Cork Institute of Technology

Programmatic Review of the Faculty of Engineering

May & December 2007

EXTERNAL EVALUATION REPORT

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1. Preamble

The five-yearly Faculty of Engineering Programmatic Review is one of a suite of the quality assurance procedures that CIT agreed with HETAC. It is concerned with extending the validation of programmes already validated; it does not validate new programmes. Its purpose is to ensure that the Faculty provides, for its students and the wider community, appropriate, relevant programmes, and the academic and physical environment necessary to so do. For the Faculty, the desired outcome of the programmatic review is the extension into the future – normally for a period of five years – of approval to offer and run its courses.

During the academic year 2006-2007 the Faculty of Engineering undertook a critical self-analysis of its programmes, procedures and facilities, and prepared documentary records of its findings and proposals to further improve and maintain the quality of its educational provision. The Institute appointed a Peer Review Group (PRG, Panel) to review and evaluate the records of the self-study in consultation with Faculty staff and to produce a report detailing its findings and recommendations. The review process necessitated three visits to the Institute by the appointed panel or a sub-group thereof:

- On 2nd and 3rd May 2007 the PRG examined all the main issues and decided that the Faculty should carry out further work before its courses could receive full validation. It validated Stage 1 of all programmes subject to certain stipulated conditions so as to enable the Faculty to recruit new students in September 2007 and issued an interim report, "CIT Engineering Programmatic Review May 2007 - Summary of PRG Findings", summarising its findings and conditions (See Appendix A).

- On the 3rd and 4th of December 2007 a sub-group of the PRG reviewed , with the programme design teams revised documentation for all stages of all courses (except those from the Department of Construction and Architecture) which had been prepared in light of the comments and conditions expressed in the interim report. It also discussed with Faculty management its response to the main issues in that report and pertinent developments that had taken place within the Institute and Faculty since the May visit.

- With regard to the Construction and Architecture programmes, the relevant members of the PRG will be reconvened to review the revised documentation relating to all relevant courses of the Department of Construction and Architecture. On completion of this additional review a supplementary report will be prepared dealing specifically with Construction and Architecture programmes.

This External Evaluation Report has been prepared by the PRG for consideration and action by the Institute, its Academic Council and the Faculty of Engineering. The report describes the Panel's discussions with the Faculty, its assessment of the outcomes of the self-analysis and a set of recommendations for consideration and action by the Institute. It is comprised of five sections:

Section A: 2nd and 3rd May, 2007
Section B: 3rd and 4th December 2007
Section C: Programme And Module Reviews
Section D: Findings and Recommendations
Section E: Appendices

The PRG would like to record its appreciation of the welcome and hospitality and support extended by Institute, Faculty staff and Registrar's Office personnel, their openness in discussion and the tremendous effort expended in carrying out and documenting such an extensive analysis and rejuvenation.

Programmatic Review of the Faculty of Engineering

Section A: 2nd & 3rd May 2007

2. Background Factors

Since 2000/2001 when the last programmatic review of the Faculty was conducted, two major developments have taken place that make this review more complex than normal: the introduction of the National Framework of Qualifications nationally and the introduction of semesterisation and modularisation locally in CIT.

National Qualifications Framework

In 2000 and 2001 all courses in the faculty were presented in year-long format and students worked towards National Certificate , National Diploma and Bachelor awards in Engineering, Construction, Construction Studies, Science and Technology. Following the introduction/implementation of the NFQ in 2002 all existing programmes were re-formed to meet the new criteria for Level 6 (Higher Certificate), Level 7 (Bachelor (Ordinary)) and Level 8 (Bachelor (Honours)) awards in Engineering, Science or Arts as appropriate. HETAC approval was granted all programmes until the next Programmatic Review, i.e. the current review.

A significant number of new programmes leading to Level 7, Level 8 and Level 9 awards in Engineering and Science have been introduced and validated since 2002. The contents of these new programmes, all to a year-long structure, were designed to meet the relevant NFQ criteria.

Modularisation and Semesterisation

Cork Institute of Technology decided to fully modularise and semesterise (M&S) all its courses for the commencement of the 2007/08 academic year.

This "big-bang" exercise entails a lot of work since all courses – and modules - must now be designed in accordance the learning-outcomes nature of the new definition process that is required to meet the NFQ criteria, and the methods to be used to determine the extent to which learners attain the intended learning outcomes.

As will be evident later in this report, the M&S model adopted by the Institute posed difficult questions for the Faculty whose concern to maintain the professional body accreditation and employer esteem won for their courses and awards over a period of years, is justified.

In recent times, in addition to the foregoing, there has been a restructuring of the Faculty and re-accreditation of all engineering programmes by Engineers Ireland.

Faculty Restructuring

The Faculty of Engineering is now divided into 3 schools which are further subdivided into 8 departments. Some of the issues arising from this restructuring will be dealt with later in this report.

Accreditation by Professional Bodies

In 2005 all Level 8 programmes in Engineering were successfully subjected to an accreditation review by Engineers Ireland while the Level 6 and Level 7 engineering programmes received appropriate EI recognition earlier this calendar year. The documentation associated with these accreditation exercises had to be presented in a format acceptable to Engineers Ireland.

This PRG notes the context in which the Faculty prepared for this programmatic review and recognises the administrative and course restructuring issues involved. It **commends** the staff of the Faculty of Engineering on their achievements since the last review and it appreciates the considerable efforts of all staff in preparing the extensive documentation that was delivered in good time to members of the review panel.

3. Courses under Review

The majority of courses being reviewed at this time evolved from those reviewed in 2000 and 2001: the 2000/2001 titles are given in italics. In all cases the new titles were introduced in 2002 during a HETAC interim enabling-validation exercise. All courses were then delivered using a year-long structure.

In 2000/2001 the 2+1 (National Certificate/National Diploma) structure was in operation and the normal point of entry to Institutes of Technology was to a National Certificate - direct entry to a National Diploma was rare. Now, in CIT the normal entry is to an Ordinary Bachelor (Level 7) degree: a Higher Certificate may be awarded to students who successfully complete the first two years of the Bachelor course and who wish to withdraw from the course at that stage. In the table below the duration of this "exit" Higher Certificate award is shown as 3-1.

Title	Level	Duration
Department of Civil, Structural and Environmental Engineering		
Higher Certificate in Engineering in Civil Engineering	**6**	**3-1**
National Certificate in Engineering in Civil Engineering		*2*
Bachelor of Engineering in Civil Engineering	**7**	**3**
National Diploma in Engineering in Civil Engineering		*2+1*
Bachelor of Engineering (Honours) in Structural Engineering	**8**	**4**
Bachelor of Engineering in Structural Engineering		*4*
Bachelor of Engineering in Structural Engineering		*3+2*
Department of Construction and Architecture		
Higher Certificate in Science in Construction	**6**	**3-1**
National Certificate in Construction		*2*
Higher Certificate in Science in Architectural Technology	**6**	**3-1**
National Certificate in Construction in Architectural Technology		*2*
Bachelor of Science in Construction Economics	**7**	**3**
National Diploma in Construction Economics		*2+1*
Bachelor of Science in Construction Management	**7**	**3**
National Diploma in Construction Management		*2+1*
Bachelor of Science in Architectural Technology	**7**	**3**
National Diploma in Construction in Architectural Technology		*2+1*
Bachelor of Science in Interior Architecture	**7**	**3**
Bachelor of Science (Honours) in Construction Management	**8**	**3+1**
Bachelor of Science (Honours) in Quantity Surveying	**8**	**3+1**
Bachelor of Science (Honours) in Architectural Technology	**8**	**3+1**

Department of Electrical Engineering		
Higher Certificate in Engineering in Electrical Engineering	**6**	**3-1**
National Certificate in Engineering in Electrical Engineering		*2*
Bachelor of Engineering in Electrical Engineering	**7**	**3**
National Diploma in Engineering in Electrical Engineering		*2+1*
Bachelor of Science (Honours) in Electrical Power Systems	**8**	**3+1**
Department of Electronic Engineering		
Higher Certificate in Engineering in Electronic Engineering	**6**	**3-1**
National Certificate in Engineering in Electronic Engineering		*2*
Bachelor of Engineering in Applied Electronic Design	**7**	**3**
Bachelor of Engineering in Communications Systems	**7**	**3**
Bachelor of Engineering in Automation and Robotics	**7**	**3**
National Diploma in Engineering in Electronic Engineering		*2+1*
Bachelor of Engineering (Honours) in Electronic Engineering	**8**	**4**
Master of Engineering in Telecommunications Engineering	**9**	**4+2**
Department of Chemical and Process Engineering		
Bachelor of Engineering (Honours) in Chemical and Process Engineering	**8**	**4**
Bachelor of Engineering in Chemical and Process Engineering		*4*

Department of Manufacturing, Biomedical and Facilities Engineering

Higher Certificate in Engineering in Manufacturing Engineering	**6**	**3-1**
National Certificate in Engineering in Manufacturing Engineering		*2*
Higher Certificate in Engineering in Biomedical Engineering	**6**	**3-1**
National Certificate in Engineering in Biomedical Engineering		*2*
Higher Certificate in Engineering in Building Services Engineering	**6**	**3-1**
National Certificate in Engineering in Building Services Engineering		*2*
Bachelor of Engineering in Biomedical Engineering	**7**	**3**
National Diploma in Engineering in Biomedical Engineering		*2+1*
Bachelor of Engineering in Building Services Engineering	**7**	**3**
National Diploma in Engineering in Building Services Engineering		*2+1*
Bachelor of Engineering in Manufacturing Engineering	**7**	**3**
National Diploma in Engineering in Manufacturing Engineering		*2+1*
Bachelor of Science (Honours) in Advanced Manufacturing Technology	**8**	**3+1**

Department of Mechanical Engineering

Higher Certificate in Engineering in Mechanical Engineering	**6**	**3-1**
National Certificate in Engineering in Mechanical Engineering		*2*
Bachelor of Engineering in Mechanical Engineering	**7**	**3**
National Diploma in Engineering in Mechanical Engineering		*2+1*
Bachelor of Engineering (Honours) in Mechanical Engineering	**8**	**4**
Bachelor of Engineering in Mechanical Engineering		*2+1*
Bachelor of Science (Honours) in Process Plant Technology	**8**	**3+1**

Department of Transport and Automobile Engineering

Higher Certificate in Technology in Automobile Technology	**6**	**3-1**
National Certificate in Technology in Automobile Technology		*2*
Bachelor of Arts in Transport Management & Technology	**7**	**3**
National Diploma in Technology in Transport Management & Technology		2+1

4. Panel Membership

Mr John Connolly	Former Head of School of Engineering Dundalk Institute of Technology (Chair)
Prof Padraic O'Donoghue	Department of Civil Engineering NUI Galway
Mr Ger O'Sullivan	Mott MacDonald Pettit Consulting Engineers
Mr Derry Nash	Project Management Group
Mr Kevin Savage	Head of Department of Civil Engineering & Construction Institute of Technology Sligo
Mr Mark Byrne	Chartered Surveyor James Sheehan Associates
Mr Geoff Butler	Butler Moffat Architects
Mr John Vickery	Registrar Institute of Technology Tallaght
Mr Tim Crean	Chief Operations Officer Sifco Turbine Components
Prof Graham Thompson	Head of School of Mechanical, Aeronautical & Civil Engineering University of Manchester
Dr Cathal Heavey	Department of Manufacturing & Operations Engineering University of Limerick
Prof Cyril Burkley	Dean of College of Informatics & Electronics University of Limerick
Ms Valerie McGrath	Arup Consulting Engineers
Mr David Killian	Network Project Leader ESB Networks

Mr Michael Buckley	EMC Ireland
Dr Patricia Kieran	School of Chemical & Bioprocess Engineering University College Dublin
Mr David Murphy	Project Management Group
Mr Declan Allen	Assistant Head of Department of Transport Engineering Dublin Institute of Technology
Mr Denis McSweeney	Marketing Director Ford Ireland
Mr Brendan Goggin	Registrar Cork Institute of Technology
Mr Ed Riordan	Deputy Registrar Cork Institute of Technology

5. Institute Staff

Director & Senior Staff

Present: Dr Brendan J. Murphy, Director
Dr Michael Noonan, Assistant Principal
Ms Claire Sinnott, Secretary/Financial Controller
Mr Liam Hodnett, Head of Faculty of Engineering
Dr Joe Harrington, Head of School of Building & Civil Engineering
Dr Barry O'Connor, Head of School of Mechanical & Process Engineering
Mr Barry Leach, Head of School of Electrical & Electronic Engineering
Ms Irene Sheridan, Head of Department of Electronic Engineering
Dr Ger Kelly, Department of Manufacturing, Biomedical & Facilities Engineering
Dr Dirk Pesch, Department of Electronic Engineering
Dr Joe Connell, Department of Electronic Engineering

Faculty Management

Present: Mr Liam Hodnett, Head of Faculty of Engineering
Dr Joe Harrington, Head of School of Building & Civil Engineering
Dr Barry O'Connor, Head of School of Mechanical & Process Engineering
Mr Barry Leach, Head of School of Electrical & Electronic Engineering
Mr Martin Mannion, Head of Dept of Civil, Structural & Environmental Eng
Dr Daniel Cahill, Head of Department of Construction & Architecture
Mr Daithí Fallon, Head of Dept of Manufacturing, Biomedical & Facilities Eng

Mr Matt Cotterell, Head of Department of Mechanical Engineering
Mr John O'Shea, Head of Department of Chemical & Process Engineering
Ms Irene Sheridan, Head of Department of Electronic Engineering
Dr Noel Barry, Head of Department of Electrical Engineering

