

Cork Institute of Technology

2011/2012 Programmatic Review of the School of Science & Informatics

Final Report of the Peer Review Group

COMPOSITION OF THE PEER REVIEW GROUP

Dr Dermot Douglas (Chair)

Higher Education Consultant

Former Director of Academic Affairs, Institutes of Technology Ireland (IOTI)

Professor John Breen

Department of Life Sciences

University of Limerick

Mr Eamonn Burke

Head of Automation & Information Technology (AIT) / Site IQP Champion

Novartis Ringaskiddy Ltd

Dr Joan Condell

School of Computing & Intelligent Systems

University of Ulster

Mr Garrett Dee

Senior Development Adviser

Enterprise Ireland

Dr Barry Feeney

Head of Department of Computing

Institute of Technology Tallaght

Dr Michael Hall

Registrar

Institute of Technology Tralee

Ms Karina Kelleher

Statistician

CSO Cork

Mr Sean Kelly
Global Deployment Programme Manager
Ericsson Ireland

Prof (emeritus) Desmond McHale
University College Cork

Dr Norman McMillan
Owner / Director
Drop Technology Tallaght

Mr Don Crowley
Head of Department of Continuing Education
CIT

Mr Daithi Fallon
Head of Department of Manufacturing, Biomedical & Facilities Engineering
CIT

Ms Eva Juhl
Institutional Review Facilitator
Cork Institute of Technology

PREAMBLE

Plenary review sessions addressing Phase 1 recommendations:

The focus in Phase 1 of the CIT Programmatic Review process is on the School and its overall programme portfolio. At the beginning of the Phase 2 review process, the School of Science and Informatics presented a summary of actions taken in response to the Phase 1 Peer Review Group (PRG) Report. The PRG was impressed by the action taken by the School and commends it on its progress. In particular, the PRG noted the actions taken by the School in relation to issues of retention and completion – discussed in the Phase 1 report - and in connection with industrial engagement. The PRG is satisfied that these issues are being addressed appropriately and that progress continues to be made.

INTRODUCTION

This Phase 2 report concentrates on the individual programmes being offered by the School and changes that have been made or are being proposed since the last Programmatic Review or Initial validation (in the case of programmes developed in the intervening period).

The purpose of this stage of review is to ensure for each programme

1. that the programme remains relevant to learners, employers and other stakeholders;
2. that there is a demand for the graduate profile produced by the programme;
3. that the Programme Outcomes correctly describe the desired graduate profile;
4. that the programme delivers the Programme Outcomes.

Phase 2 includes a detailed analysis of each programme put forward for revalidation, including its outcomes, structures, content, delivery and assessment schedules.

PROGRAMME SELF-EVALUATION

Comprehensive documentation was provided to the PRG in respect of each programme provided by the School. The following aspects were evaluated for each programme by the Programme Board prior to the meeting with the PRG:

- Career / industry profile
- Graduate profile (as defined by the Programme Outcomes)
- Programme design and delivery
- Graduate performance
- Student performance

PHASE 2 PANEL SESSIONS

The rationale for the proposed changes to programmes and modules was fully discussed at the meetings on the 19/20th January 2012 between faculty and members of the PRG. The

PRG broke up into three specialist sub-groups viz. Biology/ Chemistry, Computing and Applied Physics/Mathematics for these reviews. Membership of each sub-group and the programmes evaluated by each group is given below.

PROGRAMME BLOCKS DAY 1 (19 JANUARY 2012)

Block 1: Computing I (2 PM - 3:30 PM / 3:45 PM - 5 PM)	Panellists:
<ul style="list-style-type: none"> - HC in Science in Computing (<i>embedded award</i>) - BSc in Computing - BSc (Hons) in Software Development - BSc (Hons) in Software Development & Computer Networking - BSc (Hons) in Web Development - CISCO Certificates (1 x L6 SPA, 1x L7 SPA) 	Joan Condell, UU Barry Feeney, IT Tallaght Sean Kelly, Ericsson FOR REGISTRAR'S OFFICE: Daithi Fallon
Block 2: Biological Sciences I (2 PM - 3:30 PM / 3:45 PM - 5 PM)	Panellists:
<ul style="list-style-type: none"> - HC in Science in App. Biosciences (<i>embedded award</i>) - BSc in Food & Health Science - BSc in App. Biosciences & Biotechnology - BSc (Hons) in Nutrition & Health Science - BSc (Hons) in Pharmaceutical Biotechnology 	Michael Hall, IT Tralee John Breen, UL Francis McHugh, Johnson & J. Garrett Dee, Enterprise Ireland FOR REGISTRAR'S OFFICE: Eva Juhl
Block 3: Applied Physics & Instrumentation I (2 PM - 3:30 PM / 3:45 PM - 5 PM)	Panellists:
<ul style="list-style-type: none"> - HC in Science in App. Physics & Instrumentation (<i>embedded award</i>) - BSc in App. Physics & Instrumentation - BSc (Hons) in App. Physics & Instrumentation - BSc (Hons) in Instrument Engineering - Certificate in Process Control & Autom. (L6 SPA) - Certificate in Adv. Industrial Automation (L8 SPA) 	Dermot Douglas, IoTI Norman McMillan, Drop Tech. Eamonn Burke, Novartis Brendan O'Regan, Zenith Tech. FOR REGISTRAR'S OFFICE: Don Crowley

