have happened as research has grown strongly. While this growth in research is positive and has helped to stabilise the school against falling undergraduate numbers, there is a danger that the teaching activities of the school will suffer unless the relationships between these entities are clear. There are benefits to be had for both sides if this relationship is carefully managed around a clearly articulated structure. However, at present this structure is not clear and specifically the role of the head of school vis-à-vis the research centres is unclear.

3. The PRG believes that the absence of this structure makes the head of school role even more difficult, as substantial school resources are diverted to support research centres, e.g. providing space and facilities for postdoctoral researchers, which bring limited and indirect support from overheads. But the head of school has little authority to call on research centre resources to help the school if and when needed. The main input from the research centres to the schools appears in research outputs, postgraduate student and graduate numbers, and the teaching contribution is very limited.
4. The PRG hopes that the intended new structures for school-centre relations mentioned in the meeting with the university's senior management group will be introduced in a timely manner and that these may address some or all of the concerns. The growth in research numbers has affected the collegial environment in the school as many research centre staff appear to identify almost exclusively with the centre, and not with the school (or faculty), as was also the case for the postgraduates.

2.1.2.4 COMMUNITY RELATIONS

1. The school has a high level of activity in external communities and seems to be aware of the need to maintain these and look for and use new opportunities to expand such relations, especially in terms of recruitment of the most able and motivated students at undergraduate level.

2.2 School of Electronic Engineering

2.2.1 FACTUAL OVERVIEW

1. The school has 23 permanent academic staff, inclusive of three full-time-staff-equivalent secondments into the roles of Dean, Associate Dean for Education, Academic Framework for Innovation (AFI) Fellow and Director of RINCE (Research Institute for Network and Communications Engineering). The staff cohort is relatively stable; since the last school Quality Review, one member of permanent academic staff at professor level has left and one member of academic staff has been recruited at lecturer level. One temporary post was confirmed as permanent on the basis of strong strategic arguments made to the university's Budget Committee. However, no other staff changes have occurred over the last five years. The Head uses a quantitative model based on ECTS credit equivalents for measuring staff workload and the general consensus of staff is that this is a fair and transparent system. The following table presents some of the indicators used in this scheme.

Table 2.1 Staff Participation, Productivity and Contribution in School of Electronic Engineering

<i>based on 19 academic staff, excluding equivalent of 3 staff on secondment and 1 on teaching sabbatical</i>	
Number of staff involved in undergrad teaching	19 (100%)
Number of staff involved in postgrad teaching	19 (100%)
Number of staff supervising research students	18 (95%)
Number of staff supervising postdocs	12 (63%)
Number of staff currently on sabbatical	1
Total number of credits taught by the school	438
Average number of credits taught by academic staff (excludes secondments, sabbaticals and temporary lecturing contracts)	18
Number of (15 credit) final-year projects supervised by academic staff in 2008-2009	32
Number of (30 credit) Masters projects supervised by academic staff in 2007-2008	70
Non-EU fee income brought into the university by the School of EE	1.3M€ pa
Non-EU fee income per EE academic staff member 59K€ pa Estimated input to Irish economy from international students registered in school	5.0M€ pa
Estimated international student input to Irish economy per EE academic staff member	227K€ pa
Average number of research students per supervisor	3.7
Number of supervisors with 4 postgrads or more	9
Number of supervisors with 7 postgrads or more	3
Number of staff with at least one journal publication in the last year	8
Number of staff with at least one refereed conference publication in last year	14
Annual research earnings per academic staff member over all research active staff (2008)	285 K€
Annual research earnings per academic staff member over top five performers in 2008	1.077M€
Total number of Patents/Invention disclosures with EE School staff association	15 / 7

2. The number of undergraduate students in the school has dropped from a high of 340 in 1997-98 to a low of 160 in 2007-2008. The first-year intake has risen again over the last two years while the number of taught postgraduate students has grown from 25 in 1999 to 226 in 2008-09, and the research student population has grown from 56 in 1998-98 to 76 in 2008-2009. Research income has risen steadily to €4m in 2007 and €5.5m in 2008. The school had nine PhD graduates in 2007 and 13 in 2008. There are currently 27 research fellows, post-docs and research officers. The school has had a low take-up among academic staff of sabbatical policy opportunities and is aiming to develop more flexible, family-friendly approaches to facilitating sabbatical activities.

3. The school identifies the decline in undergraduate student numbers as the most serious difficulty encountered since the last Quality Review. This has had a number of impacts on the school and its activities, including
 - issues surrounding retention and progression, which have in turn necessitated considerable staff effort in helping undergraduate students to progress through first and second year;
 - decline in the overall academic standard of the student cohort;
 - budgetary restrictions on recruiting new staff in specialised areas;
 - increased numbers of taught postgraduate students to generate the income necessary for continued viability of the school, with the consequent increased workload in Masters project supervision;
 - additional efforts needing to be put into student recruitment.