6. Review Programme 2nd & 3rd May 2007

PROGRAMME – ENGINEERING REVIEW
Day 1 – Wednesday 2nd May

SESSION	TIME	COURSES/TOPIC	PANEL	VENUE	COMMENT
Peer Review Group (PRG) assembles at CIT	10:15			Council Room (2nd Floor, Admin Bldg)	
Panel Initial Meeting	10:30 – 11:30	All	All	Council Room	Review process overview and initial reactions
Modularisation & Semesterisation at CIT	11:30 – 12:00	All	All	Council Room	Mr Paul Sliney, CIT M & S Coordinator.
Panel meets Director and Senior Staff	12:00 – 1:00	All	All	Council Room	Vice Principal, Head of Development, Head of Research, Secretary/Financial Controller.
Lunch for Panel	1:00 – 2:00			Student Centre Gallery	
Faculty of Engineering and its 3 Schools	2:00 – 3:30	All	All	Council Room	Strategic Direction of Programmes; Basis of the Review; Discussion Document. Head of Faculty, Heads of Schools, Heads of Departments.
Tour of Facilities	3:30 – 4:30			CIT Campus	Divide into 3 School Groups
Meeting with Students	4:30 – 5:30	Students – single group	All	Council Room	Student Experience; quality of learning experience; interaction with staff; supports; career plans etc.
Transfer to Ambassador Hotel					
Industry Group	7:00 – 8:00		All	Alexandra Suite 1 (Ambassador Hotel)	Meet up to 6 senior Engineering Industry Partners
Dinner	8:00	Panel with CIT staff	All	Embassy Suite (Ambassador Hotel)	Informal exchanges

PROGRAMME – ENGINEERING REVIEW
Day 2 – Thursday 3rd May

SESSION	TIME	COURSES/TOPIC	PANEL	VENUE	COMMENT
Panel in session	9:00 – 10:00	All	All	Council Room	Recap
Panel divides into 4 sub-groups	10:00 – 12:30	SEE NEXT PAGE	4 x Sub-Groups	– Director's Conference Room – Registrar's Meeting Room – HR Meeting Room – Student Centre Meeting Room 1	Review of programme design and Year 1 modules.
Lunch for Panel with Engineering Faculty Staff	12:30 – 1:30			Student Centre Gallery	
4 parallel sub-groups contd.	1:30 – 3:00	SEE NEXT PAGE	4 x Sub-Groups	– Director's Conference Room – Registrar's Meeting Room – HR Meeting Room – Student Centre Meeting Room 1	Review of programme design and Year 1 modules.
Panel in private session	3:00 – 4:00	All	All	Student Centre Meeting Room 1	Key conclusions discussed
Close	4:00 – 4:30	All	All	Student Centre Meeting Room 1	Meeting with Head of Faculty, Heads of School.

- **Director's Conference Room** – 2nd floor Administration Bldg
- **Registrar's Meeting Room** – 1st floor Administration Bldg
- **HR Meeting Room** – 1st floor Administration Bldg
- **Meeting Room 1** – 1st floor Student Centre

7. Documentation provided by the Faculty

Documents considered by the Panel consist of Programmatic Review 2007 reports from Faculty, each School and each Department as follows:

- Faculty of Engineering
- School of Building and Civil Engineering
    - Department of Civil, Structural and Environmental Engineering (Two documents)
    - Department of Construction and Architecture
- School of Electrical and Electronic Engineering
    - Department of Electrical Engineering
    - Department of Electronic Engineering (Three documents)
- School of Mechanical and Process Engineering
    - Department of Chemical and Process Engineering
    - Department of Manufacturing, Biomedical and Facilities Engineering (Four documents)
    - Department of Mechanical Engineering (Three documents)
    - Department of Transport and Automobile Engineering

together with

- Proposed course schedules for all stages of all (or nearly all) programmes
- Module descriptors for the first 2 semesters (Stage 1) of all courses.

The departmental documents include information on changes to course content that have been made since the 2000/2001 review, and changes to the technical content that are proposed for implementation now.

8. Meeting with Director and Senior Staff

Dr. Murphy and his senior staff clarified a number of issues of interest to the Panel.

Under the new academic arrangements, introduced in 2003, Cork Institute of Technology is a federation of three colleges and three faculties one of which is the Faculty of Engineering. The Faculty of Engineering is responsible for the good governance and conduct of courses in engineering, construction and architecture. Within it there are three schools, encompassing eight academic departments. The Faculty plans to amalgamate the Department of Transport and Automobile Engineering with the Department of Mechanical Engineering and to divide the

Department of Construction and Architecture in two, one dealing with construction and the other with architecture.

The Faculty has defined its Strategic Plan in alignment with the Institute Strategic Plan. It appoints its own staff and has control over its budget which it distributes among its Schools and Departments while reserving some funding for strategic issues affecting the whole faculty. As the new structure beds down the Institute plans to devolve significant quality assurance functions to the Faculty.

Trends in student recruitment in CIT reflect a pattern similar to that experienced by 3rd level colleges in general. Enrolments, although declining, continue strong in most Departments within the Faculty where full classes of good quality students are enrolled. Enrolments are lowest in the Department of Electronics. The Panel was assured that CIT does not permit the application of an artificial points barrier in an attempt to maintain the quality if its intakes and in a number of instances all qualified applicants are offered place.

Documentation received by the Panel indicates that the delivery of a number of programmes depend heavily on part-time staff. This was of concern to the Panel. Dr. Murphy clarified the situation explaining that all non-permanent lecturing staff now have pro-rata contracts. These contracts provide security and better conditions than were afforded part-time staff in the past. The pro-rata appointees also provide the Institute with a secure teaching cohort albeit at the expense of a significant impact on its annual budget.

In all documentation received great emphasis is placed on research activity in the Faculty. Dr Murphy reassured the Panel that CIT is and will remain primarily a teaching institution with applied research encouraged mainly to aid continuing staff development. CIT is however proud of the extent of its research and that it has delegated authority to Level 10 in Electronic Engineering and in Mechanical Engineering and up to Level 9 in the other disciplines within the Faculty of Engineering, such delegation recognising the extent and quality of its research capability.

There are supports in place to encourage and assist those who wish to become research-active including sabbaticals, two hours remission of teaching time per week per postgraduate research student supervised, teaching-timetable flexibility, and a facility that permits the use of some research funding to pay substitute lecturers.

CIT has successfully competed against the other Institutes of Technology and the Universities for research funding.

The Panel expressed its appreciation to Dr. Murphy and his team for the forthright manner in which its queries were dealt with.

9. Modularisation and Semesterisation (M&S)

9.1 CIT Model

CIT are currently in transition from the traditional year-long curriculum format to one that is modular based and ECTS compliant. The Institute considers this to be a beneficial movement from a programme-centric to a learner-centred academic environment in harmony with its mission statement. Mr. Paul Sliney, CIT M&S Coordinator, gave a presentation on the model being implemented at CIT, to an audience of panel members and faculty managers and administrators. This was followed by a discussion during which a number questions and concerns were raised by members of the Panel as well as by Faculty staff.

Modularisation and semesterisation are being introduced:

a) To ensure all CIT programmes are NFQ and ECTS compliant.
b) To facilitate access to education for all groups of society.
c) To provide programmes with a high level of learner choice.
d) To facilitate flexible, responsive, creative and innovative programme design including multi-disciplinary and inter-disciplinary initiatives.
e) To enhance quality of teaching, learning and assessment in the Institute.

The Institute has defined a model to implement its vision of semesterisation and modularisation and has prepared an attractive, informative leaflet to the model and a timetable for its introduction. The main features of the model are:

- NFQ and ECTS Compliance
- Learners will have Choice
- Learning-outcomes Based
- Reform of Learner Assessment
- Derogation

NFQ and ECTS Compliance

The academic year is to be divided into two 30-credit semesters, in each of which the learner will normally attend six 5-credit modules at levels defined by the National Qualifications Framework. Modules of multiples of five credits will be permitted only by exception. For the average learner the weekly workload for the 30 week academic year will be 42 hours or 7 hours per module including class time and self study. Awards are to be made according to the number of credits attained as follows:

Award	*Credits x Level*
Higher Certificate	120 x 6
Bachelor degree (Ordinary)	120 x 6 + 60 x 7
Bachelor degree (Honours) Model 1	120 x 6 + 60 x 7 + 60 x 8
Bachelor degree (Honours) Model 2	60 x 6 + 60 x 7 + 120 x 8
Taught Masters	Bach. (Hons.) + 60 (or 90) x 9

The Institute is considering establishing a system to monitor the implementation process over the initial five years and to determine how well the perceived benefits are being realised in practice using metrics such as retention, examination success rates and the extent of interdisciplinary cooperation. One Master's student and one PhD student are currently engaged in researching the impact of M&S on students and staff respectively.

Panel View

In general the Panel support the structural provisions of the 5-credit-module based system while recognising potential areas of discomfort in its implementation, particularly during the transition phase.

The Panel realises that a certain level of experimentation will be necessary during the transition phase and advise flexibility when setting down the framework for system operation so that, in the light of experience, changes that will benefit system operation can be implemented without causing serious difficulty for the learner or for course delivery. For example the experience of those involved for some time in delivering semesterised, modularised programmes **suggests** that holding end-of-semester 1 examinations prior to Christmas can cause problems.

The Panel **recommends** that the Institute put in place an independent monitoring system to observe the implementation of M&S and to evaluate the benefits gained and the difficulties encountered.

Learner Choice

An important feature of the CIT M&S model is the mandatory inclusion, in all programmes, of at least one "free-choice" module per semester to promote the movement towards a learner centred academic environment and to encourage learners to develop skills and interests outside of their main discipline. The range of choice and freedom to choose will be restricted only by constraints of timetabling and/or resources. It is envisaged that in Stage 1 Semester 1 of all programmes, the "free- choice" module will take the form of a mandatory unit that is common to all programmes in the institute, one that is designed to introduce new students to the institute and to help them in their transition from 2nd to 3rd level. More such common modules focused on topics and issues considered appropriate or pertinent to coherent groups of students or courses may be made available, though not necessarily mandatory, in the future.

Panel view

The Panel is supportive of a considered introduction of free choice into the programmes under its purview but advises that the introduction of free choice will diminish aspects of the technical content heretofore included in these programmes. While it is possible to have a beneficial trade-off the Panel advises that careful consideration should be given to maintaining the quality and reputation currently enjoyed by the programmes in the engineering, construction and architectural communities. In its opinion meeting the established programme outcomes and maintaining the quality and reputation of the awards should, where necessary, take precedence over the inclusion of a pre-determined quota of free-choice modules, where to do otherwise might jeopardise established reputation and professional body accreditation.

Free-choice electives, if included in each semester, will form up to one sixth of total student workload, resulting in a heavy call on student time learning material not heretofore included as part of syllabus content. This will inevitably lead to a reduction in or dilution of what up to now has been essential course content and is clearly causing severe difficulties for many programme teams aiming to preserve important outcomes, and to maintain the integrity of their programmes. In addition students may experience difficulty gaining the number of Level 8 credits required for a Bachelor degree (Honours) Model 2 award.

The course schedules proposed **suggest** that an attempt has been made to lessen the impact of the free-choice requirement by offering electives based

on cognate technical material that students may choose instead of modules of totally unrelated material. The Panel is concerned that the use of cognate electives (which can be taken as an alternative to the free-elective module) may become a de-facto "mandatory", thereby undermining the value of free choice and lessening the transparency of the modular system. In any case there is no guarantee that the "cognate" elective will be chosen. Consideration should be given to this issue. An example of an alternative model would be to reduce the number of obligatory free-choice modules and to insist that they be chosen from outside of the student's core study area.

The **Panel recommends** that the Faculty give further consideration to the policy of free-choice electives in all semesters and that it seek from the Institute a sympathetic understanding of its (Faculty's) needs.

Learning Outcomes Approach

Since the NFQ is an outcomes-based awards system all programme and module requirements are defined in terms of learning outcomes, five per module. The learner will gain a greater appreciation of what is expected of him/her in terms of study and learning while attending the course, and a greater appreciation of how the overall goals of a particular programme are to be achieved. In addition, since the learning outcomes are informed by the Framework level descriptors, the academic depth and severity of modules at each stage can be clearly described and appreciated. This process is also informative for employers of graduates.

Panel view

Beyond the comments made below under "Learner Assessment" the Panel reserves its judgement on how well module learning-outcomes and associated assessment tools and processes are specified until it has received programme and module descriptors that relate outcomes to the HETAC/NQAI module descriptors and levels. These descriptors should be made available to the reconvened panel in Autumn 2007.

Learner Assessment

The Institute wishes to reform the approach to learner assessment so that such assessment becomes continuous, formative and appropriate. There will be a greater reliance than heretofore on continuous assessment as a means of evaluating learner achievement. Learners will sit a maximum of four 2-hour end-of-semester written examinations in any given semester. While learners will be permitted to progress from semester to semester within a stage without having

successfully completed all first semester modules they will not be permitted to progress to a second or subsequent stage without first having successfully completed all modules in the previous stage. All repeat assessments will be scheduled in autumn.

Panel view

The Panel noted that the considerable shift in emphasis from majority terminal examination to majority continuous (course-work) assessment will characterise the new system in practice. Some technical material will no longer be subject to written examination and continuous assessment will become the primary contributor in determining learner success and level of achievement. In the longer term when staff and students have become familiar and experienced in the new ways there are potential positives to be gained from such a change. In the meantime however, particularly during the design and early implementation phases, there are dangers to be guarded against. The new assessment methods need to be authentic and valid. Substantial training may be required for staff on new assessment methods to ensure that quality and standards are maintained.

Some of the module descriptors submitted to the PRG call for multiple assessment events per week. There are many cases of substantial differences in the learner effort needed to comply with the assessment requirements of similar modules and the attendant workload. These **suggest** a propensity to over-assess in some cases. Course Boards need to actively schedule or closely monitor the scheduling of class-time assessments and out-of-class assignments across all modules because "in-class" assessments will mean losing tuition time, which cannot be made up in the short semester time and to ensure that students have a reasonable, balanced weekly workload. Otherwise the demands of such assessment and assignment work could result in a harmful reduction in tuition or student learning time.

As the emphasis shifts from terminal examination to continuous assessment it is important that all assignment and other coursework that contributes to a student's marks are clearly specified and properly recorded and that secure records of marks awarded are maintained. The Faculty will need to be satisfied that whatever resources are required are in place.

The Panel **recommends** that the Faculty develops procedures to monitor the practical implementation and consequences of moving towards greater reliance on continuous assessment until the new processes are fully embedded.