PROGRAMME BLOCKS DAY 2 (20 JANUARY 2012)

Block 4: Computing II (9 AM - 10:30 AM) - HC in Science in IT Support (<i>embedded award</i>) - BSc in IT Support - BSc (Hons) in IT Management - Certificates in CompTIA+ (3x L6 SPAs) - Cert. in Novell Cert. Linux Professional (L6 SPA) - Cert. in Computer Networking (L6 SPA) - Cert. in Web Development Fundamentals (L6 SPA) - Cert. in IT Fundamentals & Training (L6 SPA) - Cert. in IT System Maintenance (L6 SPA)	Block 7: Computing III (11 AM - 12:30 PM) - MSc in Software Development - Postgrad. Diploma in Networking & Security - MSc in Networking & Security	Panellists: Joan Condell, UU Barry Feeney, IT Tallaght Sean Kelly, Ericsson FOR REGISTRAR'S OFFICE: Daithi Fallon
Block 5: Biological Sciences II (9 AM - 10:30 AM) - BSc (Hons) in Herbal Science	Block 8: Chemistry / Science Common Entry (11 AM - 12:30 PM) - Science Common Entry - HC in Science in Chemistry (<i>embedded award</i>) - BSc in Analytical & Pharmaceutical Chemistry - BSc (Hons) in Analytical Chemistry w/ QA - Certificate in Quality Assurance (L6 SPA) - Certificate in Quality Mgt. Part 1 (L7 SPA) - Certificate in Quality Mgt. Part 2 (L7 SPA)	Panellists: Michael Hall, IT Tralee John Breen, UL Garrett Dee, Enterprise Ireland Francis McHugh, Johnson & J. FOR REGISTRAR'S OFFICE: Eva Juhl
Block 6: Applied Physics & Instrumentation II (9 AM - 10:30 AM) - HC in Science in Industrial Measurement & Control - BSc (Hons) in Environmental Science & Sustainable Technology	Panellists: Dermot Douglas, IoTI Norman McMillan, Drop Tech. Eamonn Burke, Novartis Brendan O'Regan, Zenith Tech. FOR REGISTRAR'S OFFICE: Don Crowley	
		Block 9: Mathematics Modules (11 AM - 12 PM) - Mathematics modules (Module issues and integration across SOSI programmes) Panellists: Dermot Douglas, IoTI Des McHale, UCC (emer) Karina Kelleher, CSO FOR REGISTRAR'S OFFICE: Don Crowley

OVERALL ASSESSMENT

OVERALL ASSESSMENT

SUBJECT TO IMPLEMENTATION OF SPECIFIC REQUIREMENTS IN THE SUB-PANEL REPORTS HEREUNDER, AND WITH DUE REGARD TO SPECIFIC RECOMMENDATIONS MADE, THE PANEL RECOMMENDS THE CONTINUED VALIDATION OF ALL THE PROGRAMMES AND MODULES SUBMITTED FOR A PERIOD OF FIVE YEARS FROM THE INTAKE OF SEPTEMBER 2012.

DEPARTMENT OF COMPUTING

Blocks 1, 4 and 7

Membership of Computing Sub-Panel

Dr Barry Feeney (Chair)

Dr Joan Condell,

Mr Sean Kelly,

Mr Daithi Fallon

Programme Staff Present

Mr Jim O'Dwyer, Head of Department of Computing

Mr Gary Couse, Lecturing Staff, Department of Computing

Dr John Creagh, Lecturing Staff, Department of Computing

Ms Mary Davin, Lecturing Staff, Department of Computing

Ms Deirdre Dunlea, Lecturing Staff, Department of Computing

Ms Helen Fagan, Lecturing Staff, Department of Computing

Mr Karl Grabe, Lecturing Staff, Department of Computing

Ms Noreen Gubbins, Lecturing Staff, Department of Computing

Mr Seamus Lankford, Lecturing Staff, Department of Computing

Mr Denis Long, Lecturing Staff, Department of Computing

Mr Colin Manning, Lecturing Staff, Department of Computing

Mr Robert McArdle, Lecturing Staff, Department of Computing
Ms Cliona McGuane, Lecturing Staff, Department of Computing
Mr John O'Brien, Lecturing Staff, Department of Computing
Ms Aisling O'Driscoll, Lecturing Staff, Department of Computing
Ms Linda O'Sullivan, Lecturing Staff, Department of Computing
Mr Paul Rothwell, Lecturing Staff, Department of Computing
Mr Vincent Ryan, Lecturing Staff, Department of Computing
Mr Jonathan Sherwin, Lecturing Staff, Department of Computing
Mr Pat McCarthy, Senior Technical Officer, Faculty of Engineering & Science
Mr Pat Ahern, Lecturing Staff, Department of Mathematics
Dr Declan O'Connor, Lecturing Staff, Department of Mathematics

