Quality Implementation Plan for the Department of Electronic Engineering

1. Recommendations which the Department could implement unaided

Recommendation 1.1: (Teaching)

The high failure rate in early years of the course is a cause for concern and efforts to address this should be given serious consideration.

Response of Department:

We have taken a strategic decision to have more permanent staff teaching in the early under graduate years and to revamp a number of key foundation modules to improve the quality and relevance of material and enhance the pedagogical impact.

Action required: None - this is already being implemented as part of our normal programme review procedures.

Resources required: Reallocation of staff time

Recommendation 1.2: (Research)

Research Student Numbers: The Department has a substantial number of PhD students; this is a tribute to the Department's commitment to developing a strong research ethos.

Further growth in research numbers to the level proposed in the strategic plan will be extremely challenging. In addition there will be a need for new staff to address the supervisory load if this does in fact occur. Additional technical support staff to support research would also be necessary.

Response of Department:

In hindsight the strategic plan was overly ambitious and is no longer viable given the current economic climate. A new plan will be developed in 2011/2012 that better reflects the capacity of our staff complement to supervise research students and the potential for recruiting additional staff in the coming years.

Action: The development of a new strategic plan as outlined above in tandem with the University strategic planning exercise that will be taking place during the 2011/2012 academic year.

Resources required: Reallocation of staff time

Recommendation 1.3: (Research)

It would be beneficial to put in place a structured review of PhD student progress to incorporate early assessment in year 1; this would be an extension of the proposed annual review which seems limited in scope.

Response of Department:
We are in the process of rolling out an annual review of PhD student progress and will evaluate its performance and effectiveness on an ongoing basis, particularly as it will have to be adapted to the planned structured PhD programmes that will be commencing in 2010.

Action required: None

Resources required: None

Recommendation 1.4: (Research)
An Industrial Liaison panel would assist in the Department's stated aim of developing strong supportive relationships with industry and business communities at national and international level, particularly in those areas of mutual interest not specifically addressed by dedicated research projects.

Response of Department:
The Electronic Engineering Department already has strong links with industry through our IWE and research contacts and we feel that a formal panel will not provide any additional benefit.

Action required: None

Resources required: None

Recommendation 1.5: (Research)
The previous quality review suggested strong research links with the Hamilton Institute. This does not appear to have happened but is still perceived a very worthwhile objective.

Response of Department:
Research links do exist between individual researchers in EE and Hamilton, some as co-investigators on research grants. These links have grown organically over the last number of years and further links are likely to develop as the complementarity of the activities of IMWS and Hamilton are exploited.

Action: Head of Department to continue to liaise and build links with the Hamilton Institute to explore opportunities for exploiting synergies that exist than between EE and Hamilton.

Resources required: None

Recommendation 1.6: (Research)
There does not appear to be a career development path for contract research staff (postdocs) e.g. a process of being able to apply for promotion. It would be useful to consider this as the postdoctoral activity grows; this is of course a University level issue but a recommendation from the Department might be worth considering

Response of Department:
We are not aware of such opportunities for contract research staff at other Universities and do not know how this could be implemented given that funding for postdocs is generally from fixed term research grants of finite monetary value.

The facility already exists for postdocs to progress up the IUA pay scales and the standard practice is to factor this into research grant budgets.

The Department encourages its contract research staff to avail of the staff development courses provided by the University and to build their own research and teaching profiles. This includes supervising PhD students, grant writing and delivering modules on our ME and BE programmes.

Actions required: None - all practical measures are already in place.

Resources required: None

Recommendation 1.7: (Strategic Plan)
There is an urgent need to review the strategic plan in the light of changed circumstances, including the departure of the Product Design course, seriously adjusted national economic circumstances, pressure on commercial organisations' research budgets, and continued low recruitment etc. The proposed change of name is no longer appropriate. The opinion of the reviewers is that a number of the targets are overly optimistic and thus the robustness of the figures is questionable. For example it is not clear if sufficient staffing resources exist to establish the BSc in Technology Education. Growth of academic staff to 25 and technical support staff to 7 seems ambitious, particularly with the loss of the planned 153 Product Design students.