Derogation

Where a Course Board envisages difficulties in implementing the modularisation and semesterisation provisions in relation to the free choice module and / or the maximum of four written examinations per semester it may apply to Academic Council for derogation.

Section 4.1 of the Faculty of Engineering document deals with modularisation and semesterisation. The tone and content of the treatment presented is unhesitatingly and unreservedly positive towards the M&S model currently being integrated into CIT and states that "*The process of modularising programmes will, inevitably, involve the redistribution of current syllabus content*". Furthermore "*The faculty of Engineering intends to safeguard the current and future accreditation of its programmes by Professional Bodies during the re-configuration of its provision. This objective will be achieved by incorporating where appropriate in its programme design the approved programme outcomes set out in Accreditation Criteria by the relevant professional body.*"

The discussion that followed Mr. Sliney's presentation and the inclusion, on course schedules, of cognate electives **suggest** concern among faculty staff, particularly on the free-choice module issue, and a desire to work around the envisaged problems.

Panel view

The Panel notes the inclusion of a process for seeking derogation from a strict application of all elements of the Institute model, particularly when such strict application would make it difficult for the Faculty to maintain the established professional standing of a course. The Panel advises the Faculty to make considered use of the derogation process when necessary.

Learner Information

The Panel raised the modularisation and semesterisation issue when it met with a large representative group of students from the Faculty. Quite a number of the students were not aware of the impending modularisation and semesterisation of their courses or displayed a great degree of uncertainty regarding the

implementation of M&S and the inclusion of free-choice modules. Only about 10% of the students recalled having seen or having been told about the Institute's information leaflet that describes the M&S model being implemented.

Panel view

The timing of assessments and written examinations (particularly at Christmas) are very important and can be disconcerting to students. The PRG **recommends** that an aggressive, information campaign, explaining the M&S process and its implications, be urgently mounted among current students, particularly among those who will be switched to the M&S structures in the final year of their studies, and that the effects of the process be carefully monitored.

10. Meeting with Faculty

10.1 Internal Institute Academic Processes

Academic Structures

CIT has recently established Institute-wide operational structures to implement its quality system and to promote collegiality through effective communication. In the Faculty of Engineering, the Faculty Executive Board (FEB) comprising Head of Faculty and Heads of Schools, and the School Executive Boards (SEB) comprising Head of School HOS) and Heads of Departments (HOD) within the School meet fortnightly while Departmental Committees comprising Head of Department, Section Heads, Course Co-ordinators, Senior Lecturers 1, student representative and nominees of the Head of Department meet once per term. All meetings are minuted and meeting reports are placed on the Intranet for staff information. These committees deal with management, development of strategy and policy and resource allocation as appropriate. Upward reporting is from department to school to faculty to Institute Executive Board by the relevant head of function. Strategic issues are now being addressed by the Faculty and School Executive Boards.

A Faculty Board of Studies (FBS) that is concerned with academic matters meets once per term and may set up sub-committees and working groups to assist it in carrying out its work. It is chaired by the Head of Faculty and includes all Heads of School, Heads of Department, Section Heads and teaching staff as appropriate.

The Board reports to the Head of Faculty and minutes are forwarded to the Academic Council of the Institute.

All courses operate under the aegis of a specific course board comprising Head of Department or nominee (Chair), Course Coordinators (when more than one course is involved), lecturers representing key subject areas and student representatives.

The Heads of Department, who's range of responsibilities include strategic planning and development for a department, expressed concern about the spread of their activities and their dissatisfaction with the means available to them to have issues regarding strategy and policy etc., properly represented and considered by the FEB - the Faculty Board of Studies is the only faculty forum at which they are present. Several of them spoke of difficulties with communications between Heads of Department/Staff on the one hand, and the School/Faculty Executive Boards on the other.

Panel view

The Panel notes and **commends** the inclusion of student representation on course boards as recommended by the PRG in 2000.
It is concerned about the communications difficulties in the Faculty and the apparent erosion of collegiality and the impact that this may have on programme quality is troubling.

The Panel **recommends** that in the interests of collegiality and ongoing programme quality the faculty should review the communication channels within the Faculty/School/Department structure to ensure that the opinions and concerns of Heads of Department and their staffs can be tabled for consideration by the School and Faculty Boards and that outcomes are conveyed back to the Heads of Department and departmental staffs.

Documentation

The PRG acknowledged the effort expended writing the 20 reports and other documents that together presented the findings of the Faculty's self-study but found the total package fragmented and inconsistent and difficult to absorb. Unfortunately an agreed framework or arrangement as recommended in CIT's Academic Quality Manual V1.1, Section 5 "Programmatic Review" was not used to guide presentation of information. Had this been done, using cross-referencing to reduce duplication and fragmentation, and common formats for the presentation of statistical data, a more coordinated collegial effort would have resulted and the

preparatory work of the PRG would have been greatly facilitated. It would have been much easier to understand, absorb and assess the findings of the self-study.

Course Monitoring Reports

It is Institute policy to promote 'ownership' of courses by the academic departments and that course boards are established for each of its courses. The proper functioning of these course boards is a key element of the Institute quality system. The Institute has, as part of its quality monitoring and assurance procedures, devised and defined a Course Monitoring Report (CMR) process to monitor how course boards are performing their duties. The chairperson of each course board is required to complete a Course Monitoring Report each November for the previous academic year. This is a form of audit of the work of the course board and the effectiveness of its operation. The report must then be passed to the relevant department head for review, comment and signature before being forwarded to the Registrar. It must then be submitted to the Director and the Academic Review Committee of the Academic Council.

The principal sections of the report form are a) Course details, b) Applications and enrolment (1st Year), c) Student performance - retention and progression rates, performance of repeat and transfer students, d) Graduates - awards and employment statistics, e) Recommendations from previous CMR and actions taken, f) Course Board Activity, g) Feedback from students, graduates, industry and external examiners, h) Comments from course board chairperson and head of department). When implemented fully and properly the CMR process is a very powerful and practical element of overall quality assurance within the Institute. This process is described in the faculty overview document and in one school overview document and referred to in two courses documents.

Panel view

The Course Monitoring system is not functioning satisfactorily even though the PRG Report from 2000 recommended "Universal operation of the annual Course Monitoring Report (CMR) procedures". A number of Course Monitoring Reports have been forwarded to the Registrar's office, but whether or not the Director and Academic Review Committee have considered them and communicated their assessments and comments back to the departments is unclear. Although such feedback would be very useful to course boards, it does not seem to be a necessary part of the process. The Panel is of the opinion that if course boards complete the CMRs with a reflective and positive attitude and if the Academic Review Committee feeds

back its opinions and recommendations then they (the CMRs) will contribute to a continual improvement in the standard, relevance and delivery of the course and the students and Faculty will benefit. The Head of Faculty and Heads of School and the FBS should be included in the circulation list for the report and for the feedback from the Academic Review Committee. This would make the School and Faculty boards more informed on the ongoing effectiveness of course delivery and the quality processes involved.

The Panel **recommends** that the complete Course Monitoring System loop be reviewed, strengthened and fully implemented and that the Faculty Board of Studies be included in both the feed forward and feedback loops. In this way the Faculty, Academic Council and future review panels will have ready access to reliable, meaningful data on indicators such as admissions, non-completion rates and examination performance inter alia.

External Examiner's Reports

Panel view

With one exception all external examiner reports were complimentary. Examinations were considered to be of a very acceptable standard, students were treated sensitively and fairly and course material was adequately covered. Many reports made suggestions for improving aspects of course content and/or delivery. The Course Monitoring Report has a section requesting external examiner comments. This section should be adequately addressed and should including the considered response of the course board together with any remedial action that is deemed necessary.

In the reports for the Bachelor of Science in Interior Architecture the external examiners express views differing sufficiently to warrant some concern and attention from the course board and the Faculty Board of Studies.

Professional Body Accreditation

Panel view

All engineering courses have received accreditation at the appropriate levels from the relevant professional bodies indicating that the requirements of the workplace are being adhered to. Similar recognition from the relevant building and architectural bodies would prove beneficial to graduates from those course areas also.

Response to Recommendations made by the 2000/2001 Programmatic Review Panels

Panel view

The Faculty and a majority of course boards have responded positively to most of the recommendations made in the 2000 and 2001 PRG reports. However, the Panel has concerns about one of the recommendations from the 2000 report:

1. "Universal operation of the annual Course Monitoring Report (CMR) procedures". This recommendation, apparently ignored by a number of course boards, should be fully implemented and copies of the reports given to future Peer Review Panels.

10.2 Student Throughput

Recruitment has remained relatively steady over the past five years except in a few notable cases where there has been a dramatic down-turn. Learner performance has been variable and course dependant. Each department's course documents contain tables of statistics detailing cut-off points and the numbers of students enrolling, dropping out, sitting examinations, passing etc. for each of the last five years. Unfortunately each course board uses its own format for presenting this data – even though the Course Monitoring Reports contain a basic format for such a presentation - and so it is not an easy task to draw comparisons between programmes or across the range of programmes under review other than to identify stark variations in performance – success rate variation between 55% and 90% in 2005/2006. It is also difficult to get, from the data presented, a worthwhile appreciation for what factors contribute to success or failure and the relative importance of these factors.

Two factors contribute to the loss of students between enrolment into Stage 1 and enrolment into Stage 2. drop-out throughout the year and failure in end-of-year examinations. In some cases it is not immediately obvious where the main problem lies. The course boards are conscious of these two causes and among the initiatives that have been put in place in an attempt to support students through their first year in the Institute are:

- The Careers and Counselling Service which advises students on career opportunities and in some cases assists with transfer to a more suitable course within the Institute.

- Course handbooks and information leaflets provided by the Faculty to better inform students about their course and to help them understand better what is required from them.
- The Learning Support Centre provides extra tuition in Maths, Physics and in other fundamentals subjects that are causing difficulties for students.
- The Educational Opportunities Department provides an orientation programme for all first year.
- The Electronics INTAKE Programme is designed to help students in their transition into 3rd Level through partaking in a team activity that builds friendships with others in the class and by providing additional information about electronics and career opportunities.
- The inclusion of industrial visits in 1st year
- Making the 1st year programme more practical
- Closely monitoring attendance in first year and confronting students who tend towards habitual absenteeism.

In response to concern expressed by the Panel about applicants with disabilities it was informed that such applicants are accepted through the CAO process as special category applicants. CIT has a Disabilities Officer to assist in the provision of supports for such students while in college. The Panel **commend** the Institute on their procedures and caring approach in this regard.

Panel view

Student throughput as an issue does not feature or appear to be of concern at Faculty or School level or at the Faculty Board of Studies since all references to student statistics are confined to the department documents.

The data presented includes the performance of repeating students mixed in with those who are taking examinations for the first time thereby yielding optimistic performance indicators. Progression rates expressed in percentage terms that do not take account of students who fail to progress because of failure in examination are misleading.

No attempt has been made to study the performance of defined categories of students as they pass through the Institute or to monitor individual completion-on-time statistics.

CIT might find it useful to compare their throughput data with that of other similar Institutes. In a similar way the Institute would benefit from assessing

how effective new initiatives aimed at improving retention actually are and comparing their findings with those of other Institutes.

The Panel **recommends** that the Faculty Board of Studies set up a special sub-committee to research in some detail relationships between Leaving Certificate performance and success on all Level 7 and Level 8 programmes in the Faculty and that the outcomes of this research be made available to course designers to inform them in their design activity.

10.3 Employment and Further Studies of Graduates

Panel view from a desk study

This important issue, underpinning as it does the relevance of and justification for the existence of courses, does not feature at all in the Faculty or School documents.

In department documents' treatment of the issue varies from excellent in the Department of Chemical and Process Engineering in which the employment of five graduating cohorts is analysed in very informative detail, to the dismissive in the Department of Construction and Architecture in which the following appears for six of the eight courses treated:

> "Employment and further studies of awardees should be reported and analysed in comparative tabular format.
>
> The Institute does not currently collect work placement information for graduates but as far as the course team is aware all graduates the majority of graduates found employment in the local and national industry" (sic).

Elsewhere statistical data presented for a period varying from one to four years - 2004 in some cases - shows a growing tendency for Level 7 graduates to progress immediately to Level 8 studies, very often in CIT. While this trend is alluded to or obvious in most cases, real or possible reasons underlying the trend are neither proffered nor discussed. The majority of those not progressing further at this time and whose present activity is known are in gainful, relevant employment. The majority of Level 8 graduates go into employment although a small but growing number progress to further studies. (There is a strong possibility that the results of

the survey of graduates in 2004 is incorrect in the Level 7 Manufacturing Engineering course document or in the Level 7 Mechanical Engineering document or in both.)

The vast majority of the graduates from the chemical engineering programme are employed in Cork showing how relevant the programme is through its contribution to the development and support of the local economy. A similar treatment of other programmes would be very informative and a very useful input to faculty planning and resource distribution going forward. The Panel **recommends** that the Faculty Board of Studies take a coordinating role in maintaining relevant up-to-date statistical data relating to graduate placement and progress.

10.4 National and International Transfers

European Exchange

The Institute envisages an increase in student exchange with partner institutes abroad when semesterisation and modularisation is implemented and all programmes are fully ECTS compliant. At the present time the Departments of Civil, Structural and Environmental Engineering, Electronic Engineering and Electrical Engineering participate actively in the SOCRATES/ERASMUS exchange programme. Incoming students are attracted to programmes at all levels but mainly Levels 7 and 8 while outgoing students are primarily attending Level 7 programmes. There is also an active short term exchange of lecturing staff wishing to come to CIT and for CIT staff spending short periods teaching in partner institutes abroad.

National Transfers

Level 7 to Level 8 progression paths are well established in the Faculty. The normal requirement for the Level 7 graduate to progress to a 1-year add-on Level 8 programme is to have achieved at least 50% average in the bachelor degree examination. Those wishing to transfer to an add-on honours degree from a closely allied but not necessarily directly aligned ordinary degree may have to undertake bridging in some core subject areas. This applies to internal as well as incoming applicants.

Those graduating from a bachelor degree may transfer to Stage 3 of an ab-initio honours programme providing they have either an overall Merit 1 that includes a

Merit 1 level performance in Mathematics or a Merit 2 overall that includes a Distinction level performance in Mathematics. The Department of Electronics provides a bridging programme in Mathematics for all transferees to ensure the mathematical base required for the honours programme.