PROGRAMMES REVIEWED

Major Awards

Higher Certificate in Science in Computing (*embedded award*)
BSc in Computing
BSc (Hons) in Software Development
BSc (Hons) in Software Development & Computer Networking
BSc (Hons) in Web Development
Higher Certificate in Science in IT Support (*embedded award*)
BSc in IT Support
BSc (Hons) in IT Management
Postgraduate Diploma in Networking & Security
MSc in Networking & Security
MSc in Software Development

Special Purpose Awards

Certificates in Comp TIA+ (3x L6 SPAs)
Cert. in Novell Cert. Linux Professional (L6 SPA)
Cert. in Computer Networking (L6 SPA)
Cert. in Web Development Fundamentals (L6 SPA)

Cert. in IT Fundamentals & Training (L6 SPA)

Cert. in IT System Maintenance (L6 SPA)

CISCO Certificates (1 x L6 SPA, 1x L7 SPA)

GENERAL PANEL FINDINGS

Commendation: The Panel commends the academic staff of the Department of Computing under the leadership of Jim O'Dwyer. They have a clear commitment to providing high quality industry relevant programmes to their students and have an equally clear commitment to their students. The Department has also recently established clear leadership in the provision of programmes in cloud computing. While these newly validated programmes in cloud computing are not directly part of this review, the Panel acknowledges this significant development.

The Panel welcomed the open and frank nature of the exchanges between the Panel members and the academic staff of the Department. Questions raised and ideas explored by the Panel were responded to in a collegiate and constructive manner. This gave the Panel confidence that the members of the Department operate in a reflective manner and will seek to evaluate and respond to the issues raised in the review.

The Panel noted a serious commitment to placement in the Department's programmes; a feature which is recognised as adding significant value to the graduates of Computing programmes in CIT.

Over the two days of the panel meetings many themes were raised and discussed. Some of these pertain to all programmes and some were specific to a particular programme.

In general the Panel is happy to recommend the continuation of the programmes proposed by the Department.

SPECIFIC FINDINGS

There are a number of issues which, if addressed, the Panel feels could add value to all of the Department's programmes. Accordingly the Panel makes the following recommendations:

- **Common Year 1**

The Panel welcomes the introduction of a common first year. The case for this was well presented. A common first year provides fundamentals to all students and allows students to discover their strengths and then switch to a specialisation which matches this strength. It also explicitly underpins the notion of a common standard across specialisations. A common first year can also be a more efficient way to deliver programmes.

Every change, however, brings with it downstream consequences. The Panel were concerned that students on all programmes, even those with non-software development focus, would have to take additional modules of software development. This is a 'threshold' subject and may result in high failure rates. Department staff defended the proposal strongly and well. Clearly the advantage of giving students their choice of specialisation at the end of year 1 is a strong one. Further the Department has thought carefully about the delivery of Software in year 1 and has specific learning and support strategies in place, particularly in the area of programming. The Panel was convinced that this proposal can impact positively in allowing first year students to understand their strengths and thereafter select the programme at which they are most likely to thrive.

The issue of different entry standards between Level 6/7 programmes and Level 8 programmes, in the context of a common first year, was discussed. Level 6/7 programmes have a lower minimum entry standard. A regulation is proposed where students from a Level 7 will have to meet a higher criterion at the end of year one than a simple pass to move from a Level 7 programme to a level 8 programme.

It appears illogical that a student (starting on Level 7) who has achieved a higher mark in the common first year might not be allowed to progress into the second year of a programme compared to another candidate (starting on Level 8) with a lower mark. It is true that the minimum admissions criteria are different between the two programmes but the reality has

been that the candidates admitted to the Computing programmes at either level 7 or 8 have been scoring well above the minimum admission criteria regardless of programme.

The Panel recognises that these are complex issues and it cannot make conditions that impinge on general CIT regulations. It also understands that a Working Group has been set up through Academic Council to look at such anomalies, particularly between level 7 and level 8 programmes.

Recommendation: The Panel recommends that the issues described above be included as part of the Academic Council's Working Group deliberations.

Of critical importance is that policies are not seen as inconsistent in their treatment of students as determined by the results at the end of year 1.

- **HCI Module Year 1**

The Panel supports the Department proposal for the module *Introduction to HCI* (SOFT6002, Fundamental) to take the place of the 'Free Choice' module in Semester 2. HCI is an important element of core computing knowledge.

Recommendation: The Panel recommends that this module be a part of the first year computing programme.