4. In a major rationalisation exercise undertaken in the spring of 2009 with a view to supporting accredited five-year engineering programmes and in preparation for the budgetary constraints that were then envisaged, the school has managed to reduce the number of credits being taught in 2009-2010 by 84 ECTS credits, or the equivalent of 17 'standard' modules. The school has also rationalised the operation of the academic committees that oversee the delivery of its programmes. Accreditation of the school's programmes by Engineers Ireland has also driven other rationalisation measures and quality improvements.

5. The suite of taught postgraduate programmes with specialisations in Electronic Systems, Telecommunications, Nanoelectronics/Photonics, Image Processing and Analysis and Network Implementation is the largest such engineering provision operating on the island of Ireland. The number of students on taught Masters programmes is showing continued growth, with the number for 2008-09 academic year at 222, the highest in the faculty. This is partly due to the relationship of the school with the University of Wuhan in China (50 students) and partly due to the range of flexible programmes on offer (part time industry based programmes, upskilling programmes and a range of specialist programmes). The school is making great efforts to continue to attract additional taught postgraduate students, with a new initiative underway in India.

Table 2.2 Students numbers in the School of Electronic Engineering

2008-2009	Student Numbers	Non-EU
Undergraduates	174	25%
Taught Postgraduate	222	34%
Research Postgraduate	74	24%

6. The school has identified energy/sustainability and bio/health/lifestyle as the major growth areas over the next decade requiring the expertise of graduates with electronic engineering or related skills. The school is currently planning and initiating developments in these areas such as the introduction of new taught postgraduate modules in energy/sustainability; a new one-year taught Masters programme in Electrical and Sustainable Energy engineering, including a

conversion route for graduates in non-cognate engineering disciplines such as civil engineering to this area; dedicating space to a projects and research lab in energy and sustainability; arranging lecturing and administrative loads to facilitate academic staff to build expertise in this area; facilitating the development of industrial and research collaborations in this area; recruitment of senior academic staff expertise in bioelectronics to complement existing expertise in the school in the biomedical imaging area.

7. Staff members are very appreciative of the investment made in equipment and facilities in the school over recent years. The research space is airy and bright, with up-to-date computers and other equipment for students. However, some undergraduate students complained of the age of the computers in the undergraduate laboratories and “have the worst computers in the faculty”. There is an ongoing replacement plan in the school to upgrade computers on a rolling basis.
8. Members of the school’s staff are active in a wide range of community, industry- and profession-based activities outside the university or directed at groups outside the university. These include participation in the Week of Wonder organised by Engineers Ireland and aimed at encouraging primary and secondary students to pursue a career in engineering.

2.2.2 Main Findings of PRG: School of Electronic Engineering

2.2.2.1 ORGANISATION AND MANAGEMENT

1. The consistent message from staff and students in the school is that they are happy in their work. They appear highly motivated, with a very positive atmosphere in evidence. The Head of School uses a transparent work load allocation model, which was seen to be fair. There is a shared view that everyone needs to work together to get through the tough times ahead. However, there is a need to develop a strategy to show how the school is going to face this crisis, as the current approach seems to be more opportunistic (i.e. following the money) than based on a longer-term strategy. In addition, the balance between undergraduate and post graduate numbers needs to be examined, as the 44:56 ratio shows a reliance on postgraduate students which may not be sustainable in the long run. However, the recent innovative measures to attract international students are to be commended. In respect to this item and the following two items, the School of Electronic Engineering and the School of Mechanical and Manufacturing Engineering will benefit by addressing them jointly.
2. Problems with the university’s student database programme (ITS) were highlighted as a major problem in the Self-Assessment Report, but these now seem to be resolved.

2.2.2.2 TEACHING AND LEARNING

1. The school runs an open opportunities programme in conjunction with the School of Mechanical and Manufacturing Engineering, under which applicants who do not get a Grade C or higher in Leaving Certificate mathematics, but who show an aptitude for engineering, are given an alternative entry route to engineering. However, no clear metrics for the success or failure of this programme were in evidence; nor were there any plans to develop the metrics, the view being to wait until a full cycle of students had passed through this programme before making an evaluation. There is also a very high drop-out rate (approximately 30%) from first-year undergraduate engineering, which the school attributes to the low entry points, the mismatch between students’ perceptions of engineering and the reality, the high workload required on the engineering courses and the particular difficulties that many students have with the mathematics components of their programmes. The school, perhaps in conjunction with other schools in the faculty experiencing these problems and with faculty support, should explore how

to provide tutors who have expertise in engineering-related maths (eg engineering postgraduate students) for the Maths Learning Centre and thus for support of students in first year and later years who experience difficulties with the maths components of their programmes.