The Faculty may facilitate transfer into various years of a programme following a rigorous assessment of prior learning achievement. As an example holders of advanced technical qualifications from City and Guilds may be accepted on to the Bachelor of Science in Electrical Power Systems.

10.5 Bologna and the European Higher Education Area

The 2010 target date for having a European Higher Education Area based on the three cycle system (bachelor/master/doctorate), mutually acceptable quality assurance and recognition of qualifications and periods of study is drawing closer. The Institute is considering an eleven semester model that it regards as "structured to provide articulation with taught Masters provision and is adaptable to Bologna-compliant 3+2 or 4+1 models".
The Faculty offers bachelor ordinary programmes in engineering, science and arts. It offers honours bachelor programmed in engineering and in science. It offers one taught masters programme in engineering and is planning others.

Panel view

In recent years as the demand for places in engineering has declined nationally many programmes have been recruiting students of lower ability than heretofore. This has been a contributing factor to retention and progression problems particularly on some Level 7 programmes and to difficulties maintaining educational standards.

The Faculty needs to clarify, in the context of the National Framework of Qualifications, its understanding of the extent of the recognition it will seek to establish for its awards within the European Education Area. The structures of its Level 7, 8 and 9 awards will be important for the continuation of professional body accreditation for many of its awards in the near future.

The Panel **recommends** that the Faculty re-ignite, within the Institute, the debate on the implications of the Bologna process.

10.6 Review of Course Design

The re-design of courses is more radical on this occasion than has been the case previously due to the introduction and implementation of modularisation and semesterisation. Although Proposed Course Schedules in semesterised and modularised formats have been prepared for all stages in virtually all programmes, syllabuses are available for Stage 1 only and initial, cursory attempts, at most, have been made to demonstrate compliance with NFQ/HETAC level indicators and award-type descriptors - the design process is not yet complete. As a consequence complete programmes cannot be validated in May 2007.

The Panel was advised that extra resources will not be available to support any increase in class contact hours on any programme - contact hours in general across the faculty are already high enough. The Panel would not support any proposal to increase contact hours from 26 to 29 as has been mooted in some cases.

Panel view

An enabling process would be considered to permit recruitment to Stage 1 of the new-format courses while all other stages including add-on programmes would continue in traditional mode for the academic year 2007-2008. The PRG decided that an additional visit would be necessary to complete the review exercise and to draw up final findings and recommendations. It recommended to the Faculty that in preparation for that visit that the following be produced for each programme seeking validation.

- The national standard in terms of award descriptors, levels and credits for the award as determined by HETAC
- The programme outcomes stated in a form that shows that they are consistent with the national standard
- A demonstration that the individual module learning outcomes combine to generate the programme learning outcomes
- A statement of the assessment methods used showing that they ascertain the extent to which individual students achieve the standard.

This information should be produced in a standard format (matrix) for each programme; it will be reviewed at the re-convened panel visit in Autumn 2007.

10.7 Syllabi

Many of the issues raised and points made during the syllabus review are recorded in the earlier section devoted to modularisation and semesterisation and will not be duplicated here.

The Panel broke up into discipline groups to review the Stage 1 syllabi.

10.8 Review of Laboratory, Workshop, Studio and Other Facilities

Tour of the facilities was undertaken by half of the peer review group.

10.9 Development and Deployment of Academic Staff

Some lecturers who teach on the apprentice programmes have significant special expertise in certain areas that would enhance full-time programmes but timetabling issues arising from the non-alignment of academic calendar and apprentice blocks calendar sometimes prevent this from happening.

The Institute encourages staff to continually upgrade their knowledge and skills and supports those who become so engaged through payment of fees, enabling timetabling etc.

As the recently introduced national Performance Management and Development System (PMDS) becomes established and staff personal development plans will play a very important role in the continuing development of staff and will also assist with staff deployment.

10.10 Links with Industry, Business and the Wider Community

The Panel was informed that interaction with industry in the interests of maintaining the workplace relevance of its graduates took many forms. While there is no formal Faculty-Industry contact each department has an advisory board or panel made up of industry representatives and department staff that meet on an annual basis and more often at times when new courses are being planned and designed and when established courses are being reviewed as is exemplified by the clear tie-in between stakeholder feedback and proposed

course changes.. Many staff are active in their professional associations and meet with practitioners on a regular basis at meetings, conferences etc. The Faculty seeks professional body accreditation for the specific purpose of maintaining course relevance and standard. The nature of much of the Faculty's research/consultancy activity is such as to bring staff into close contact with a number of industries at the leading edge of their technologies. There are other points of contact also.

Panel members met with five industry representatives who expressed their general satisfaction with the support they were getting from the Faculty in terms of ACCS and adult provision and the quality of graduate they are receiving on whose pragmatism and work ethic they commented very favourably. They would **suggest** that an increase in co-op would make students more aware of the statutory regulations and organisation of industry which would give a relevance to much of their course theory and would better prepare them for employment upon graduation. They felt that while the new graduates are technically competent there is a need to improve communication skills especially in technical reports – however, industry would urge caution in trading technical content for softer skills. Representatives from industry that had experience of graduates from semester and year-long structures detected no noticeable difference in performance.

Panel view

In the interests of strategic development and R&D activity, formal industry advisory boards at Faculty/School level that meet regularly should be established. Formal records of these meetings should be maintained. These boards would also help to strengthen the identity of the Faculty and Schools.

10.11 Research

The further development of research activity is one of the strategic objectives of the Faculty in line with Institute policy. It (Faculty) has established a number of research groups and centres spread across all schools.

10.12 Course Delivery Methodologies

Average class size is 40 for standard lecturing purposes. If class sizes are larger than this, tutorial support is required. The experience with tutorials is that

attendance is poor and there are difficulties with administration and timetabling. The preferred option is group size of 40 for interactive lectures. The group size allows for a lecture and tutorial type mix, which permits feedback and removes anonymity.

There is no formal Institute policy on delivery methodologies. Some staff use traditional lecture style and some provide online notes although the latter practice, appreciated by students, is not standard across the Faculty. There is a fear that by giving all notes online student attendance might deteriorate. The preferred option of staff is to give outline notes and develop these during lecture time. The use of computer assisted learning and support from academic websites is not yet well developed.

It is expected that the soon to be established Teaching & Learning Unit will help to develop alternative delivery methodologies.

The panel is anxious to see greater development in this area to counteract the retention and progression difficulties at all levels but especially in the first year of courses and **suggests** that delivery methods should be benchmarked against those of other providers to develop a set of "best practice guidelines".

10.13 Adult and Continuing Education

The Faculty has a strong continuing education programme with 1077 part-time students enrolled. The activity is primarily based on flexible and accessible delivery of programmes available to full-time students. There are also a number of City and Guilds and short, specialised courses to meet local demand.
The Panel commended the Faculty on the extent of its commitment to the provision continuing education but feel that the activity, which at present is department based, would benefit from overall coordination at Faculty/School level so as to make optimum use out of available resources.

10.14 Academic Regulations

Embedded Higher Certificates
The Institute has recently changed its policy regarding Higher Certificates. Students are no longer recruited to courses leading to these awards. Those who

successfully complete Year 2 of a Level 7, Bachelor Degree programme and who do not wish to progress to the third year will, in the majority of these programmes, receive the Higher Certificate qualification. (See CIT prospectus for 2007). This applies to all Level 7 programmes conducted in the Faculty of Engineering except the BSc. in Architectural Technology and BSc. in Interior Architecture.

Panel view

The programme documents presented to the PRG display a lack of certainty as to whether the Higher Certificate is an embedded award conferred on all who complete Stage 2 or a "step-off" award conferred only on those choosing to terminate their studies on successfully completing the second year of the three year programmes. The Panel is concerned that the established status of the Higher Certificate qualification be protected and is of the opinion that Higher Certificates awarded by the Faculty should conform to national norms and standards in terms of programme outcomes, course schedules, levels of award and policies and protocols for the issuing and ownership of parchments.

The Panel **recommends** that the academic status of such embedded or step-off Higher Certificates and the criteria upon which they are awarded be clarified and published by the Institute.

11. Meeting with Students

The panel had a very lively and interesting discussion with a large group of students who were very well able to express their views both positive and negative. They were very positively disposed towards the academic staff who they found in the main to be very approachable and helpful and they appreciated the well laid out and student-friendly class timetables. They had concerns about the quality of the IT provision and library facilities and while many knew of the introduction of semesterisation and modularisation there was an evident lack of awareness of the timing of its introduction and of the implications it would have for students already attending courses in the Institute.

Panel view

The PRG noted a high level of discontent among students with the open-access computing facilities, and with (in some cases) inadequate

maintenance of hardware and software at department level. This leads to reduced access and utilisation of computer labs outside of formal classes. The PRG urges the Institute to set up as soon as possible a campus wireless network, while recognising that there are security and registration issues that will need to be resolved. In addition, there should be greater support and information for the purchase of student licences for major engineering and general software packages.

Students also complained strenuously of poor library facilities, especially study spaces and noise control. In the Panel's view proper library support is essential for students and urges that the facilities available be reviewed and improved where found wanting.

The PRG **recommends** that an aggressive, information campaign, explaining the M&S process and its implications, be urgently mounted among current students, particularly among those who will be switched to the M&S structures in the final year of their studies, and that the effects of the process be carefully monitored.

Programmatic Review of the Faculty of Engineering

Section B: 3rd & 4th December 2007

12. Review Programme 3rd & 4th December 2007

PROGRAMME – ENGINEERING REVIEW					
Session	***Time***	***Courses/CIT Personnel***	***Panel***	***Venue (No.)***	***Comment***
3rd December 2007					
1. Convene - Coffee Panel Initial Private Meeting	1100	Initial greeting from President/Head of Faculty, then in private.	All Panel Members	CIT Council Chamber	Setting of context for Phase 2
2. Discussion of Some Outstanding Issues	12:00 - 1:00	Head of Faculty, Heads of School, Ms Eva Juhl	All Panel Members	CIT Council Chamber	Communication within Faculty; Free Choice; Embedded Award Policy
3. Lunch	1 – 2:15		All Panel Members	Tourism & Hospitality Restaurant CIT	
4. Continuation of Discussion of Outstanding Issues	2:15 – 3:30PM	Head of Faculty, Heads of School.	All Panel Members	CIT Council Chamber	Liaison with Industry, Ongoing Monitoring & Review of Programmes.
5. Panel Splits into several Programme Groups	3:30 – 5 PM	Each Programme Group of Panel members engages with a programme team to review modules and programme outcomes in detail		Various venues	These sessions would provide the basis for re-validation of the individual programmes.
6. Hotel & dinner – evening free.					

4th December 07					
7. Panel Splits into several Programme Groups	0900 – 11:00	Each Programme Group of Panel members engages with a programme team to review modules and programme outcomes in detail		Various venues	These sessions would provide the basis for re-validation of the individual programmes.
8. Panel Splits into several Programme Groups	11:00 – 1:30	Each Programme Group of Panel members engages with a programme team to review modules and programme outcomes in detail		Various venues	These sessions would provide the basis for re-validation of the individual programmes.
9. Buffet Lunch for Panel	1:30 – 2:30				
10. Closing Panel Discussion in private	2:30 – 3:30	Panel reviews findings	All		Key conclusions discussed
11. Closing Meeting	3:30 – 4:15		All		Meeting with Head of Faculty, Heads of School

13. Welcome from President and Head of Faculty

The President, Dr. Brendan J. Murphy, welcomed the PRG to the Institute to complete, as far as was possible, the Programmatic Review. He informed the Panel that the Institute's internal monitoring process had decided that modularisation and semesterisation of Construction and Architecture programmes were not yet sufficiently advanced for those programmes to be considered by the Panel at this time. He said that all first year students in the Institute are now experiencing the new modularised and semesterised system. Since September there have been some minor glitches but no major problems.

Dr. Murphy thanked the Panel for its Interim Report which, he said, the Institute had found most useful. It had echoed issues and concerns expressed by other panels. He briefly addressed some of the issues raised in that report.

"Free choice" is being implemented but where there are serious issues and implications involved Course Boards may apply to the Academic Council for permission to reduce the number of such modules. This prerogative has been exercised by Engineering Course Boards.

Speaking briefly on the issue of retention, Dr. Murphy said that low Leaving Certificate Points is a serious contributor but not the only issue involved and the solution is not simply one of increasing class contact time. Student expectations and life style have changed and the Learning Support Unit is attempting to address these changes. The CIT view is that student workload should not be increased; instead students should be allowed time for reflection, study and project work. In Semesters 1 to 4 the maximum class contact time should not exceed 27 hours per week, while in Semesters 5 to 8 a maximum of 24 hours per week is recommended.

He accepted that there has been a tendency to over-assess. This has been recognised by the Institute. Its Academic Council will develop acceptable norms and monitor assessment practice to ensure these norms are observed.

Dr. Murphy thanked the PRG members, the Faculty of Engineering staff and Registrar's office for their efforts in preparing for the review.

14. Panel Meeting with Faculty Management

The Panel engaged Faculty Management in wide ranging discussions that ranged over relevant developments that had taken place in the Institute and in the Faculty since the May visit and areas of concern raised in the interim report.

Mr. Liam Hodnett, Head of Faculty of Engineering, seeded the discussion with the Faculty's response to the eight points raised in the CIT Engineering Programmatic Review interim report of May 2007 (See Appendix B).

To further facilitate discussion Mr. Ed Riordan, Deputy Registrar, tabled "Embedded Awards – Update to Engineering Programmatic Review Panel Dec 2007" describing the current position within CIT on embedded awards (See Appendix C).

14.1 Communications within the Faculty

The Head of Faculty has arranged for a meeting of Head of Faculty, Heads of Schools and Heads of Departments to be held every 4-6 weeks. One such meeting has so far been held. Furthermore departmental meetings are to be encouraged to improve communications with teaching staff.