- **Essential Maths Year 1**

The case for this module was clearly and cogently argued. The concern of the Panel is that such students that do not achieve the passing grade be afforded the opportunity to achieve a passing grade in a resit or similar opportunity.

- **Assessment Schedules**

There is a need to explicitly address the prospective CA load facing each cohort.

Recommendation: The Panel recommends that programme boards adopt an approach whereby the prospective assessment schedule for each programme and year is considered at

the beginning of the semester by the relevant group of lecturers to check that the overall schedule is not too onerous and that specific weeks/days are not overloaded with CAs.

With the advent of modularisation it is clear that shared modules impose constraints on the system. However every effort should be made to provide a reasonable schedule to students at the beginning of each semester.

- **Transferable Skills**

The specific issue of written communication was raised. The Panel notes that the development of transferable skills is critical in the formation of a graduate.

Recommendation: The Panel recommends that programme boards ensure that learners on all programme have an opportunity to develop transferable skills. The best way to ensure this might be to review the types of assessments (formative and summative) provided on particular programmes to ensure that these assessments require the learners to develop and express their transferable skills as they progress through the programme.

- **Content of Programmes**

Commendation: The Panel recognises the excellent effort that has been made to rationalise content under the modularisation process and to adopt a common first year.

Commendation: The Panel also recognises the reputation CIT Computing has established for itself in the area of Cloud Computing.

Recommendation: Consideration should be given to a process which would update the indicative content of the Computing, Software Development and Software Development and Networking Programmes. It is recognised that, while learning outcomes are critical, many employers will look at indicative content in a syllabus. Currently, the syllabi, while having good content, need to be refreshed to reflect the current expectations in the software and IT infrastructure markets. Specifically the Department might consider the inclusion of material, laboratories and exercises relating to

- Optimisation and scalability as a part of software development

- Agile software development/ test driven development
- Cloud Infrastructure

- **Retention**

The Panel recognises that there are many actions being undertaken with a view to improving retention.

Recommendation: Given the current emphasis on retention in the third level sector in general, and computing in particular, the Panel recommends that the Department considers its approach to, development and management of the various retention initiatives being discussed.

- **Graduate Employment**

The Panel recognises that many of the Department's past graduates have successfully obtained employment as a result of the computing knowledge gained at CIT. However, the report on graduate employment was short on detail. The Department should consider how it might track its graduate employment rates formally to provide evidence of the success of its programmes.

- **MSc Programmes**

There is an apparent anomaly between the expected learner effort for the MSc Software Development Programme and the MSc Networking and Security Programme. The software programme requires 60 credits effort while the Networking Programme requires 90 credits worth of effort. While this is wholly in keeping with credit structure available under both the NFQ and the EFQ, consideration should be given to this to ensure that there is consistency of approach in defining student effort and the credit being awarded for that effort.

- **MSc in Software Development**

The software programme has served CIT graduates very well for a significant period of time. However, there have been significant recent developments in software and software process.

Recommendation: The Panel recommends that the indicative content be reviewed at the earliest opportunity. The Department should ensure that input from industry, particularly from the main software houses in Ireland, forms a significant part of this review.

While knowledge of software is a prerequisite to access the programme, it appears from some of the lower level topics on the indicative syllabi that there is a significant variation in the software knowledge expected from participants.

There may be an opportunity by increasing the volume of the award to cater for the variety of input standard and also to add newer material to the programme by increasing the overall volume of the award. This also would allow an exit award of a postgraduate diploma in Software.

- **MSc in Networking & Security**

The structure and volume of this award was seen as appropriate to the award level and the Panel felt that it could serve as a model for the Software MSc. The programme board should consider broadening the tight Cisco focus of the programme to allow for treatment of and reflection on other aspects of modern network technologies.

DEPARTMENT OF BIOLOGICAL SCIENCES

Block 2 and Block 5

Membership of Biological Sciences Sub-Panel

Dr Michael Hall (Sub-Panel Chair)

Prof John Breen

Mr Garrett Dee

Ms Eva Juhl

Programme Staff Present

Dr Hugh McGlynn, Head of School of Science & Informatics

Dr Brendan O'Connell, Head of Department of Biological Sciences

Mr Eddie Fitzgerald, Lecturing Staff, Department of Biological Sciences
Dr Deirdre Gilroy, Lecturing Staff, Department of Biological Sciences
Ms Anna-Maria Keaveney, Lecturing Staff, Department of Biological Sciences
Ms Margaret Lane, Lecturing Staff, Department of Biological Sciences
Mr Germain Levieille, Lecturing Staff, Department of Biological Sciences
Ms Anna Murphy, Lecturing Staff, Department of Biological Sciences
Dr Jim O'Mahony, Lecturing Staff, Department of Biological Sciences
Dr Helen O'Shea, Lecturing Staff, Department of Biological Sciences
Dr Rosemarie Rea, Lecturing Staff, Department of Biological Sciences
Dr Roy Sleator, Lecturing Staff, Department of Biological Sciences
Dr Heloise Tarrant, Lecturing Staff, Department of Biological Sciences
Ms Anne Ward, Lecturing Staff, Department of Biological Sciences
Dr Aidan O'Connor, Lecturing Staff, Dept. of Applied Physics & Instrumentation
Dr Leo Goold, Lecturing Staff, Department of Chemistry
Dr Rosamund Hourihane, Lecturing Staff, Department of Chemistry
Dr Sean Lacey, Lecturing Staff, Department of Mathematics
Ms Hannah Lordan, Lecturing Staff, Department of Mathematics