2. First-year students also had a problem with the Matlab classes, and they found Matlab more a hindrance than a help, having to become familiar with Matlab at the same time as getting to grips with new mathematical concepts. It is recommended that the Matlab element of the course should be integrated more fully with the rest of the material.
3. The third issue identified was in relation to the group project in first year, where the students felt they did not have enough experience to work effectively in groups and that one or two students in the group ended up doing all the work. It is recommended that some sort of guidance be provided for first-year students in how to work in groups early in the first semester. This could be part of the broadening of the curriculum as identified by some employers as preparation for work in industry covering, for example, team dynamics, interpersonal skills and direct communication.
4. Finally, some students complained about the poor sequencing of modules, leaving the prerequisites for some modules not covered before the module starts. A full review of the sequencing of modules is recommended to ensure a seamless transition for students. The feedback from the students was that the school is open to making changes to course delivery when problems are brought to their attention, so the school may already be addressing this issue.
5. The school is looking at alternative methods of course delivery, including distance learning and blended learning. It has also started to work with Oscale, the DCU distance education centre, to develop an e-learning strategy for both undergraduate and post graduate programmes. This approach should be given focussed attention.
6. The school should also work with the university to get new programmes approved as quickly as possible and to ensure that the additional DCU lead-times are significantly less than those imposed by external agencies such as the CAO.
7. Students and staff believe that a common area for students to socialise with each other would be very important to help students feel more part of the school and reduce the feeling of isolation.

2.2.2.3 RESEARCH

1. The school has been very successful in attracting research funding. As recently as September 2009, the Nanomaterials Processing Laboratory became the lead partner in a major EU research project targeting energy efficiency for home and office appliances and worth €20 million.
2. The PRG noted that research groups do not interact much with each other. During the session with the research students the question was asked how many researchers knew other researchers outside their own group. No one knew anyone else. When asked to state where they “belonged”, the students invariably said they belonged to the research centre first, then to the school and then to DCU. Many did not feel a sense of place within the school. In order to facilitate more interaction and synergies among the research groups, it is recommended that a common area for postgraduate students be set up. Such facilities exist in other faculties and add

greatly to the students' experience and networking. It also means that groups can share equipment and resources, which does not seem to happen at all in the centres or the school.

2.2.2.4 COMMUNITY RELATIONS

1. Members of the school make strong contributions to the management and strategic direction of the faculty and the university. This is evidenced by their participation on university committees and on faculty committees. The current Dean of the faculty and Associate Dean for Education are both from the school. Members of the school also play a variety of roles on international and national committees in areas of their expertise. In addition, the school has run a programme for transition year students as well as the Week of Wonder in association with Engineers Ireland.
2. It is recommended that the school together with the School of Mechanical and Manufacturing Engineering develop the Open Opportunities programme to work more with second-level schools, and that they step up promotion of the Access programme and other initiatives to attract applicants with a Level 7 qualification. Consideration should also be given to providing these programmes part-time or by distance learning.

2.3 School of Mechanical and Manufacturing Engineering

2.3.1 FACTUAL OVERVIEW

1. The School of Mechanical Engineering is located in the relatively new engineering building and has modern, spacious and well-equipped facilities. The total space assigned to the school is 3265 sq meters of which 58% is allocated to laboratories.
2. The school has 17 academic staff members – one professor, six senior lecturers and ten lecturers. It has one full-time School Secretary, ten technical officers, one full-time researcher and three postgraduate research fellows. In 2005 when the school last performed a quality review there were two senior lecturers in the school. There are also two full-time staff equivalent secondments into the roles of Associate Dean for Research, and AFI (Academic Framework for Innovation) Fellow.
3. The school is responsible for the management and delivery of seven taught programmes. One is delivered jointly with the School of Electronic Engineering, and another has a 25% contribution from the DCU Business School (DCUBS). The school operates four undergraduate programmes, of which the most recently established started in 1999. In the five years since the school quality review, the number of graduates from these programmes has fallen from 62 to 47, with the B Eng in Mechatronics Engineering accounting for most of the decline and the BEng in Manufacturing Engineering with Business Studies producing just three graduates in 2009.
4. The total number of undergraduate students registered on all taught programmes in 2008-2009 was 185, compared to 302 in 2003-2004. The SAR did not provide comparable data for undergraduate and taught postgraduate numbers so these are detailed in two tables as follows:

Table 2.3: Undergraduate Programmes in the School of Mechanical and Manufacturing Engineering