The Panel met with Heads of Departments in response to their expressed dissatisfaction and concern with what they consider to be their current standing within the Faculty. The recently introduced course design and delivery structures and processes and the manner in which they were introduced, together with the new faculty management structure seem to have created a situation in which the Heads of Departments are uncertain as to their role and the scope of their authority and responsibility in relation to the design, maintenance and modification of the academic programmes in their departments and are dissatisfied with their ability to access the resources needed to run the programmes. The current situation, they maintain, arises out of dysfunctional communication within the Faculty that affects their ability to perform their academic roles within both the Faculty and the Institute. The Panel sensed a strong Departmental ethos with weak links to the Schools and Faculty but a less than desirable sense of course ownership deriving from concerns that their authority in relation to course design and delivery has been curtailed. Overall a strong impression is given that the revised structures are not working as well as

they might. Similar frustrations were also evident from academic staff at individual programme sessions suggesting that this is a fundamental problem which permeates down through all levels of staff involved.

Panel view

The Panel is particularly concerned about any matter that could have a deleterious effect on course design, maintenance and delivery. While welcoming the establishment of a forum where *inter alia* Heads of Departments can play a fuller role at faculty level exploring and developing more coherent faculty-wide initiatives and common approaches to matters such as Bologna, assessment policies and course development and monitoring, the Panel is of the view that this alone will not eliminate the difficulties expressed.

The Panel **recommend** that the communications issues within the Faculty be re-addressed and that the authority and responsibilities of Heads of Departments be clarified as a matter of urgency recognising the implications of such major management and academic restructuring.

14.2 Programmes and the HETAC Descriptors

Mr. Hodnett said that a lot of effort has been expended in preparing the most recent set of course documents detailing all modules and programme outcomes for all programmes except those in construction and architecture. He apologised for the delay in completing the latter programme documents but assured the Panel that they would be ready early in 2008.

The high quality course documentation presented was written using a format and guide recently developed and adopted by the Institute (See below). The Module Learning Outcomes to Programme Outcomes mappings show that HETAC standards are being met.

In response to queries from the Panel Mr. Hodnett stated that while there have not yet been noticeable changes to course content as a result of defining programme outcomes he expects that changes to programme outcomes in the future will result in changes to content.

Panel view

The programme outcome descriptors vary in quality from course to course. In some programmes the outcome descriptors give a concise, accurate description of the graduates' qualities and are very informative for potential employers and prospective students, and very good examples of the new CIT approach; in others, generic terms that tell little about the specialism concerned or about the graduates are used, sometimes underselling high quality programmes. The Panel **suggests** that high quality descriptors should be used as exemplars to raise the standard and clarity of programme outcomes for all programmes in the Faculty.

14.3 Course Monitoring

Mr. Hodnett explained to the Panel that the process pathway for the CMR, i.e. Course Board to Head of Department to Registrar to Academic Council and Director reflects the flatter management structure that existed before the new Faculty structure was introduced in 2007. In future the CMR will be considered by the Faculty Executive Board and the Faculty Board of Studies as well. While in most departments Course Monitoring Reports are completed as required the Faculty will ensure that in future all Course Boards will comply.

Panel view

While welcoming the above clarification, the Panel considers the CMR, if completed with due diligence, to be a very powerful course monitoring, maintenance and continual improvement tool.

The Panel **recommends** that loop-closing feedback from the Institute Executive Board and Academic Council to the Heads of Departments and Course Boards, so vital in ensuring the CMR process achieves its full quality assurance potential, be fully implemented.

Additionally the Panel **recommends** that the CMR template be modified to include a section dedicated to formal student feedback.

14.4 Embedded Higher Certificates

The current position of these awards may be deduced from Appendix C, "Embedded Awards – Update to Engineering Programmatic Review Panel Dec 2007".

Panel view

The course documentation for all Higher Certificate awards is in full compliance with requirements, i.e. proposed course schedules, programme outcomes, module learning outcomes and detailed module syllabuses are included.

14.5 Modularisation & Semesterisation

Stage 1 of all Engineering programmes is now being delivered in modularised, semesterised mode. It is the intention that, subject to successful re-validation, this mode of operation will extend to all stages of all programmes in September 2008.

A Modularisation & Semesterisation Steering Group operates within the Institute to guide implementation of the system. There is an urgent need for defined regulations to govern a number of aspects of system implementation and programme delivery.

Following are a number of implementation issues that are of concern at Faculty, School and Department level.

- Under the modular scheme student evaluation will rely more heavily on continuous assessment than has been the case heretofore. Although, in these early stages, there have been as yet few students complaining about the scheduling of assessment activity, there are indications of a tendency to over assess. Lecturers are coming under pressure from students to provide results very quickly following assessment instances.
- The Institute has no clear, defined policy that details recovery mechanisms and guidelines for dealing with students who fail modules that are 100% assessed.
- The retention of actual exams and some assignments has traditionally been a lecturers' duty. Such material is archived within the academic department. Formative assessments are usually given back to the students once corrected; this has always been Institute policy.

- The Faculty successfully sought a modification to the original specification and now all courses in the Faculty are required to have one "Free Choice" module per stage and not per semester. The "Free Choice" module is included in Semester 2 of Stage 1 and in the first semester of all other stages. The term "Free Choice" includes modules of cognate subject matter designed by the course design teams specifically for inclusion in this category. These "Free Choice" modules are not specifically included as contributors to the discipline specific Programme Outcomes although it is recognised that they contribute in the "Learning to Learn" category and in the case of cognate modules, support the main theme of the programme although not core material. There is an urgent need for regulations that govern student selection of "Free Choice" modules to ensure that the selection available does not duplicate core subject matter already dealt with or to be dealt with elsewhere in the programme. Heads of Departments and Course Boards should have a moderating role in vetting student choice.

Panel view

Course Boards have a role in scheduling assessment instances and in moderating any tendency towards over assessment of students. The module template software tool might be extended to include the generation of assessment schedules on a given course, and to assist with monitoring and planning.

Course Boards have a role also in ensuring that students transitioning from year-long to semesterised/modularised delivery in September 2008 are provided with the opportunity and assists to achieve all the important learning outcomes of their programmes.

The offering of cognate electives in the "Free Choice" category is of concern to the Panel. There is a danger that students will always choose (and may be encouraged to choose) a cognate elective that will ultimately benefit their programme of study; offering freedom of choice in such circumstances runs contrary to the free choice ethos initially envisaged by the Institute. It would be advisable to put in place an appeal mechanism that students can turn to if they feel their choice has been unfairly turned down. The Panel **suggests** that the Programme & Web-tool development team considers including with each programme a facility whereby Heads of Department, together with Course Boards may

add module identifiers of modules determined by them to be unsuitable for selection as "Free Choice".

The Panel **recommends** that the Institute define a comprehensive "marks and standards" to govern the implementation of its modularised/semesterised system as a matter of urgency.

The Panel **recommends** that more consideration be given to developing an appropriately resourced Faculty policy regarding the retention of examination scripts, assignment artefacts and reports etc upon which student performance is evaluated.

The Panel **recommends** that Heads of Department together with Course Boards be empowered to authorise student "Free Choice" module selections.

14.6 Bologna Process

Panel view

While recognising the importance of Engineers Ireland to the Faculty and its graduates the PRG **recommends** that the Faculty broaden its discussion of the Bologna Process to include all the principal aims of the process itself including transparency of qualifications (EUROPASS), credit transfer (ECTS), quality assurance, free movement of students, reciprocal recognition etc.

14.7 Student Supports

The PRG welcomes the provision of new computer facilities, the updating and standardisation of CAD software and the appointment of an additional computing technician.

14.8 Staff Supports

The issue of staff supports was raised at the May review. With regard to postgraduate student supervision, staff are given a reduction in teaching hours. However, no formal policy exists within the Institute for allowing a reduction in

teaching hours when lecturers undertake a postgraduate programme themselves. The support given to staff undertaking development themselves is currently on an ad hoc basis. A reduction in their total lecturer involvement can be achieved through reducing their general admin duties and restructuring their teaching timetables etc. Problems arise when some admin duties are passed onto others not themselves engaged in recognised research or studying for a further qualification. In addition granting a reduction in teaching hours has resource implications across the Institute. The Institute also has conditional sabbatical leave as part of its staff development policy.

Panel view

The Panel **recommends** that the Faculty clarify the staff development supports it can resource and that it seek further resources from the Institute to support this very important part of collegial life.

14.9 Strategic Planning

See Appendix B.

14.10 Writing Programme Outcomes – A CIT Users' Guide

Since the May visit of the PRG the Registrar's Office in CIT have developed a guide to assist programme designers when writing programme outcomes. The PRG commends the Institute on this initiative that "sets out the general parameters for CIT Programme Outcomes" based on the eight sub-strands National Framework of Qualifications grid. Brevity, clarity and accessibility are the main focus. Ms Eva Juhl gave a presentation on the guide and explained other work that the Focus Group on Modularisation and Semesterisation is doing to develop software that facilitates the filling-in of module templates and that assists in drawing up a matrix that relates modules to programme outcomes. When complete this software will also assist in grouping module learning outcomes to programme outcomes.

Panel view

The "writing Programme Outcomes" toolkit and the web tool for modules and programme descriptors are well integrated and even at this early stage of their existence show great promise. The authors of the booklet

and the software are to be complimented. The Panel understands that the Engineering faculty were the first heavy users of the software and despite a number of technical hurdles that had to be overcome the documentation produced is a testament to its value particularly in the structured approach to using NQAI and HETAC descriptors. The Panel cautions against installing the web tool as the only method for correlating programme outcomes with the individual module outcomes.

The Panel reiterate that statutory requirements are the main drivers of a Programmatic Review, not meeting professional body stipulations. However it also recognises that an additional cross-mapping of modules and learning outcomes to programme outcomes to meet specific professional body requirements would greatly facilitate Faculty staff when preparing for professional body accreditation. Such additional cross-mapping implies additional work for the software developers but should not be an arduous task. An alternative approach would be for CIT to approach the other Institutes of Technology, HETAC and EI with a view to establishing a common format for such mapping, thereby reducing otherwise unproductive reformatting.

Programmatic Review of the Faculty of Engineering

Section C: Programme & Module Reviews

School of Electrical and Electronic Engineering

Panel Subgroup Members:

Prof Cyril Burkley	(Chair)
Mr David Killian	(May 2nd & 3rd 2007)
Mr Michael Buckley	(May 2nd & 3rd 2007)
Mr Denis McFadden	(December 3rd & 4th 2007)
Dr Maeve Duffy	(December 3rd & 4th 2007)
Mr. Les Gosnell	(December 3rd & 4th 2007)
Mr. John Connolly	(Rapporteur and panel member)

Introduction

The School is subdivided into two departments each one responsible for the design, maintenance and delivery of a suite of courses. The Programmatic Review Sub-group (hereafter referred to as the PRG-E) met with the staff of each department separately and reviewed with them the Programme Outcomes, Course Schedules and Module Content of each programme. Stage 1 modules from all Higher Certificates, Bachelor (Ordinary) and Bachelor (Honours) programmes had been reviewed and agreed during the May visit so that the main concern focused on the second and subsequent stages. The findings are presented below in a) a set of general recommendations that apply to all courses in a department and b) particular conditions that relate to specific courses.

The PRG-E strongly **recommends** that **recommendations** made - agreed to by the departmental staffs – be implemented before students are enrolled in September 2008. Where specific **requirements** are stipulated course validation is contingent upon the specified conditions being implemented and notified to Academic Council before students are enrolled to any stage of the programme in question for the 2008/2009 academic session.

GENERAL ISSUES & COMMENTS

Documentation:

The course documentation is well presented in all cases showing the fruits of a lot of work by the course boards since the May visit. The staff admitted to a "work in progress" in some instances but the lack of completeness is not considered sufficient as to stall the introduction of all stages of all courses in Autumn 2007 provided the conditions stipulated have been complied with by that time.

Programme Outcomes:

In all cases Programme Outcomes are too generic and do not give clear profiles of the courses in question. In some cases course strengths are not cited at all thereby understating what is on offer while in others the claims of programme outcome are not always supported by specific module learning outcomes. An example of the former is the B. Eng. (Honours) in Electronics where Co-op., Management modules and Technology Entrepreneurship could be mentioned to underpin the engineering strengths of the programme. The POs could be improved by re-writing using, in some cases, more discriminating terminology, and the PRG-E **recommends** that this be done.

Learning Outcomes:

In virtually all cases module learning outcomes are well defined as are assessment events to discover the level to which the outcomes have been attained.

Module Dependencies:

In general the 'Module Dependencies' section of all module descriptors for all programmes have been left unfilled. The PRG-E **strongly recommends** that the dependencies section be completed in all cases. Informative dependency data:

a) Helps students realize the importance and relevance of the contribution each module makes to their total (the student's) learning experience
b) Provides an important aid to the course design and delivery teams
c) Provides helpful information to interested parties such as evaluating panels and students examining the possibilities for transfer and progression, particularly in an ECTS context.

Recommended Reading:

In a number of modules 'lecture notes' are used as recommended reading. The PRG-E **recommends** that related text references should be included to encourage students to investigate the subject material more broadly thereby promoting the 'Learning to Learn' programme outcome. The PRG-E further **recommends** that, in all modules, the Recommended Reading List be reduced to one main text where possible. The specification for all texts should include edition and year of publication.

Cognate Electives:

The proposed courses include a number of 'cognate electives' in Semesters 2, 3, 5 and 7. In reviewing with staff the subject matter of each course the Panel was

mindful that such modules might contain subject matter repeated elsewhere in core modules or that could be considered pre-requisite material for core modules in subsequent semesters but not included in core. Very few such instances occurred and are dealt with below under the relevant course.

Progression:

The PRG-E is concerned that the course lecturers are not aware of the rules that govern student progression - neither are they sure how they will deal with students who fail modules that are 100% continuous assessment.