PROGRAMMES REVIEWED

Major Awards

HC in Science in Applied Biosciences (Embedded Award) (Block 2)

BSc in Applied Biosciences & Biotechnology (Block 2)

BSc in Food & Health Science (Block 2)

BSc (Hons) in Pharmaceutical Biotechnology (Block 2)

BSc (Hons) in Nutrition & Health Science (Block 2)

BSc (Hons) in Herbal Science (Block 5)

GENERAL PANEL FINDINGS

All sessions commenced with an overview of the overall learning objectives which the Programme Coordinator was invited to present by the Sub-Panel Chair.

Following on, a number of topics were discussed with programme staff for each of the programmes. These included CAO applications data and trends, definitions and relative importance of percentage values and absolute data with respect to retention and progression, modular structure, differentiated modules and progression barriers between the Level 7 and Level 8 degrees, electives and free choice modules, core (mandatory) modules (titles and content), changes to modules and justification thereof, module descriptors (information and consistency of detail), removal of the project and ramifications for research-related programme outcomes.

A similarity index for the programmes reviewed on Day 1 was tabled by the Department of Biological Sciences at the outset of the session and was discussed.

GENERAL PANEL FINDINGS ON MODULES (BLOCKS 2, 5 AND 8)

The Panel noted that modules as presented had been reviewed for all programmes, but that time would not allow exhaustive consideration of each module in the panel session.

Overall Recommendation: The Panel confirmed that it agreed with module content as proposed for the Biological Sciences programmes under review overall. The Panel therefore recommends approval of the module descriptors as proposed, pending successful module moderation and the implementation of any requirements, with due regard given also to implementation of recommendations.

Recommendation: The Panel asks, however, that the module descriptors should be reviewed by the programme board, or equivalent forum, to ensure that there is consistency of information and quantum of detail in all module descriptors across each programme and the suite of programmes as a whole.

- **All Modules** – Overview of Modules Associated With a Programme

Recommendation: A 1-page summary listing of modules should be produced for all programmes. These could be coloured differently to allow for different module status viz. shared modules, mandatory modules, elective modules etc. The Panel recommends that the

CIT Course Builder database should be investigated to determine whether it can be programmed to automatically output this information.

- **All Modules** – Module Titles

The Panel noted that some module titles are very generic, for example: Botany, Pharmacology, Ethnobotany, Organic Chemistry, Physical Chemistry. Many would consider these to be entire disciplines, and it seems unrealistic they can be covered in a single module.

Recommendation: The Panel recommends that overly generic module titles should be avoided, and that care should be taken to adequately represent the scope of the module in the title, e.g. Introductory Botany etc. A revision of module titles to ensure this is encouraged.

- **All Modules** – Contact Hours

The Panel noted that there was a standardisation of contact hours for modules to 4 hours per week for most modules across the Biological Sciences programmes.

- **All Modules** – Indicative Content

Recommendation: The Panel notes that there is significant variation in the extent and detail of the Indicative Content. This needs to be standardised.

- **All Modules** – Resources Lists

Recommendation: Resources listings in modules need to be updated. One module had the following recommended resources: 1995, 1990, 1995, 2002 and one Supplementary 2010. It is suggested that Recommended Resources should have one or two items for all modules and Supplementary Resources perhaps 3 or 4.

- **All Modules** – Standardisation of Recommended Resources

Recommendation: Each of the disciplines might consider adopting a single standard text book which would be included as a Recommended Resource in a number of modules. This

could be done for each of the subject areas. It was noted that Campbell and Mader were both being included for Biology. It is unlikely that students would have both of these textbooks.

SPECIFIC FINDINGS RELATING TO BIOSCIENCES PROGRAMMES

a) Programmes Structures

- **Inclusion of Placement**

The Panel notes that all programmes included in Block 2 include a placement module in Semester 6.

- **Differentiation of Parallel Ordinary / Honours Programme Streams**

The Panel notes that each of the two parallel Ordinary and Honours degree streams, the BSc in Food & Health Science / BSc (Hons) in Nutrition & Health Science and the BSc in Applied Biosciences & Bioprocessing / BSc (Hons) in Pharmaceutical Biotechnology respectively, are differentiated both in title and through inclusion of the requisite number of differentiated modules in the programme schedules, as required by CIT policy on parallel programmes.