Programme Title	First Offered	Number of Graduates 2009
BEng in Mechatronic Engineering <i>Jointly offered with School of Electronic Engineering</i>	1996-1997	13
BEng in Mechanical & Manufacturing Engineering	1999-2000	16
BEng in Biomedical Engineering	1999-2000	15
BEng in Manufacturing Engineering with Business Studies <i>(Run in cooperation with DCU Business School)</i>	1999-2000	3
Total		47

Table 2.4: Taught Postgraduate Programmes in the School of Mechanical and Manufacturing Engineering

Programme Title	First Offered	Number of Students 2009
Access Computer Aided Mechanical and Manufacturing Engineering	February 2002	13
Graduate Diploma in Computer Aided Mechanical and Manufacturing Engineering	February 2002	12
MSc in Computer Aided Mechanical and Manufacturing Engineering	February 2002	33
Total		58

5. Since the last review period, the school has introduced a 'Common Engineering' first-year programme run jointly with the School of Electronic Engineering. Drivers for this development included accreditation reviews conducted by Engineers Ireland and issues around the retention of first-year students as well as the desire to share expertise and improve teaching work-load allocations across all programmes. The school has identified some difficulties emerging from this initiative, most notably problems in second year, identified by external examiners, where students appear to be underperforming in some core modules such as mechanics and engineering maths. Measures to address this have been put in place but they have not had a significant impact on student performance in second year. The school would hope to further address this matter in the context of preparations for moving to five- year MEng programmes which will commence in September 2010.
6. The school is actively engaged in research and has grown its research student numbers considerably in the past five years. The school is currently home to 55 registered PhD students and 25 research masters students. Staff members are involved in a number of research centres including the Materials Processing Research Centre (MPRC), the largest research group in the school, the National Centre for Plasma Science and Research (NCPST) and the National Centre for Sensors Research (NCSR). The school also has two academic staff members who are actively involved in the Enterprise Process Research Centre, an interdisciplinary research group consisting of academics from Engineering, Computing and Business within DCU. The output of research publications by the school has been significant, with an average of nine publications per member of staff per year. During the same period, research income generated by the school's research centre, and other income generated by academics or academics affiliated with a research centre based outside the school was over €8 million.
7. The Head of School has overall responsibility for the management of the school and reports to the Faculty Dean. The Head is supported by a Deputy Head of School, a rotating position that was first introduced in 2007 to prepare for the forthcoming retirement of the Head of School who has held the post for 22 years. The Head is also supported by a six-member School Executive which rotates its membership every three years. In April 2009 the School Executive approved the establishment of a School Research Committee and a School Teaching and Learning Committee. The chairpersons of both committees, and one other member of each committee, are members of the equivalent faculty committee.
8. All programmes in the school are managed by a programme board chaired by a programme chair which is rotated every three years. Administrative support is provided by a School Secretary and administrative staff located in the Faculty Office. The school is, however, concerned about the significant reduction in administrative capacity available to it because of effective staff reductions in the Faculty Office.

2.3.2 Main Findings of PRG: School of Mechanical and Manufacturing Engineering

2.3.2.1 ORGANISATION AND MANAGEMENT

1. The PRG found that several improvements had been made since the last quality review, notably:
 - The development of a school strategic plan 'Engineering Strength: Strategy to 2010'
 - A review of the role of the School Executive with improved structures, roles and responsibilities
 - The appointment of a Deputy Head of School

- The formation of a School Research Committee and Teaching and Learning Committee with direct links to the equivalent faculty committees
2. While a great deal of work has been done to improve decision-making processes in the school through the established school committees, there remains a concern on the school's part that information is not adequately disseminated and decision-making with regard to budgets and resource allocation is not fully transparent. The PRG believes this could be remedied in part by improving the efficacy of existing communication mechanisms. All committee chairs and officers should report regularly on developments and decisions made at school and faculty meetings.
 3. Staff expressed concern about the effectiveness of the devolution of administrative support to the faculty. They felt it was difficult to get issues resolved in a timely manner and this affected the school negatively. They also felt that there was a lack of clarity around the role and relationship of the faculty office to the school. The school needs to work with the faculty office to improve and develop effective and appropriate administrative support structures.
 4. The meetings with staff showed that a strong culture of collegiality and collaboration exists within the school. Morale was found to be high among academic staff but it was considerably lower amongst the school's technicians who are concerned at the lack of an explicit career path for technical staff. The PRG noted this concern but it believes that any review of promotion and reward mechanisms should be considered in line with a review of technical resources available across the university, the promotion of greater innovation in roles and duties, and other potential synergies, taking in, for example, discussions underway through Human Resources regarding post-doctoral staff.
 5. Laboratory equipment is generally funded through Higher Education Authority grants and does not place a burden on school or faculty budgets. The PRG believes there may be issues around the cost of maintenance and replacement of equipment in the future.