Response of Department:
Drafting a revised strategic is a major action item for the Department in 2011/2012. As noted by the reviewers this is needed to reflect the change in focus of the Department now that Product Design is no longer part of our remit. It also needs to take account of our substantially reduced staff complement and the limited potential for expansion going forward given the challenging economic climate we are currently facing and which is likely to be with us for several years.

Action: The development of a new strategic plan as outlined above

Resources required: Reallocation of staff time

2. Recommendations which the Department could implement only with assistance from other bodies within the University and without cost implications

Recommendation 2.1 (Future of the Department):

The Department is small and faces significant challenges. There is serious danger that a set of interconnected issues impact negatively on the current excellent work in teaching and research and cause an unsatisfactory spiral, i.e. low student numbers, leading to limitations of growth of academic staff numbers, leading to limitations on volume of research achievable, leading to limitations on research income, leading to limitations on ability to supervise additional research students, leading to pressure on department finances, leading to further limitations of growth of academic staff numbers and so on. This would be a very regrettable outcome for such a dynamic and innovative young Department.

This outcome may be overly pessimistic; renewed growth in student numbers (and there are some positive indicators of this) would avert this situation.

However other electronic engineering departments in the country face similar challenges and it is unlikely the recruitment position will radically change in the near future. Furthermore the issue of student numbers was raised in the 2006 self-assessment report. Clearly the problem has not been alleviated in the meantime.

The reviewers are aware that opportunities for reorganisation have been discussed and in particular a potential merger with computer science. The later could offer the critical mass to allow the Department to grow and develop which maintaining the excellent teaching and research ethos. The reviewers would encourage the Department to engage actively in such discussions, which we believe do not threaten the integrity of the discipline but would if handled appropriately, provide security and significant opportunities for innovative teaching and research, and the development of new courses, thus ensuring the sustainability of the discipline in Maynooth.

Response of Department:

The Department is very aware if its vulnerability and intends to develop a strategic plan in that plays to its strengths and helps maintain its viability in the coming years. Current indications are that undergraduate numbers have turned a corner and that there are significant opportunities for growth on our taught postgraduate programmes.

We are open to opportunities that strengthen our position both within the University and externally and are happy to engage in discussion with Computer Science and other relevant parties as appropriate.

Actions: Continue dialogues with Computer Science and other relevant parties with the view to identifying opportunities and strengthening our position both within the University and externally.

Resources required: Staff time and a willingness from other parties within the University to engage.

3. Recommendations which the Department could implement only if additional resources are provided by the University

Recommendation 3.1: (Teaching)

Student Numbers: The number of taught students enrolled in the Department is a serious cause for concern and the decline in student numbers is perceived as the most pressing problem facing the Department. The fact that the Department is small is not the real issue per se, but nevertheless the decline in numbers, coupled with the departure of the Product Design course, and other internal and external pressures mean that the viability of the Department is questionable if current trends continue.

Response of Department:

The Department is acutely aware of its vulnerability in relation to student numbers, particularly at undergraduate level. Low student numbers is a problem that is common to Electronic Engineering (EE) Departments across the country and there is little that we can do as a Department to impact on this societal trend. Having said that, there are signs that the current economic climate is generating a renewed interest in EE and we are hopeful that our numbers will increase over the next few years.

With the support of the International Office we are also increasingly targeting the international student market and have recently signed joint degree agreements with JPU and DMU in China. This will yield a steady stream of Chinese students joining our EE programmes over the next 3 years.

In recognition of the insensitivity of undergraduate numbers to our efforts the Department has focused on expanding its taught Postgraduate and research programmes. There has been substantial growth in our ME numbers in the last year (54 students in 2009 compared to 20 in 2008) and this has compensated for the loss in FTEs arising from the departure of Product Design. In fact we approaching the capacity we can accommodate with our current staff numbers as dictated by our cap-stone project supervision requirements for final year BE and ME students.

Actions required: The Department will continue to develop its postgraduate programmes and target the international student market. When developing our Strategic Plan we will set targets for undergraduate and postgraduate student numbers that reflect University commitments on EE staffing levels going forward. The University will set out its commitments to EE in relation to staffing levels to facilitate this.