- **Planned Separation of Biological Sciences from the Science Common Entry**

The Panel was informed that the vast majority of entrants (up to 95%) under the Science Common Entry went into Biological Sciences, with 20 progressing into Semester 2 of a BioSciences programme in the current academic year.

This caused both operational difficulties and, due to the cut-off date for resource estimation, resourcing issues for the Department.

The points for the Science Common Entry had dropped, leading to a disjoint between the entry points of students entering Biological Sciences programmes in Semester 1 and SCE students. This affected the progression of SCE learners both into and later within their programme of choice. In addition, as SCE students were undecided on their area of study, many were also not properly prepared for the course of study they eventually chose.

The original intention behind the Science Common Entry had predominantly been to raise the intake into the Physical Sciences, not the Life Sciences. It was therefore planned that the Life Sciences would be separated out from the Science Common Entry in future. As fewer second-level students took Chemistry or Physics for their Leaving Certificate subjects, those who chose a Common Entry programme for the Physical Sciences would already be more decided going in, so the School did not feel that the issues currently facing Biological Sciences would just be shifted to the Physical Sciences. In addition, in a narrower Common Entry programme students could be induced into the Physical Sciences in a more targeted fashion.

The Panel notes that no changes to the Science Common Entry are envisaged for the coming year 2012/13, as the entry has already been advertised through the CAO.

Further discussion of the Science Common Entry as it arose in the context of the panel sessions with the host department of the Common Entry, the Department of Chemistry, is contained in pages 39 – 40 of this report.

- **Special Module Regulations on Component Pass Barriers**

Prompted by a proposal from the Department of Chemistry for special module regulations, the necessity for special module regulations on attendance and separate pass barriers for specific module components was discussed.

The Panel heard that special regulations setting component pass barriers had been common in Science before modularisation.

The Head of School stated that the Heads of the Science Departments had discussed the matter and formed the view that where there was a separation between lab and theory, a separate pass barrier of 30% should operate for each component. Module sharing with other departments was a factor which militated against the re-introduction of special component regulations, however, since such regulations were included in the module descriptor rather than the programme schedule, and therefore applied to all cohorts to which the module was delivered.

In further discussion of the issue with the Panel, Department staff expressed differing views on the benefits of allocating visibly distinct component marks, including ‘labs’ marks.

The Panel notes that the Department of Biological Sciences did not propose to introduce component pass barriers into BioSciences modules.

The findings and recommendations of the Panel made in connection with a proposal for introduction of separate component pass barriers by the Department of Chemistry are contained on pages 33 – 35 of this report.

- **Special Module Regulations on Attendance**

Department staff voiced the opinion that the special attendance regulations were generally not needed. It was felt that attendance regulations might actually increase attrition. Student who failed as a result of poor attendance generally returned to repeat the stage and improved their performance. An attendance requirement had been mooted during the previous Programmatic Review, but had not been introduced. Equally, no mark-up was given for attendance.

1. BSC IN FOOD & HEALTH SCIENCE

a) Demand and Performance

- **Demand at Entry and Learner Performance**

The Panel was informed that CAO points and subsequent learner performance on the programme were broadly correlated. However, the Department had always made a point of ensuring students at the lower end of the spectrum were ‘minded’ to enable them to gain the best education possible, in keeping with the CIT mission.

The Panel also heard that the BSc in Food & Health Science was very attractive to overseas students. There were approximately three times as many overseas students as Irish students on the programme.

- **Employment Opportunities**

The programme coordinator expressed the view that any distinctions in the employment chances for graduates of the Ordinary and Honours degrees respectively depended on the type of employer. Rather than being established at award level, these were decided in interview.

In the view of the Department, graduates of the modularised ‘version’ of the programme were somewhat more focused than previous graduates. On the minus side, they found it more difficult to participate in societies and extracurricular activities and had less time to “stop and smell the roses”.

- **Progression to Further Study**

The great majority of learners on the programme over the past 5 years progressed to further study within CIT, originally into the add-on BSc (Hons) in Applied Biosciences and since 2009 into Stage 4 of the BSc (Hons) in Nutrition & Health Science.

The Panel asked whether the programme could be seen as an entry route to the Honours programme for learners on lower points. The Head of School pointed out the divergent requirements on the Level 7 and 8 cohorts posed by the three or more differentiated modules and the 50% progression barrier for Level 7 graduates.

The Panel discussed the necessity of these distinctions with the Department, and queried in particular whether the learning outcomes of the Third Year of the ab-initio Honours degree were essentially the same as the Programme Outcomes of the Ordinary degree. Department staff outlined the CIT policy on parallel Level 7 and 8 programmes, as a consequence of which the distinctions had come about.