2.3.2.2 TEACHING AND LEARNING

1. The PRG noted the following improvements since the last quality review:

On the recommendation of the previous PRG report the school renamed its existing undergraduate programme BEng in Medical Mechanical Engineering to BEng in Biomedical Engineering; the first students to be awarded degrees with the new title will graduate in 2010; this programme has grown from seven graduates in 2004 to 15 graduates in 2009 and is now of a similar size to the BEng in Mechanical and Manufacturing Engineering;

The previous PRG report recommended that more formal systems for gathering student feedback and for student-staff liaison should be implemented. This has been partially implemented; students are represented on programme boards, student surveys are carried out by individual lecturers, and programme boards carry out reviews on an ad-hoc basis. A plan to conduct web-based surveys was outlined in the school's Strategic Plan but was not implemented. This should be progressed further, along with the identification of appropriate mechanisms to gather feedback from students who drop out of courses.
2. The PRG in the current review found that the school has excellent teaching and laboratory facilities and equipment. The school is dealing with retention issues and declining undergraduate numbers. Staff in the school believe and the PRG agrees that poor retention rates are explained by:
 - lower academic ability (lower CAO points) of students entering the programmes

- students having particular difficulty with Maths
- students discovering that they have chosen the wrong course

In respect of these items and related issues mentioned in section 2.2.2.2 the School of Mechanical and Manufacturing Engineering and the School of Electronic Engineering will benefit by addressing them jointly.

3. Some of the undergraduate students interviewed by the PRG said that the lower CAO points requirement of the school was one of the reasons for selecting the DCU programme. There is some evidence that lower entry points act as a mistaken signal to students that the course is relatively easy.
4. The school has made commendable efforts to support students who may have difficulty with the course content. The Learning Innovation Unit has supported staff in terms of enhancing their teaching practice through the use of learning diaries and reviewing learning styles. Students on some modules are required to keep a learning diary and receive feedback on their entries. Students complete a 'learning styles' questionnaire, the results of which are used to improve the teaching practice of staff.
5. These initiatives are in their early stages and there are no data available to evaluate how well they are working. It was noted that the school is in a good position to propagate new teaching and learning initiatives across the faculty.
6. Graduate numbers on undergraduate programmes have declined from 67 in 2004 to 47 in 2009. The numbers on the joint programme with the Business School have declined from 7 graduates in 2004 to 3 in 2009. Staff members believe that this is not inefficient because almost all modules on this programme are delivered across multiple programmes. They also pointed out that course restructuring and rationalisation were under way as part of the Academic Framework for Innovation.
7. The PRG meetings with undergraduate and postgraduate students and recent graduates indicated a very positive student experience in the school. Students particularly appreciated the INTRA placement, practical work and the modern facilities. Students also identified excellent supervision and support from staff as strengths of the school. Some students believed that having industrial experience as part of a PhD programme would be beneficial. The Library's online collections were noted as being extremely important to the work of postgraduate students.

2.3.2.3 RESEARCH

1. The PRG noted that the issues highlighted in the previous quality review and that have been addressed include:
 - There are currently 80 research students and a further 70 students on taught masters programmes within the school, a significant increase compared with 2004;
 - Research funding achieved through proposals from school staff members in the past five years amounted to €8.2 million;
 - Significant increase in research publications and these are now published more widely than previously;
 - The school has consolidated its research activity to the fields of biomedical engineering, sustainability and energy, and materials and enterprise engineering; its research centres are an integral part of school activities and some staff have established strong links with other research centres in the faculty;

- The school still has one professor but there are now six members of staff at senior lecturer level, four of whom were promoted in recent years and are now taking on leadership positions within the school.
2. The PRG in the current review found that the school has significantly increased its research activity and the development of postgraduate taught programmes to improve overall student numbers, school finances, professional profile and to meet requirements for staff promotions. The undergraduate/postgraduate student balance could be a cause for concern if the school continues to have a relatively weak undergraduate base from which to draw prospective postgraduate students.
 3. The school has strong links with industry and these should be further strengthened, both as a source of research projects and as an additional stream of funding. This funding route and greater involvement in EU projects are to be encouraged, replacing the heavy reliance on state funding schemes which are likely to decrease significantly over the coming years. Given the growth in inter-disciplinary research activities, it would benefit all researchers to be made aware of the equipment available to researchers across the entire university. This was illustrated very clearly in the PRG's meeting with research students who reported that a vital piece of equipment required by them was available in another faculty yet they only became aware of this by accident.