Department of Electronic Engineering

Title	Level	Duration
Higher Certificate in Engineering in Electronic Engineering	**6**	**3-1**
Bachelor of Engineering in Applied Electronic Design	**7**	**3**
Bachelor of Engineering in Communications Systems	**7**	**3**
Bachelor of Engineering in Automation and Robotics	**7**	**3**
Bachelor of Engineering (Honours) in Electronic Engineering	**8**	**4**
Master of Engineering in Telecommunications Engineering	**9**	**4+2**

Department Staff:

Tom O'Mahony	Dirk Pesch
Michael Murray	Fergus O'Reilly
Paddy Collins	Michael O'Gorman
Oliver Gough	Matt Cranitch
Joe Connell	John Barrett
Richard Guinee	Aine Ni She

Course Specific Issues

- **Higher Certificate in Electronics**

The PRG-E **recommends** that reference to workplace and equipment safety and the importance of environmental awareness be included in programme outcomes.

Stage 1 modules were reviewed and accepted in May 2007. These modules are being taught to the Stage 1 intake since September. Experience thus far in delivering the modules manifests the immediacy of assessment examinations particularly in 100% assessable modules and the difficulties being experienced meeting student demand for feedback within 2 weeks of setting an assignment.

The Panel was informed that the proposed Semester 3 & 4 modules contain much the same subject matter as dealt with in Stage 2 up to this time except that the analog electronics content has been slightly reduced.

The content of Semester 3 module, "Build Your Own PC", overlaps to a large extent the content of Semester 4 module "PC Maintenance". For validation the PRG-E **requires** that "Build Your Own PC" be withdrawn from the Semester 3 group of cognate electives and that it must not be available to any student pursuing the Higher Certificate in Electronics or a Bachelor of Engineering in Electronics (Ordinary).

- **Bachelor of Engineering (Ordinary) in Applied Electronic Design**
- **Bachelor of Engineering (Ordinary) in Communications Systems**
- **Bachelor of Engineering (Ordinary) in Electronic Automation and Design**

The Higher Certificate in Electronics dealt with above is embedded as Stages 1 & 2 of each of these programmes. All PRG-E recommendations and requirements relating to the HC programme refer to these programmes also. Comments below regarding subject content refer to Semesters 5 and 6 of the bachelor courses. There is considerable commonality (3 core and all elective modules) across the three courses in Semester 5. Each course effectively stands alone in Semester 6 with "Statistics and Probability" being the only shared module – it is common to the BEng (Ord) in Applied Electronic Design the BEng (Ord) in Electronic Automation and Design.

The Programme Outcomes for two of the programmes describe "Knowledge – breadth" as that "relevant for an electronic engineer". The PRG-E **recommends** that when re-writing the Programme Outcomes more generally acceptable terminology be used.

Semester 5 module "Communications Electronics" is a very lengthy syllabus that would be very difficult to treat adequately in the time allotted. The PRG-E **recommends** that some topics from this syllabus be transferred into the Semester 6 module "Telecommunications Hardware"

The PRG-E **recommends** that electronic programmes at Level 7 should include a treatment of European standards and directives, e.g. CE mark, emissions, mains

borne interference, use of environmentally sensitive materials and components etc.

The Proposed Course Schedule for The BEng (Ord) in Electronic Automation and Design cites only two electives. The PRG-E **recommends** that the missing electives be included.

- **Bachelor of Engineering (Honours) in Electronic Engineering**

This is a good programme somewhat undervalued in the Programme Outcomes. The PRG-E **recommends** that the following be done:

1. Rename Semester 4 module "Engineering Management 2" as "Engineering Management 1" and Semester 6 module "Engineering Management 3" as "Engineering Management 2".
2. Include at least one recommended text for each module even though comprehensive lecture notes are given. The specification for all texts should include edition and year of publication.
3. Remove reference to Shannon's Sampling Theorem from the learning outcomes of Semester 5 "Engineering Mathematics 321".
4. Include a treatment of European standards and directives, e.g. CE mark, emissions, mains borne interference, use of environmentally sensitive materials and components etc.

Department of Electrical Engineering

Title	Level	Duration
Higher Certificate in Engineering in Electrical Engineering	**6**	**3-1**
Bachelor of Engineering in Electrical Engineering	**7**	**3**
Bachelor of Science (Honours) in Electrical Power Systems	**8**	**3+1**

Department Staff:

Noel Barry
Jerry C. Duggan
Padraig O Murchu
Sreto Boljevic
Barry Leach
Noel Mulcahy
Richard Daly
Denis A. Collins
Joe Buckley
Aine Ni She

Course Specific Issues

- **Higher Certificate in Electrical Engineering**

Students from a Trade Background:

Students from a trade background who have attained a National Craft Certificate in Electrical Engineering or cognate studies and who have passed the Leaving Certificate examination in English and Mathematics are usually recruited directly into Stage 2. In Semester 3 these students are required to take "Mathematics And Computer Aided Design" instead of "Electrical Power Distribution And Production".

Possible Change in light of Experience:

In light of the experience gained since September 2007 the Course Board now believe that the content of Stage 1 modules "Electrical Science", "Electrical Practicals" and Stage 2 modules "Electrical Fundamentals" and "Engineering Practicals" should be repackaged into separate electrical and electronic threads thereby creating four modules each containing practical exercises and an end of module written examination. The PRG-E accepted that such change could be introduced for the 2008 intake subject to Academic Council approval.

Meters and Measurement:

The PRG-E consider that the proper use of measuring instruments to be of major significance in this programme and **requires** that they be specifically included in relevant modules.

Electrical CAD:

The PRG-E **requires** the Semester 1 module "Electrical CAD" to be re-titled to reflect more accurately the syllabus which does not contain any CAD.

Mathematics and CAD:

The Semester 3 Elective Regulation statement is incorrect/unclear. "Mathematics And CAD" is specified as an elective in Semester 3. For those students with a trade background who enter the programme directly into Semester 2 this module is mandatory, replacing "Electrical Power Distribution and Production". Since the mathematics content of the module is already dealt with in Stage 1, "Technological Mathematics 1" and "Technological Maths (Elec.)" it cannot be offered to as an elective to students entering the programme as normal entrants at Stage 1. The PRG-E **requires** it to be included in core in place of "Electrical Power Distribution and Production" for those from a trade background that entered directly into Stage 2 and **recommends** that it be withdrawn as an elective. A clear statement to this effect should be entered onto the Proposed Course Schedule.

Installation Practicals:

Though not essential and not a preparation for another module(s) in the programme, this elective would provide a highly desirable, cognate experience for students from a non-electrical background entering this programme at Stage 1. The course team anticipate that the vast majority of such students will elect to take this module. However, the PRG-E **requires** that any such students who elect to study an alternative free-choice module must, in the spirit of free-choice, not be specifically disadvantaged later in the programme when compared with those who elect to take it.

- **Bachelor of Engineering in Electrical Engineering**

The Higher Certificate in Electrical Engineering dealt with above is embedded as Stages 1 & 2 of this programme. All PRG-E recommendations and requirements relating to the HC programme refer to this programme also. Comments below regarding subject content refer to Semesters 5 and 6 of the bachelor course.

Mapping Module Learning Outcomes to Programme Outcomes:

The mapping of module learning outcomes to programme outcomes is incomplete, sparse and inadequate. The PRG-E **requires** that this mapping be completed.

"Electrical Utility and Power Systems" and "Power Engineering" :

There is some duplication of content between these Semester 5 and Semester 6 modules. The PRG-E **requires** that the syllabuses be reviewed and duplication eliminated.

"Computer Applications for Electrical Engineering":

The Semester 5 module "Computer Applications For Electrical Engineering" is intended as an elective and should be grouped with the FREE CHOICE MODULE. The PRG-E **requires** this to be done. In addition the PRG-E **recommends** that the module syllabus be rewritten to indicate the more advanced level at which the course staff understand it to be.

Project Modules:

The PRG-E **requires** that indicative content be included for Semester 5 module, "Project Development (Phase 1)" and Semester 6 module, "Project Realisation (Phase 2)" to specify the thrust, scope and level of suitable project exercises. Furthermore the de-facto interdependence between these modules is not an elective regulation as stated in the course document.

Since "FT Hours" normally refer to class timetabled activity the 0.33 hrs/week allotted to the project modules seems wholly inadequate and the PRG-E **recommends** that the times be increased to a more realistic level.

Semester 6 Elective Regulation:

The Semester 6 Elective Regulation statement is incorrect. Students must choose two electives in this semester to make up the mandatory 30 credits. The PRG-E **requires** that this be made clear.

Outcomes:

The PRG-E **recommends** that the learning outcomes for "Electrical Utility and Power Systems" be reworked to better reflect the syllabus content and that safety and hazards be emphasised to a greater extent in "Engineering Management", and that they be clearly included in the programme outcomes.

"PLC Applications":

The PRG-E **recommends** that this title be changed to "PLC Application" to more accurately reflect the content and thrust of the module.

- **Bachelor of Science (Honours) in Electrical Power Systems**

Project Modules:

The PRG-E **requires** that indicative content be included for Semester 7 module, "Project Research (Phase 1)" and Semester 8 module, "Project Dissertation (Phase 2)" to specify the thrust, scope and level of suitable project exercises. Furthermore the de-facto interdependence between these modules is not an elective regulation as stated in the course document.

Since "FT Hours" normally refer to class timetabled activity the 0.5 hrs/week allotted to the project modules seems wholly inadequate and the PRG-E **recommends** that the times be increased to a more realistic level.

"Electrical Power Systems and Machines":

There is evidence of duplication between some of the content of this elective module, Semester 5 "Electrical Utility and Power Systems" and Semester 6 module "Power Engineering". The PRG-E **requires** that these syllabuses be reviewed and all duplication eliminated or that the elective be withdrawn.

Elective Modules:

In Semester 7 Advanced Plant Automation is a mandatory module and not an elective as shown in the semester schedule. There are thus six mandatory and one elective modules scheduled for Semester 7. Semester 8 has four mandatory modules and a series of electives from which the module "TM421 Adv Mathematics for Electrical Power Systems (EPS4 Electrical)" is to be withdrawn. The PRG-E understands that one of the Semester 7 mandatory modules is to be moved to Semester 8 and that students will select one elective in Semester 8. The PRG-E **requires** that the semester schedules be clear on this issue.

Semester 8 Elective Regulation:

The Semester 8 Elective Regulation statement is incorrect and should be removed.

Programme Title:

The classification of this programme as a Bachelor of Science (Honours) programme was discussed. The programme was designed more in accordance

with engineering award descriptors than those of science and would be more accurately described as having an engineering technology focus than a science focus. There is concern within the School that the only alternative to the current title would be a Bachelor of Engineering (Honours) which is a title reserved within the Faculty for 4-year ab-initio programmes designed to meet Engineers Ireland accreditation criteria as well as those of the NQAI.

This is an issue of more general concern across the Institute of Technology sector where a designation more closely supporting engineering technology would be welcomed as relevant and meeting a requirement.

School of Mechanical & Process Engineering

Department of Mechanical Engineering

- **Bachelor of Engineering (Honours) in Mechanical Engineering**

Panel Subgroup Members:
Mr Tim Crean
Mr John Connolly
Dr Cathal Heavey
Mr John Vickery
Mr Brendan Goggin

The course has been restructured to the modularised and semesterised format. It had also incorporated changes recommended as a result of the Engineers Ireland accreditation. Following the May meetings and as a result of the derogation from free choice, the opportunity had been taken to shore up scientific and technological areas.

The areas identified by Engineers Ireland as needing attention had been addressed. These included transferrable skills, role of the engineer in society. Ethics was now integrated into a number of areas rather than separated out as an stand-alone element.

Project Work:
Project work is a significant element of the course and has been reorganised from a one-year long project to a one spread over two semesters, a 5-credit module in the first semester and a 10-credit module in the second semester.
Group projects take place in the third year and individual projects in the second year. The staff outlined the approaches to selection of projects, their development, management and assessment, and the student supports that are in place. In certain instances, cross-disciplinary interactions on projects, with for example, Business Studies students, is encouraged.
It was noted that students on the course had been highly successful in national and international competitions for student projects and the overall quality of the project work was commended.
It is recommended that the Institute clarifies its policy in relation to the intellectual property of students' projects.

Work Placement:

A mandatory period of work placement was introduced into the second semester of the third year of the course. This occupies half of the semester with three "fat" modules being taught in the first half of that semester. Examinations are schedule to be completed before the students go on placement. While the mandatory period of placement lasted for a half semester, it was the hope and expectation that students would continue on in their placement over the summer period. There are specific learning outcomes associated with the placement.

The panel were informed that there were expectations that all students could be placed in Irish industries but that consideration was also being given to placements in industries abroad, in other institutions and in centres within CIT. It was envisaged that a number of staff would be involved in securing the placements and establishing and maintaining the industrial links for this purpose.

Learning Outcomes:

The panel noted that for the purposes of the Programmatic Review the learning outcomes has been written in the format appropriate for HETAC standards and that for some programmes the learning outcomes had had to be previously written for Engineers Ireland accreditation. The panel noted the unnecessary duplication of work.

It was the view of the lecturers that the learning outcomes specified by Engineers Ireland were clearer and more appropriate.

Choice of Electives – Module Issues:

It was commented that in the limited experience to date, the students had shown a conservatism in regard to selecting choice of modules for the second semester from outside their discipline area.

In regard to the assessment workload on students, there did not appear to be problems evident at this stage but it would be necessary to keep the matter under review.

The question of the distribution of the student workload within the modules was raised by the panel, with a particular reference to how the figures for independent study by student had been arrived at.

In response it was stated that students had not been consulted in regard to their practices and that the independent study allocation had in effect been a mathematical exercise to bring the total effort up to 7 hours.

Course Management and Communications:

The panel were informed of the structure of the Course Board and its operation. It commended the open communications between the staff and the students and the system of academic advisors in place. It was also noted the strong sense of identity at departmental level and the views that the School structure was taking time to bed-in. It also noted the concerns expressed that the sense of ownership of courses at departmental level was being diluted by Institute-wide policies such as those in relation to assessment or prerequisites as part of the M&S conversion.

Research:

The panel raised the question of the extent and manner in which the research activity in the department supports the honours degree programme. It noted the difficulties in attracting students to postgraduate studies because of the buoyancy of employment markets. It **recommends** continuing of efforts to enhance the research activity.

Transition Management:

Issues were discussed in relation to transition arrangements for the change-over from the existing courses to the new structures in a modularised and semesterised format and incorporating changes approved through the programmatic review. A number of areas of concern were identified during the implementation process and it was recognised that others might be identified as the implementation process.