- **Retention Measures**

When asked about the success of the retention measures outlined on p. 2-3 of the programme submission, the Head of School stated that the retention figures in the Biological Sciences were particularly healthy. Department staff outlined the ‘buddy’ mentoring system in place

between 1st Year students and students from later stages of the programme, which utilised both email and social media. Provision of good life supports was also a part of the ‘culture of the programme’.

b) Programme Structure

• Placement v Project

The Panel was informed that a project initially included in the programme had been removed to allow for a longer placement, which gave students a competitive advantage in the workplace. Most learners progressed into Year 4 of the Honours degree, where they have the opportunity to demonstrate the practical integration of their learning.

Finding: The Panel noted this, but cautioned that weaker students who did not progress to further study would require particular support in the practical elements of their programme.

• Module *Human Nutrition* (Draft, Fundamental – Sem. 3 E) – Status

The Panel was informed that this module dealt more with food production and the food industry than human health. The Panel queried whether a module on *Human Nutrition* should be mandatory in a Food & Health Science programme. The Panel was informed that the Free Choice requirement had prevented departments from making all relevant material mandatory. However, Department staff had found that an attractive cognate elective such as this competed well against Free Choice. Without actually limiting choice, it captured the ‘hearts and minds’ of students, which allowed them to build up a more uniform qualification. This was noted by the Panel. The observations made hereunder equally apply to the Honours degree programme.

• Frequency of Assessment Events

The Panel heard there was a general consensus among academic staff that students were over-assessed in the currently approved programme. Department staff stated that the number of assessments had been reduced in the revised module descriptors. The Panel queried how the Department negotiated the need for a regular assessment schedule in practical skills building,

including lab report writing, where weekly assessments might be considered justifiable. The Panel heard that the School had recently invested in MCQ software and had increased the percentage of MCQ use. With some TLU training, Department staff were able to use this system to provide instantaneous feedback to students. Staff also felt that two practical skills assessments in Weeks 6 and 12 should be sufficient. Finally, the School was investigating how one assessment could satisfy the practical components of a number of modules.

- **Programme Outcomes**

The appropriateness of the term ‘manufacturing technology’ in the context of PO 1 was discussed. The Panel heard that the programme team did not want to limit graduates to food production / processing, as some graduates had chosen other fields.

The Panel noted that the material relating to PO 2 was fairly well hidden in the programme, and might not be immediately obvious to prospective employers.

With regard to PO 4, Department staff considered that the outcome was still appropriate to the programme despite the removal of the project. The learning outcomes which fed into this were linked to product creation and production and were now distributed across the programme. It was acknowledged however that PO 4 was weakly mapped against the programme, and that this might merit review.

Recommendation: The mapping of the module learning outcomes against Programme Outcome 4 across the programme should be reviewed and strengthened as indicated.

- **Placement of *Introduction to Food Entrepreneurship* (Draft, Intermediate – Sem. 6 M)**

The placement of this module within the programme was queried. It was noted that this would be delivered as a ‘short fat module’ prior to the commencement of placement. The module was intended to support students in deciding if food entrepreneurship was for them, and thus functioned as a preparatory module both for placement and entry into the food business on graduation.

2. BSC (HONS) IN NUTRITION & HEALTH SCIENCE

a) Demand and Performance

- **Learner Performance**

Discussion on examination performance revealed that while some years had relatively poor progression due to poor examination performance, there were reasons in those years why this was the case. For the first intake into the programme, the programme could not be advertised via the main CAO list, and points on entry had been set quite low. There might also not have been enough information about the programme available to the first cohort prior to entry. The Panel heard that the entry points had since been raised.

- **Graduate Performance**

Only one cohort had graduated from the programme to date. The Panel heard that many of the graduates had chosen to leave the country without attempting to gain employment nationally. These were recorded as ‘unsuccessful in employment’ and thus contributed to the notable percentage of graduates in this category. As data were only available for one cohort, it was noted that the numbers might not be telling.

b) Programme Structure

- **Programme Title**

The Panel heard that the distinction in titles between the two Level 7 and 8 programmes (the terms ‘Nutrition’ and ‘Food’) was intentional, as a result of the CIT policy on parallel programmes. The programme focused not so much on consumption, but on the production of food and other bio-products, and on how these met dietary and health requirements.

- **Programme Schedules – Strategic Positioning of Modules**

There was concern in the Panel with regard to strategic positioning of modules core to the programme which were included in the list of electives.

On the one hand, the Panel considered that students might be put at a disadvantage if the respective elective was not chosen. This concerned particularly *Human Nutrition* (Draft, Fundamental) in Semester 3, but was also true for *Biocomputing* (Draft, Fundamental) in Semester 4 and the subsequent *Bioinformatics* (BIOT8006, Advance) elective in Semester 8.

For *Human Nutrition*, the Panel heard that this elective was in fact chosen by all students, as commensurate with the spirit of the Honours programme. The Panel pointed out that the converse effect of this was that students did not consider the other options, effectively eliminating elective choice.