2.3.2.4 COMMUNITY RELATIONS

1. School members are strongly represented and involved in the wider university through membership of faculty-level committees. There is also considerable evidence of good relationships with industry, professional bodies, other universities and involvement in the scholarly communication and publishing process where staff members act as journal and conference reviewers and are members of journal editorial boards. In relation to the local community, the school has been involved in a number of faculty initiatives to encourage primary and secondary students to follow a career in engineering. The PRG believes there are opportunities to build on existing relationships with the immediate local community to develop and enhance reciprocal links.
2. It is recommended that the school together with the School of Electronic Engineering develop the Open Opportunities programme to work more with second-level schools, and that they step up promotion of the Access programme and other initiatives to attract applicants with a Level 7 qualification.

3. The Review Process

3.1 THE SELF-ASSESSMENT PROCESS AND SELF-ASSESSMENT REPORT

1. The Self-Assessment Report (SAR) of the Faculty of Engineering and Computing was comprehensive and yet reasonably concise. It provided a clear view of how the faculty and the constituent schools had developed and sought to improve quality since the previous round of school-level quality reviews.
2. The process of self-assessment appears to have been conducted effectively. Schools established quality review co-ordinating committees that took responsibility for drafting the relevant sections of the SAR and organising the schools' 'away days'.
3. Since for each constituent school this was a second-cycle or repeat review, it was decided, with the agreement of the university, that the contents of the SAR relating to the constituent schools should be prepared in the context of the reports produced as a result of the first cycle reviews. Each school drafted its own contribution to the SAR and appointed its own Quality Review Coordinator. A Faculty Quality Review Committee of the Dean, Associate Deans, Heads of School, School Quality Review Coordinators and Faculty Manager met to initiate the preparations. A coordinating group was established in each school with membership representing various aspects of the school's operation and various academic grades to prepare preliminary drafts of the SAR, prepare the "away days", complete the school's contribution to the SAR and prepare for the Peer Review Group's site visit.
4. The school "away days" involved all staff in the preparation of the school's contribution to the SAR, particularly in regard to the preparation of the SWOC (strengths, weaknesses, opportunities and challenges) analysis. These events were facilitated by external consultants who met key staff prior to the event, chaired the event and helped with some aspects of the report preparation arising from the event.
5. The Faculty Quality Review Committee met "on a number of occasions", according to the SAR. The Associate Deans took responsibility for the sections of the SAR relating to their areas of responsibility and the Dean took responsibility for the final draft of the SAR.
6. The PRG found there was little evidence in the report of collective reflection by the faculty. This process appeared to have been very largely devolved to the schools where the PRG found that the self-assessment reports demonstrated a good level of self-reflection and of openness. There were no major surprises for the PRG during the visit as the SAR had covered almost all that needed to be covered. The one exception, relating to the morale of staff in the School of Computing, took up a large amount of the PRG's reflection and discussion time; earlier indication of the issues might have saved on this effort.
7. There were some differences between the various school elements of the SAR in the detail of the data provided. In two cases, historical (5-year or 10-year) information was provided on staffing and student numbers, and in one case the information covered only the current or most recent year or two. This hindered comparisons between the schools in terms of resources. The presentation of research outputs was also not consistent between schools; nor was it entirely clear how reported research income – mostly channelled through research centres – was assigned to schools. In these and other respects, it is **recommended** that a tighter template be provided for such reports. This is practicable in this second cycle of reviews in which the point of departure is the previous quality review and not so much primary data may be required.

3.2 THE PEER REVIEW PROCESS

1. The members of the PRG are listed on the cover page of this report. They were assigned as sub-groups to individual schools, each group with its rapporteur. The programme for their visit to the faculty and schools is summarised as follows.