The panel **recommends** that the department should have the necessary flexibility to ensure the smoothest possible implementation in a manner that would not disadvantage students.

- **Higher Certificate in Engineering in Mechanical Engineering Level 6**
- **Bachelor of Engineering in Mechanical Engineering Level 7**
- **Bachelor of Engineering in Manufacturing Engineering Level 7**
- **Bachelor of Science (Hons) in Advanced Manufacturing Technology Level 8**
- **Bachelor of Science (Hons) in Process Plant Technology Level 8**

Panel Subgroup Members:

Mr Declan Allen

Mr John Vickery

Mr Tim Crean

Dr Cathal Heavey

Mr Brendan Goggin

1. Communications

The group noted that since the visit in May there had been an improvement in communications within the Faculty. The establishment of the meetings involving Heads of Departments, Heads of School and the Head of Faculty had contributed to this.

There were good lateral communications between departments within the school and there were also significant levels of informal communications with a good positive attitude among the course team. However, the structure and its operations still needs development and attention, for instance:

- No formal means of interaction between Service Departments in other Faculties and the Engineering Departments.
- There do not appear to be meetings which involve all Heads of Department and all Heads of School within the Faculty meeting together.
- The Faculty Board of Studies is in early stages of operation and to date has had limited range of issues which it has addressed.

2. Structure

There is a perception of overlap in roles and responsibilities between the Heads of Department, Heads of School and Head of Faculty. There is a need for greater clarity and distinction in these regards. It is not clear if the structure or if its operation is serving the needs of front line staff as well as they could be served.

3. Research

A particular issue raised was the manner in which research proposals are dealt with. It is suggested that the Development Office and Head of Research would engage with the Research Centres to produce a plan for the development of research. The particular problems about staff members commencing research and maintaining its momentum were raised. These include initial funding and teaching workload. The question of the current contracts serving the research mission of the Institute was raised and whether there should be a different type of contract for those engaged in research – i.e. a research contract.

Mechanisms are required to establish new area of research.

4. Programme Outcomes, Learning Outcomes and Assessments, Modularisation & Semesterisation

A substantial volume of good quality work had been carried out. While there appeared to be changes in staff workload on assessment with the new modularisation and semesterisation system, it appeared to be operating well. There were changes to workloads on staff but they 'were up for it'. There were no reports of student overload, the assessment schedule being well distributed. It is recommended that overall student workload and its distribution should be monitored.

The practical and workshop programmes were benefiting from the semesterisation. However, for more theoretical subjects e.g. mechanics, completing the entire subject over a shorter period had some problems with students 'internalising' the subject. Attention may need to be paid to the phasing of subject in the context of Modularisation & Semesterisation.

5. Prerequisites, co-requisites and incompatible modules

CIT has adopted the approach of maximising, at least in theory, the extent of availability of subjects for free choice, by not specifying pre requisites or co-requisites. There are many cases however where there is an educational and practical reason for specifying them. These include for example workshop- and laboratory-based modules.

It was noted that there are no incompatible modules specified, while it is clear that there would be substantial overlap between modules on programmes and certain modules on other programmes.

There was a reliance on an unspecified and un-established student advisory mechanism to assist students in making correct choices of free choice or elective modules.

The sub-group **recommends** that the Institute develop procedures to address the handling of module choices in a realistic and pragmatic way.

6. Meeting HETAC Standards

The mapping exercise of Programme Outcomes and Learning Outcomes showed that HETAC standards were being met by the programmes as designed.

The academic staff group stated that the free choice in the final year of a Level 8 would have to be a Level 8 module. There was therefore a sharp divergence between this staff group view that expressed to the PRG in an earlier session by the Modularisation Coordinator. Clearly, this is an issue which needs to be resolved at Institute / Academic Council level.

7. Course Monitoring / Course Boards

The course boards are operating successfully and include student representatives. Formal training for student representatives might be considered.
The course monitoring reports need to be within a context where there is better closing of the loops. They appear to be looked at as predominantly statistical reviews of applications, examinations etc. and not significant attention paid to feed back from externs, students etc. It advised that they be looked at more clearly in the context of quality improvement, where there is greater clarity about expected outcomes; if there are deviation from these actions to be taken to address deficiencies.

Department of Manufacturing, Biomedical & Facilities Engineering

- **Bachelor of Engineering in Building Services Engineering**
- **Bachelor of Engineering in Biomedical Engineering**

Panel Subgroup Members:

Mr John Vickery

Dr Cathal Heavey

Mr Derry Nash

Mr Tim Crean

Mr Ed Riordan

The course teams and the panel discussed the revisions to the two programmes with a focus on the modularisation and semesterisation changeover. The following issues were noted and the panel **recommends** that they be the subject of ongoing attention by the course teams.

- Students will need help and advice to be more focused in their study approach and in their time management in a semesterised system.
- A schedule of assessments needs to be presented to students at the beginning of each semester.
- The course teams should review the number and frequency of assessments to ensure that there is a reasonable balance between learning and assessment. It may be feasible to reduce the assessment load.
- Following consultations with the relevant industrial advisors there is now a greater emphasis in both programmes on Project Management and "soft skills".
- It is recommended that the "Creativity, Innovation & Teamwork" common semester 1 module be delivered in a manner that applies to the specialist area.
- The panel noted that the Institute needs to urgently develop a policy for re-assessment of failed continuous assessment work, especially given that some modules are 100% continuous assessment.
- The Biomedical Engineering course team should check as to whether the Biomedical Devices 2 module is capable of being undertaken by students who have not taken Biomedical Devices 1.
- While staff were happy with departmental communications and procedures, there is frustration at the information and decision-making structures in place at faculty and Institute levels. The recently-introduced meetings of all

Heads of Departments and Schools in the Faculty of Engineering are likely to be helpful.

- The Faculty Board of Studies has an important academic remit. The panel **recommends** that this body be properly established and made operational as soon as possible.
- It was noted that the two course boards are operating satisfactorily. Course Monitoring Reports are prepared by the Course Coordinators for consideration by the Head of Department and Registrar.
- There is an active research programme on the Biomedical Engineering side, with funding of €1.25m secured this year.
- The Building Services Engineering team should ensure that the up-to-date building regulations are referenced in modules and used in lectures.

Department of Chemical Engineering

- **Bachelor of Engineering (Hons) in Chemical & Process Engineering Level 8**

2nd & 3rd May 2007

Panel Subgroup Members:

Eamonn Cashell (CIT)
Patricia Kieran (UCD)
Dave Murphy (PM)

CIT staff members: John O'Shea (Head), Noel Duffy, Aisling O'Gorman, Cilian O'Súilleabháin, Ian O'Sullivan, Brendan Ryan

The meeting of May 2007 between the Chemical and Process Engineering subgroup and Institute staff focused primarily on the content of Semesters 1 & 2 of the revised programme which the subgroup found to be entirely satisfactory. The subgroup viewed the facilities available and expressed the following general opinion:

The Sub-Group believes strongly that implementation of S&M, in accordance with CIT guidelines, but without compromising the quality of the existing programme, cannot be achieved without allocation of appropriate supporting resources. For Chemical & Process Engineering, essential, programme-specific requirements include:

- Provision of dedicated classroom space, with appropriate IT facilities, for Final Year Design Projects (15 credits);
- Provision of a dedicated, well-equipped computing laboratory (or equivalent), to accommodate a full Chemical Engineering class, for delivery and assessment of modules (across Stages 1-4) integrating computer-based professional applications with traditional teaching & learning.

Additional issues, related directly to the effective delivery of the Chemical Engineering programme within the new framework include:

- Provision of an IT technician; this is essential for this highly IT-dependent discipline
- Provision of dedicated administrative support to the Department

- Chemical Engineering is a practically-oriented discipline. A tour of the Department facilities revealed evidence of urgent need for capital equipment investment, to ensure maintenance of teaching quality and achievement of stated learning outcomes.

3rd & 4th December 2007

Panel Subgroup Members:
Dr Patricia Kieran
Mr David Murphy
Mr Ed Riordan

CIT Staff Members: Mr John O'Shea, Mr Cilian Ó Suilleabháin, Mr Brendan Ryan, Mr Gordon Petrie, Mr Noel Duffy, Mr Ian O'Sullivan, Dr Aisling O'Gorman.

- The subgroup discusses the proposed changes to the BEng (Hons) in Chemical Engineering. The subgroup **recommends** the proposed title change, i.e. to **BEng (Hons) in Chemical & Biopharmaceutical Engineering.**
- If is noted that in semesters 7 and 8 each student will take both the *Design Project* and the *Experimental Project,* but the working out of this is somewhat complicated due to timetabling and resource constraints. The Department is requested to ensure that a clear elective regulation (special regulation) is put in place to cover what is intended with regard to design project and experimental project.
- There was a detailed discussion of the impact of modularisation and semesterisation, which the group noted was being introduced over 2 academic years in CIT. Part of the implementation is a much greater reliance on in-class assessment, and the group shares the programme team's concern regarding the adequacy and security of assessments in a classroom setting. This is an Institute-wide issue which should be part of an early CIT review of the implementation of modularisation and semesterisation.
- The group noted the revised format for programme outcomes and welcomes both the general approach in CIT, and particularly the way in which the Department of Chemical Engineering has stated their programme outcomes.
- The subgroup **recommends** that Academic Council would clarify the regulations for repeat and remediation for students failing modules with 100% or substantial continuous assessment.

- The group noted the progress made by the Institute in placing modules and programmes on the "web tool". Both the modularisation and semesterisation team and the Engineering staff are to be commended for this progress, given that the software and system is clearly a work-in-progress.
- A survey of the student assessment load should be carried out; it may be possible that this survey can be automated via the web-tool.
- The group was told that assessment dates stated in the module descriptors were very rigid. If this is so, it seems unnecessarily restrictive and the subgroup **recommends** that discretion should be returned to departments to make sensible adjustments to assessment dates within modules.
- Another area in which departments should have discretion is in the identification of "incompatible modules". In the absence of a fully-loaded database listing all incompatible modules, the group **recommends** that this function be carried out at department level.
- The subgroup notes that elective modules are quoted in support of programme outcomes. This is something which the group **recommends** should be the subject of further consideration at Academic Council level. It is not *Engineers Ireland* practice, for instance.
- The subgroup endorses the proposal that better Institute supports be put in place for staff undertaking further study.
- The department and faculty will need to finalise their plans for the Bologna process and future professional recognition. The student intake of 2009 will be affected. It was noted that a 4+1 module is currently favoured, but this is a CIT decision.
- Detailed items for attention: A final check of credits, and the number of written exams in Semester 7 and Semester 8. Final check of number of written exams in Semester 5. In modules ID 2102 and ID 2680 please edit content to more typical length. (The panel noted the assurance that the material CAN be covered in time available; it should be made less forbidding to the student in comparison to other modules). An updated Chemistry module to be put in place in Semester 3 – this is understood to be ready.

Department of Transport & Automobile Engineering

- **Higher Certificate in Engineering in Automobile Technology (Level 6)**
- **Bachelor of Arts in Transport Management and Technology (Level 7)**

Panel Subgroup Members:

Mr Declan Allen

Mr Denis McSweeney

Ms Eva Juhl

A. Phase 1 Recommendations

The panel notes that the Phase 1 recommendations still stand. The recommendations from the present phase of the review should be read in conjunction with the Phase 1 recommendations on the above programmes.

B. Phase 2 Recommendations

The following section details the panel recommendations from the Phase 2 panel session. Unless otherwise indicated, the observations relate to both the HC and BA programmes.

1. Programme Outcomes (BA)

While the Programme Outcomes for the Higher Certificate were found to be good, concise and appropriate to the field, the panel noted that the Programme Outcomes for the BA lacked consistency and did not adequately reflect the content of the programme or the envisaged graduate profile.

The panel **recommends** that the Programme Outcomes for the Bachelor programme should be rewritten to ensure greater terminological consistency. Specialist terminology from other fields of study should be removed. IEI documentation could be used for terminological reference.

2. Schedule of Assessment

The panel found that no schedule of assessment was included with the programme documents for both the HC and the BA. The panel **recommends** that a schedule of assessment should be prepared and included with programme documentation.

3. Bachelor of Arts Award Type (BA)

The panel queried the appropriateness of the Bachelor of Arts award type for a programme of this nature. The programme staff stated that the BA was a legacy title. They concurred with the panel's judgment that the title was not appropriate, but stated that they had so far not succeeded in changing it.

The panel felt that the present award type of Bachelor of Arts was wholly inappropriate to the programme content and the graduate profile, was unattractive to both prospective students and prospective employers, and might hamper the employment prospects of graduates in cases where certain pre-screening mechanisms are applied in the selection of candidates for particular positions.

The panel therefore makes a very strong recommendation that the Department should advance a change in the award type of the degree, and that the Institute should support the Department in this. A number of different options are open to the Department (BSc, BEng). In order to identify the most appropriate award type, the Department should investigate the programme content and the balance of subjects as well as additional issues such as entry requirements etc. In addition, the possible development of a Level 8 degree in the subject area should also be kept in mind when arriving at a decision.

4. M&S Issues – Semester Schedules and Mapping of Module Learning Outcomes to Programme Outcomes

- **Semester Schedule for Semester 2**

The panel noted that 6 mandatory subjects were listed on the Semester Schedules for Semester 2, along with the Free Choice elective, which would bring the overall credits to be obtained in this Semester to 35. The Department affirmed this was a simple inputting error, and stated that the module Computer Applications 1 (Module ID 2994) should have been marked as a cognate elective. The panel found this to be appropriate and **recommends** that the error should be corrected in the Schedules as soon as possible.

- **Summary Mapping of Modules LOs to POs**

The panel queried the fact that the mapping of Module LOs to POs for Module 805, Introductory CAD, appeared to be less extensive for the Bachelor programme than the Higher Certificate. The Department asserted this was probably not intentional. In addition, the panel noted that in the programme documentation for the BA, one of the Free Choice modules was not mapped to

any PO, while the other was mapped to PO 5 Competence – Context, which was not wholly appropriate. The panel **recommends** that these instances should be investigated and corrected as appropriate.