Resources required: Staff time for international recruitment trips and teaching exchanges that are part of agreements with JPU and DMU; Continued support from the International Office for promotion of our programmes internationally and the recruitment of international students.

Recommendation 3.2: (Teaching)

Product Design: The departure of the Product Design course and three associated staff poses a problem on a number of fronts – timing, organisation, and leadership of the EE Department afterwards, student numbers. Conversely it may offer the Department the possibility of re-using the released laboratory space (assuming this is retained by the Department and is in fact released).

Response of Department:
The departure of Product Design (PD) from the EE Department has gone smoothly. A new Head of Department has been appointed and interim arrangements have been agreed with Product Design staff on the use of Department facilities as they await the renovation of their new premises. As already noted, the substantial increase in our taught PG intake has more than compensated for the loss in PD numbers. Indeed, the departure of PD is fortuitous as we will need the released lab space as a project laboratory for our ME students.

Actions required: None – already completed

Resources required: None

Recommendation 3.3: (Teaching)

Staffing Numbers: staffing numbers at present are appropriate for the students enrolled. However the Department is finding itself in the situation where low student numbers limit scope for expansion in staff numbers, which in turn limit scope for the introduction of new courses to boost student numbers.

The extent of teaching delivered by postgraduate students is substantial and is considered excessive. It is understood why this has occurred but there are risks in this in terms of quality of delivery and assessment.

Response of Department:
The combination of a recruitment embargo and departure of Product Design staff has seen a reduction in our academic staff numbers from 11 to 8, while at the same time our student numbers have increased substantially. This has left the Department stretched to breaking point. Despite increasing the number of modules taught by each staff member (at the expense of research activities) we have had to rely heavily on postgraduate students providing occasional teaching to meet our teaching commitments. As a benchmark, we have the smallest number of staff of all EE Departments in the country. The National average is 15.

The University has been informed of the difficulties we are having, but the current economic climate makes it unlikely that we will be adequately resourced in the foreseeable future.

In the interim we have introduced increased monitoring and mentoring of post graduate students involved in teaching. We also encourage them to take the Teaching and Learning Cert/Diploma offered by the University.

Actions required: Ultimately the only solution to this problem is the recruitment of additional academic staff which can only be achieved with the support of the University. In the interim the University needs to provide more structured support for training and mentoring of occasional staff.

Resources required: Four additional academic staff.

Recommendation 3.4: (Research)

Research income is overly concentrated on a small number of staff. This is not only undesirable, but poses a substantial risk to the Department's research development (e.g. should a major research income attractor seek employment elsewhere). There is a need to mitigate this risk, by expansion of the number of research active staff, and in particular the number of research active staff who attract research income.

Response of Department:

With the recent staff reductions, 7 of the 8 remaining academic staff are research active and for the most part their level of research activity is consistent with their career stage. We will continue to actively encourage staff to become research active and to secure research income through our workload allocation model, but ultimately the risks to our research development are a consequence of the small staff complement and this can only be addressed through the recruitment of additional research active academic staff. This will require action at University level.

Actions required: In the short term no action is required, but as noted above, in the longer term the University needs to increase the academic staff complement of the Department to allow it to compete on an equal footing with other EE Departments nationally.

Resources required: Four additional academic staff.

Recommendation 3.5: (Research)

There is a serious imbalance in the distribution of PhD students among staff, ranging from one member of staff with 13 students, to six staff with zero students. Joint supervision of research students is implemented however in an attempt to alleviate this imbalance. Nevertheless further growth in research student numbers will become impractical without additional research academic staff eligible and willing to supervise.

Response of Department:

Recent staff losses and grants successes has meant that this imbalance has largely been eliminated with 7 out of the 8 remaining staff now primary supervisors of one or more PhD students. Some staff members still have a significant PhD load, but this is a consequence of their high level of research activity.

With such a small staff complement further sustainable growth in research student numbers can only be achieved through the recruitment of additional research active academic staff. This will require action at University level.