Day	Time	Activity	Remarks
Day 1 Wednesday	9.30-11.30	Briefing by Director of Quality Promotion	Prof Colin Grant confirmed as chair of PRG
	11:00	Coffee	
	11.30-13.00	Peer Group meeting to organise work	Chair led discussion of main areas of interest and concern arising from the SAR; principal issues outlined to guide PRG for the visit
	13:00-14:00	Lunch	
	14.00-15.40	Short presentations by faculty and schools, with discussion of SAR	4 presentations and discussions
	15:40-16:10	Meeting with Dean + School Heads	
	16:10-16:25	Coffee	
	16:30-17.30	Discussion of school sections of SAR	
Day 2	9.00-9.30	PRG internal discussion	
Thursday	9.30-10.15	Meeting with Associate Dean for Research and members of RC	Chair of RC led the presentation; ~10 members present from all schools and several research centres
	10.15-10.30	Coffee	
	10.30-11.15	Meeting with Associate Dean for Education and members of T&LC	Chair of T&LC led the presentation; ~10 members present from all schools
	11.15-12.15	Meeting with Faculty Services	Faculty Administration Manager led presentation; one other member of faculty administration present, plus 7 members of technical / IT staff
	12.15-13.00	PRG internal discussion	
	13.00-14:00	Lunch	
	14.00-15.00	Visit to schools' facilities (and staff)	
	15.00-16.15	Meeting with school staff (representing junior/senior academics, admin / technical staff)	
	16:20-16:35	Coffee	
	16.35-17.30	Meeting employers and graduates	
Day 3	9.00-9.30	PRG internal discussion	
Friday	9.30-10.30	Meeting with Senior Management	Professor Ferdinand von Prondzynski, President; Professor Anne Scott, Deputy President; Professor Richard O'Kennedy, Vice-President for Learning Innovation; Professor Eugene Kennedy, Vice President for Research; Mr. Frank Soughley, Finance Director
	10.30-11.00	Coffee	
	11.00-11.45	Students: Undergraduate	
	11.45-12.30	Students: Postgraduate	
	12.30-13.30	Clarification of outstanding issues for PRG	
	13.30-14:00	Lunch	
	14.00-16.30	Preparation of Exit Presentations	
	16.30-17.00	Exit Presentation	

2. The PRG was able to adhere to this timetable with only minor deviations. However, it was felt that the timetable for future visits should certainly be no longer than for this visit and, if possible shorter. At the same time, however, the PRG felt that more time needed to be allocated to the PRG's consideration of its findings and preparation of its exit presentation. Meetings with students could be shortened to 30 minutes and some school-level meetings also shortened. In faculties with more schools, there will need to be significant reduction in school-level activities. For this visit, it was envisaged that there would be separate schools and faculty exit presentations but the PRG amalgamated the exit presentations into one and it is **recommended** that this practice be considered for future faculty reviews.
3. During the peer review visit, the PRG found that it was focusing more on faculty-level issues or issues common to the constituent schools more than was the case in the SAR or was evidenced in the presentations given to the PRG. Issues such as the quantity and quality of student recruitment, student retention, increased emphasis on taught postgraduate programmes, increased emphasis on building research groups and centres, the role of the head of school, transparency of workload allocation, transparency of resource allocation, and many more, transpired to be common to the schools in the faculty but appeared to have been addressed independently by the three schools in the self-assessment process.
4. The faculty and schools were at all times co-operative and responsive during the review visit; requests for additional information, for example, were met promptly and efficiently. But clearer guidelines are **recommended** as to who meets whom; it should be clear, for example, that the meeting with the general staff of schools takes place without the head of school present.
5. For future faculty-level quality reviews, the PRG **recommends** that the size of the review group **not** be scaled up to reflect a larger number of constituent schools. The PRG considers that the group in the present review was already at or beyond the maximum size for efficient conduct of the process. In dealing with larger and possibly more diversified (in disciplinary terms) faculties some compromise will need to be found between disciplinary representation and effective operation. The group will need to be briefed to focus on higher-level issues.
6. This PRG further **recommends** that rapporteur duties for school-level visits be assigned within the appointed group of academic and other peer reviewers, thus obviating the need for additional internal members of the PRG acting as rapporteurs. The preparation of sections of the PRG report concerning schools should be handled as part of the overall effort, rather than devolved to sub-groups. Overall, it is **recommended** that the PRG composition for, the brief for and the conduct of future faculty reviews focus more strongly on the faculty level.
7. The first stages of the PRG's work involved a discussion of definitions of quality, quality assurance and quality improvement. Given the presence in the PRG of industry representatives from sectors where quality assurance processes are highly formalised alongside academics whose understanding of quality processes are different, this was to be expected. The PRG **recommends** that the university, through its Quality Promotion Unit, develop a concise statement for external reviewers (and perhaps for internal guidance) on how quality and quality improvement are defined and are to be assessed in the university context; this should be set out in conceptual rather than procedural terms. The PRG also **recommends** that specific guidelines be provided to units under review as well as to reviewers on what aspects of performance are being assessed, and by what means, in the current, second cycle of reviews.