5. Module Motor Workshop Processes (2995)

Given that the Bachelor programme had moved away from the rudimentaries of trade to reflect more strongly the much wider industry context of the present day, the panel queried the continued inclusion of the Motor Workshop Processes module. The programme team stated that this had been discussed previously. As it was felt that the practical orientation of the module contributed to retention, a decision had been taken to retain the module, but to move it from Year 2 to Year 1.

The panel notes this decision. However, the panel does **recommend** that the Department should continue to monitor the relevance of this module and its contribution to student retention going forward, in particular in light to the potential development of a Level 8 step-up programme. While the immediate attractiveness of a particular element is no doubt an important factor in ensuring student retention, this needs to be informed by wider considerations of the need to attract and retain the right kind of student for the programme profile and the range of employment options open to its graduates. This was summed up by a panel member as the need to "make the programme relevant for relevant students".

6. Module Reading Lists

The panel noted that the reading lists for many modules were quite light, not sufficiently up-to-date, and/or clearly incomplete or missing altogether in some cases. A general lack of up-to-date web resources was also observed. In addition, the panel noted a great dependency on a limited number of texts across a number of different modules, in particular Hillier's Fundamentals and the IMI publications. With regard to the latter, the panel expressed the worry that, since the IMI was an English organisation, its publications did not sufficiently cover Irish legislation.

The panel **recommends** that the module reading lists should be revisited and should generally be 'amplified' considerably. The revised reading lists should include a sufficient amount of up-to-date web resources as appropriate, and should clearly reflect the academic dimension of a Level 7 degree programme, both in quality and quantity.

7. Block Exemption Regulations / Franchised Dealer Operations

The panel noted that Block Exemption Regulations (BER) were addressed only once in the programme, in the context of Automotive Industry Interpersonal Skills (Module 2434, Sem. 6). The panel felt that this would not provide students with sufficient knowledge of / competence in dealing with BER, and that furthermore the Interpersonal Skills module was not the correct focus for this area. Instead, the panel considered BER to be a fundamental part of Franchised Dealer Operations. The fact that this area of study was not covered at all in the programme was identified as a significant gap.

The panel therefore **recommends** that the programme team should develop a module or modules on Franchised Dealer Operations. This area of study should in fact form a 'chunky core' within the programme, and should include a strong focus on current topical industry features such as data protection. BER should be removed from the Interpersonal Skills module and should be integrated into Franchised Dealer Operations. The Franchised Dealer Operations module(s) could be jointly delivered by Departmental staff and service lecturer(s) in Law. Outplacement and/or guest lectures by visiting BER experts should be considered as possible components of such (a) module(s).

8. Work Placement

The issue of work placement was discussed briefly. The panel agreed with the programme team that this could not be integrated within the confines of the 3-year Level 7 degree programme. However, the panel **recommends** that work placement should form a part of any Level 8 programme to be developed in the area of study. It is suggested that this should run for a whole semester if possible.

9. Assessment of Learning Outcomes – Year 3

The panel noted that there were issues with the assessment of Learning Outcomes in a number of Year 3 Module Descriptor. These took two principal forms, either a failure to note the Learning Outcome(s) addressed by a particular assessment, or an apparent failure to cover a particular Learning Outcome in any of the assessments. The panel **recommends** that the Year 3 Module Descriptors should be revised and the omissions corrected as appropriate. The revisions should ensure that all Learning Outcomes in a module are assessed appropriately.

10. Possible Development of a Level 8 Degree – Staff Qualifications

The panel heard that a number of staff members were currently pursuing higher degrees, and wishes to compliment these staff on undertaking their studies in addition to their lecturing duties. In connection with this, the panel would like to underline the importance of appropriately staff qualifications in the context of a possible development of a new degree. Where the degree to be developed is at Level 8, the panel considers that a significant proportion of programme staff should hold magisterial qualifications.

11. Contact Hours

The issue of contact hours was raised by a number of Departmental and service staff. The staff members stated that the contact hours for some subjects had effectively been reduced as a consequence of Modularisation and Semesterisation. They expressed their worry that this might affect pass rates, as some students would not adapt well to having to develop a higher proportion of the material through Independent Study.

The panel appreciates the difficulties inherent in restructuring an existing programme to fit a very different delivery/assessment format with various associated constraints. However, it would **recommend** that programme staff should grasp the joint processes of Programmatic Review and M&S as an opportunity for a thorough re-examination of all programme elements. This re-examination should be guided by the question which elements add, or do not add, value to a Level 7 degree programme. A re-examination of the programme along those lines would assist the programme team in identifying elements and/or delivery mechanisms which were traditionally part of the course but which are no longer as productive for the current programme level and graduate profile.

School of Building & Civil Engineering

Department of Civil, Structural & Environmental Engineering

- **Bachelor of Engineering in Civil Engineering**
- **Bachelor of Engineering (Hons) in Structural Engineering**

Panel Subgroup Members:
Prof Padraic O'Donoghue
Mr Derry Nash
Mr Kevin Savage
Mr Jim O'Dwyer (CIT Rapporteur)

Department Staff:
Joe Harrington, Niamh Power, Des Walsh, John J. Murphy, Brian O' Rourke, Sinead Corcoran, John P. Murphy, Leonard O'Driscoll, Thomas R. O'Leary (Mathematics Dept), Tony Conway, Tim Buckley.

The review took the form of a round table discussion over about 2.5 hours.

The panel complimented the department on the documentation which was well presented and of a high standard. They also noted that a large volume of work had been undertaken and completed to a high standard since the May 2007 visit. Clearly the department is a well run department with a commitment to its students and the community. The latter was demonstrated by its involvement with part time delivery of the programmes and its defence of the practice despite the scarcity of resources. That the department was seeking changes to the submitted programmes, is evidence of ongoing discussion, refinement and development.

Research:
With the advent of 5 year engineering programmes, all staff should be at masters level by 2012 at the latest. Are there appropriate supports in place to help staff achieve that standard and what are the blocking factors?

Staff in general are happy with the supports that can be availed of. However the staff are currently overstretched dealing with the current workload. Reducing workload by removing some part time delivery was not seen as a desirable

option. Part time delivery is seen as a service to the community and an integral part of CIT's remit.

Documentation:
The quality of the documentation was praised. The learning outcomes were well written and assessable in the main.

The Department requested some changes to the submitted documentation.

(i) Numerical Methods had all but disappeared from the course and needed to be reinstated. It was proposed that Engineering Computing 1 (Module 3023) should replace Programming Fundamentals 1 as a mandatory module in semester2. Further Engineering Computing 2 (3020) should replace Programming Fundamentals 2 as an elective in semester3.

(ii) In the process of modularising, material was moved between stages, with the affect that a student may miss out on some material in the transition. To solve the problem the following was proposed for **one year only as a transitional arrangement**:
In the ordinary degree, in semester 5, Environmental Engineering 1 and Free Choice to be replaced Structural Design & Management(3019) and Structures and Mathematics (3017).
In the honours degree, in semester 5, Structures, Concrete and Mathematics (3018) to replace Free Choice.

(iii) Minor changes:
In the ordinary degree, semester 1 Construction 1 the marks allocation for CA/Examination go from 30/70 to 20/80.
In the honours degree, semester 1 elective Communications 1 should be re-titled Communications 1 with German. Further modules may be developed and could be offered under free choice thus allowing a student to progress with a language competency.

The panel were happy with the proposals and recommend that the changes be accepted.

There was a lengthy discussion on the level of assessment and the workload it places on both student and staff. Some modules have 4 assessments which attract only 20% of the marks, with the remaining 80% going to the terminal

examination. The management of the assessments in terms of setting, marking, returning scripts and marks, advising students and dealing with doctor's sick certificates was a major task in itself. The late submission of assessment material was also a problem as there appeared to be no policy on what to do in such circumstances.

The student reaction to the new regime was also debated. However it was considered to be too early in its implementation to make any informed judgements.

The panel recommend that the department review the number of assessments per module in light of experience. The Department should construct an assessment schedule as part of the review to get a clear picture of the student and staff workload per semester.

The panel also recommend that the Institute establish a clear policy on the late submission of material.

There was a short discussion on the use of computer based learning. While desirable, it was agreed that there needs to be an Institute wide policy on eLearning which is backed up with technical and educational supports.

It was noted that while the newly appointed computer technician alleviated some of the problems in the ICT area within the Department, the ICT provision was still not adequate.

Placement:
The sub-group supports in principle the regulation on placement as proposed in Appendix 1 but this needs further discussion as to practicability. The module on placement was welcome, but the period was short and may be difficult to operate. **The Department should be involved in the placement process which will necessitate the allocation of some resource to the task**.

Communication:
This was a serious issue raised during the May visit. It was difficult to identify exactly what the problem was. However the general feeling was that requests for information downward came hard and fast with usually a short time for reply. Requests upward through the management chain seemed to lack urgency and answers tended to come slowly if at all.

Proposals on Grade of Award and transfers:

The Department submitted a proposal on how the award grade might be calculated and how transfers between the two degrees might operate (see appendix 1).

It was clarified that "satisfactory result" in paragraph 2 meant 70%. It was pointed that the 70% minimum mark was not in conformance with the current transfer regulations agreed by the Academic Council.

The panel was happy to recommend 70% as the appropriate Mathematics mark for transfer. This should be formally ratified at Academic Council level.

The panel was not in accord on the other issues raised and felt they needed further consideration. They recommended that the Institute formulate a policy on grades of awards.

APPENDIX

(Proposals to the PRG from Department of Civil & Structural & Environmental Engineering)

Special Regulations for the Bachelor of Engineering in Civil Engineering Programme (Level 7)

1. Grade of Award:

The grade of the award shall be determined by averaging the results from mandatory and best cognate elective modules totalling 55 credits at Level Seven taken in Semesters 5 and 6.[1]

2. Transfer mechanism to Bachelor of Engineering (Honours) in Structural Engineering:

Students wishing to transfer into the Bachelor of Engineering (Honours) in Structural Engineering programme shall have a satisfactory result in the Module Technological Mathematics 312 or equivalent.[2]

[1] For further discussion at Academic Council/Department level
[2] Supported by sub-group

Special Regulations for the Bachelor of Engineering (Hons) in Structural Engineering Programme (Level 8)

1. Grade of Award:

The grade of the award shall be determined by averaging the results from mandatory and best cognate elective modules totalling 55 credits at Level Eight taken in Semesters 5 and 6 (=A1), averaging the results from mandatory and best cognate elective modules totalling 55 credits at Level Eight taken in Semesters 7 and 8 (=A2) and combining these averages in the ratio of 20% to 80% respectively (G=0.2xA1 +0.8xA2).[3]

2. Transfer mechanism to Bachelor of Engineering (Honours) in Structural Engineering

Students wishing to transfer into the Bachelor of Engineering (Honours) in Structural Engineering programme shall have a satisfactory result in the Module Technological Mathematics 312 or equivalent.

3. Elective Work Placement Module

Students repeating examinations or assessments immediately prior to the commencement of Semester 7 are not permitted to take the Elective Work Placement Module during that summer period.[4]

[3] For further discussion at Academic Council/Department level
[4] Supported in principle by sub-group, but **requires** further discussion as to practicability.

Programmatic Review of the Faculty of Engineering

Section D: Programmatic Review Findings

15. Validation Findings

Revalidation of Programmes

The PRG subgroups are satisfied that they can recommend validation for all programmes listed below for a period of **5 years from the intakes of September 2007** subject to compliance with a small number of important **requirements** detailed in this document.

Validated Programmes:

Higher Certificate in Engineering in Civil Engineering
Bachelor of Engineering in Civil Engineering
Bachelor of Engineering (Honours) in Structural Engineering

Higher Certificate in Engineering in Electrical Engineering
Bachelor of Engineering in Electrical Engineering
Bachelor of Science (Honours) in Electrical Power Systems

Higher Certificate in Engineering in Electronic Engineering
Bachelor of Engineering in Applied Electronic Design
Bachelor of Engineering in Communications Systems
Bachelor of Engineering in Automation and Robotics
Bachelor of Engineering (Honours) in Electronic Engineering
Master of Engineering in Telecommunications Engineering

Higher Certificate in Engineering in Manufacturing Engineering
Higher Certificate in Engineering in Biomedical Engineering
Higher Certificate in Engineering in Building Services Engineering
Bachelor of Engineering in Biomedical Engineering
Bachelor of Engineering in Building Services Engineering
Bachelor of Engineering in Manufacturing Engineering
Bachelor of Science (Honours) in Advanced Manufacturing Technology

Higher Certificate in Engineering in Mechanical Engineering
Bachelor of Engineering in Mechanical Engineering
Bachelor of Engineering (Honours) in Mechanical Engineering
Bachelor of Science (Honours) in Process Plant Technology

Higher Certificate in Technology in Automobile Technology
Bachelor of Arts in Transport Management & Technology

The Panel appreciates the difficulties the programme design teams had in updating programme material and in the extensive and difficult restructuring exercise undertaken, and commends them on results achieved. A number of suggestions and recommendations have also been included in this report to assist design teams and course boards in solving some of the remaining difficulties and as an aid in continuing programme development and improvement. These should be considered by the relevant groups and acted upon according to their best judgement.

Some changes from the documentation submitted were identified in meetings between departments and the PRG sub-groups. Departments should go ahead and make those changes, and send finalised documents to the Registrar for approval. If the changes are considered major they should be sent out to the PRG for their opinion.

As regards the Construction programmes, the PRG were informed that they were not complete and up to standard in time for presentation to it, and were withheld on foot of an internal Institute review. The PRG was disappointed that it was not able to complete its work at this second visit and requests the Faculty and Institute to look into the reasons for this. It is recommended that when the programmes have been fully revised and updated by the department, the Chairperson and the PRG members in that field of study should re-convene to review the programmes and issue recommendations to the Academic Council with regard to revalidation. There is concern as to what these departments can do to have an intake of students for September 2008. This uncertainty can only be alleviated by the submission of the appropriate documents and the reconvening of a sub-group of the panel to review the programmes.

Programmatic Review of the Faculty of Engineering

Section E: Appendices