Actions required: Increase the academic staff compliment of the Department.

Resources required: Four additional academic staff.

Recommendation 3.6: (Research)

The number of research groups (stated as five) appears excessive relative to the size of the Department and the number of research active staff. It would be efficient to create a smaller number of highly effective research units, possibly by means of an agreed merger.

Response of Department:

We agree with this assessment and are currently looking at possibilities for reducing the number of research groups to three. The Dean of Research has recently opened discussions with IMWS and the Departments of Electronic Engineering and Computer Science on the possibility of making IMWS a broader ICT based Institute in order to generate a better critical mass of researchers. This may prove an appropriate vehicle for the research activities of most of the Department's academics.

Actions required: This action is ongoing and is likely to be completed by the end of 2010.

Resources required: Additional technical and administrative staff support for the expanded Institute.

Recommendation 3.7: (Physical Space)

A number of staff commented on the issue of insufficient laboratory space for PhD students. This was also raised by the existing PhD students who believe there is no spare capacity at present. It would be useful to benchmark existing Departmental space against similar Departments in Maynooth and elsewhere so as to determine the relative position and if necessary, put forward a substantiated argument to the University authorities. Alternatively the departure of the Product Design course my offer opportunities in this respect. Further growth in research will certainly require additional research laboratory facilities or desk space for research assistants, depending on the nature of the work.

Response of Department:

We continue to have a shortage of desk space and experimental space for our research activities. The absence of dedicated experimental space is a major challenge for the Biomedical Engineering and Dynamics and Control Research groups. The departure of Product Design will free up some lab space, but this is needed to accommodate our expanding ME programme.

The Department intends to draw up a revised strategic plan in 2011/2012. As part of this process we will include an assessment of the desk-space and experimental space currently available to EE and our requirements going forward.

Actions: An assessment of the experimental space requirements of the Department; The provision by the University of additional experimental laboratory space to support the Department's research activities. The President has committed the University to a meeting between its Senior Officers and the Department in the Autumn of 2011 to pursue the issue.

Resources required: Experimental research space

Recommendation 3.8: (Support Staff)

The issue of support staff on fixed term contracts, while understandable, poses risks to the continuity of research and the potential loss of key skills. It would be prudent to ensure that sufficient support staff are engaged on longer term contracts so as to ensure a stable and highly experienced support environment.

Response of Department:

This issue has already severely impacted on the Department as we have lost a key member of technical support staff in 2009 due to the recruitment embargo. We currently have 1 admin staff (2 x 0.5) and 2 full-time technical staff. To operate effectively we require 1 additional admin staff and at least one additional technical staff member with and IT background. We previously had three technical support positions one of which was as an IT specialist who managed the Department's computer networks, laboratories and servers. When the original IT person resigned we were only allowed to hire a replacement on a 3 year contact basis. This contact ended in 2009 just as the contract renewal embargo came into force and we have been without specialist IT support since then. The lack of specialist IT support continues to be a major handicap to the efficient operation of the Department and to the security of our IT systems.

Unfortunately this issue is beyond our control and in the current climate is likely to be beyond the control of the University authorities for the foreseeable future.

Actions required: University sanctions the recruitment on long term contracts of additional technical and admin support staff for the Department

Resources required: 1 Technical Staff; 1 Admin staff

Appendix: General departmental response to the Peer Review Report

Overall we feel that the Quality Review process has been a positive exercise and wish to thank the reviewers for their balanced assessment of our strengths and weaknesses. We particularly acknowledge the review team's recognition of the Department as a dynamic and innovative young Department with a high standard of taught programmes and a strong research ethos.

This document details our responses to the recommendations made by the reviewers as given in Section 14 of their Peer Review report. It should be noted that since the review, which took place on 6-7 April 2009, there have been internal and external changes that have impacted substantially on the Department and the climate in which it operates. In particular, the departure of Product Design and the recruitment embargo have led to a reduction of staff numbers from 13 to 8, technical staff from 4 to 3 (one of which is funded from research overheads) and admin staff from 1.5 to 0.5. Our responses reflect this new reality.