4. Recommendations

1. **Actions need to be taken to rebalance relations between schools, research centres and faculty such that the collective ethos of the Faculty of Engineering and Computing is strengthened.** The faculty should identify areas for increased co-operation and sharing, including academic programme development, technical resources and support, and student recruitment and retention. In academic programmes the opportunities should be identified to share more elements and develop more joint degrees that might prove very attractive to prospective students.
2. **The strategic planning processes at school, faculty and university levels need to be improved, so that, especially in the current challenging circumstances, staff at all levels are given clear guidance on the targets and priorities for the years ahead.** The strategic plans of the faculty and university were found to be inadequate and/or out-of-date and school plans were of highly variable value in providing the necessary guidance.
3. **The university and the faculty need to take a strong and active approach to boost undergraduate student intake numbers and quality.** The Faculty of Engineering and Computing has experienced the greatest difficulties of any in the university in this respect. This faculty has done well to reverse the decline but it continues to face major challenges in dealing with students of very variable ability, particularly in supporting mathematics learning. The faculty should assess the demand for alternative methods of course delivery, including distance learning and blended learning, and if this assessment shows it to be appropriate, develop a strategy and implementation plan at school and faculty level, possibly in conjunction with Oscail, the DCU distance education centre.
4. **The schools and faculty need to identify clearly the responsibilities and remedial measures to address the continuing problem of relatively low retention rates in this faculty.** The schools and faculty should explore how to provide tutors who have expertise in engineering-related maths for the Maths Learning Centre and thus for support of students who experience difficulties with the maths components of their programmes.
5. **The mechanisms for appointing and supporting heads of school need to be improved.** The leadership role of the head of school working with the Dean is critical but the articulation of the head's role is not clear enough, as reflected in the very different and sometimes difficult experience of the three schools in the faculty in filling and performing this role.
6. **In the School of Computing an urgent intervention is needed to address the severe breakdown of professional relationships in the school. This must be considered a high priority for school, faculty and university.** Strong and visible support needs to be given to the head of school position from both faculty and university acting with a coordinated plan, and with due sensitivity to the legitimate concerns of the school staff. The success of the School of Computing is critical to the success of the faculty and university into the future. The PRG recommends that the university and faculty, in consultation with the head of school and the school community, consider a variety of possible interventions, including e.g. (a) extended, external professional mediation working to support the current head of school; (b) the appointment, at the imminent end of the current head of school's term, of a new head of school (either an internal or external candidate) with experience suitable to address the issues, possibly also with additional external professional mediation; (c) subdivision of the school into smaller units which can be constituted in a way to reduce stress.

7. **The university, schools and faculty should undertake careful planning to ensure that the current level of research activity and infrastructure can be maintained.** In the Faculty of Engineering and Computing this effort should produce a clear roadmap developed by the schools and faculty jointly. This should set out clear priorities in substantive areas of research and strategies to deal with anticipated developments in national and international research strategies and funding.
8. **The university and faculty should review and improve their mechanisms and structures for allocation of resources and particularly the provision of rewards and incentives to generate and support innovative and sustainable activities.** This faculty has demonstrated high capacity for innovation to address the decline in student intake and staff engaged in such efforts need to be able to see the returns on those efforts.
9. **The university, faculty and schools need to ensure that the INTRA programme is well supported and continually renewed.** INTRA represents a key strength of the university but competition in this area from other universities is increasing and the external circumstances are increasingly difficult. Industry partners are very positive about students on both undergraduate and postgraduate programmes and, in particular, about their experience of INTRA but note that competitors are offering longer placements which they find more effective and worthwhile. The competitive positioning of the engineering and computing internships needs to be reviewed urgently.
10. **Social and collegial interaction needs to be improved between academic staff, research students and research officers across the schools and research centres in the faculty.** The university, faculty and schools should examine how suitable communal spaces could be provided as a means to promote stronger networking and stronger faculty identity.
11. **The faculty should consider developing a shared workload allocation model for academic staff in view of the relative success in the adoption of such models in two schools and the relative lack of success in a third.** The model used should aim, among other things, to minimise staff anxiety and frustration, ensure the best-possible match of staff expertise to module topic, establish an agreed framework for changing staff members' portfolios of modules, while achieving an appropriate level of turnover and minimising academic staff's administrative burden.
12. **The schools and faculty should review their committee structures and communication processes to improve the participation in and dissemination of decision-making.** Such improvements should aim to ensure that faculty-level committees in particular can focus on common substantive and strategic issues, that representatives on these committees act effectively in communicating two ways between school and faculty, ensuring that school staff members are kept fully abreast of developments at faculty level, and that school-level committees integrate their efforts with those of faculty-level committees.
13. **The faculty should take the initiative in compiling an inventory of major pieces of research equipment in its schools and research centres,** with a view to eliminating duplication and rationalisation and synergies, where it is appropriate. The university should promote the same effort across other faculties and schools.
14. **The university, faculty and schools should consider the implications of the shifting balance between undergraduate and postgraduate numbers and set parameters for this process.** This analysis is of particular importance to one school in the faculty where the majority of students are postgraduates – this balance may not be sustainable.