- **Removal of *Science of Food & Healthcare* (BIOL8008, Advanced – Sem. 8 M in existing approved programme)**

The Panel queried the removal of *Science of Food & Healthcare* from the award stage of the proposed Nutrition degree and heard that the content had been distributed among other modules delivered earlier in the programme. Department staff felt that the content could be delivered more efficiently that way and would also benefit graduates of the Ordinary degree. The Panel noted this.

- **Mathematics / Statistics**

The Panel noted that, as with the Ordinary degree, there was no Mathematics module after Semester 1. However, the 4th Year Project in the Panel's view required students to have statistical support. The Panel pointed out that such statistical support was available as core modules in other programmes, but not on this programme.

3. BSC IN APPLIED BIOSCIENCES & BIOTECHNOLOGY

a) Demand and Employment Opportunities

- **Progression to Further Study and Employment Opportunities**

The Panel was informed that, though the majority of graduates progressed to the Honours degree for further study, employment opportunities definitely existed for graduates of the

Ordinary degree. This could be seen for instance in the fact that students on industrial placement often received offers to stay on with the company.

b) Programme Structure

- **Terminal Examinations Requirement**

The Panel advised the programme team that the maximum of (4) terminal examinations allowed by the CIT modular model was exceeded in Semester 5 of the programme. It pointed out that the issue might have arisen when the new *Chromatographic techniques* module was added to the programme. The Department confirmed that the assessment breakdown for this module would be changed to 100% Continuous Assessment.

Requirement: The Department is asked to revise the assessment breakdown for *Chromatographic techniques* as proposed, to ensure Semester 5 aligns with the CIT requirement on the maximum number of terminal examinations.

- **Modules *Chromatographic techniques* (Draft, Advanced – Sem. 5 M) and *Applied Separation Technology* (BIOM8001, Advanced – Sem. 5 M in Food/Nutrition degrees)**

The Panel queried the extent of overlap between *Chromatographic techniques* and *Applied Separation Technology* included in the Food/Nutrition stream. Department staff outlined that the principles were the same, but that the content and industrial application were significantly different. The Panel observed that it could see merit of including both modules in BSc in Applied Biosciences & Biotechnology from an employer point of view, and discussed with the proposers where relevant material would be included in other modules. Department staff confirmed that reverse osmosis and filtration as well as downstream/upstream processing were covered elsewhere in the programme.

4. BSC (HONS) IN PHARMACEUTICAL BIOTECHNOLOGY

a) Demand and Employment Opportunities

- **Progression**

As this was a new programme introduced since the last Programmatic Review, the data on progression was incomplete. The Panel queried poor progression. The Panel heard that some of the Science Common Entry students in 2010, where low CAO points had been specified in the first year of the intake had poor academic capability and did not progress to 2nd Year. The Panel noted that where such issues arose, the School was able to point out that there were valid reasons for this.

- **Examination Statistics**

The Programme Coordinator offered that graduate examination statistics were high for 2010 and 2011 and this was noted by the Panel. The Panel also noted that for academic year 2010 / 2011 there was no 3rd year because it was a new programme.

b) Programme Structure

- **New Modules**

The Panel noted that any new modules proposed for the revised BSc (Hons) in Pharmaceutical Biotechnology in lieu of other modules were approved modules owned by one of the Science Departments.

- **GMP / GLP**

The Panel queried the inclusion of content on GMP / GLP, and heard that this was largely incorporated into 3rd and 4th Year modules. Department staff felt that employers from an industry background would be able to pick up on this from the module titles as proposed.

Recommendation: The Panel noted this. It suggests however that inclusion of GMP and GLP in the title(s) of the appropriate module(s) might still be valuable in advance of

placement, so that an employer would immediately see these elements when looking at the range of subject areas covered.

- **Assessment Schedule**

Recommendation: A schedule of assessments for each programme stage should be provided.

c) Modules

- **All Modules – Notes**

Finding: The Panel pointed out that a unified approach was needed to notes provided by lecturers.

- **Module Project – Implementation Phase (INTR8015, Adv. – Sem. 8 M)**

The Panel discussed Final Year projects with the staff present. It was noted that individual project tasks and deliverables are actually spread across the year. The Panel heard that a limited number of projects were based in industry.

5. BSC (HONS) IN HERBAL SCIENCE

a) Demand for the Programme

Department staff provided an outline of the programme, commenting that the Programmatic Review had been an opportunity to re-focus the programme content to address the changes observed in the career paths of graduates. In response to career path analysis and student feedback, more analytical modules had been incorporated into the programme, with a view to broadening the student base. The programme remained clinically based, but the revisions would ensure the programme catered to a wider range of opportunities. The revised programme had now been given three ‘arms’, or thematic streams, in Chemistry, Agronomics, and the Science of Herbs.

Commendation: The Panel commends the clear visual presentation of the proposed thematic streams in the programme documentation and considers this very helpful, not least by

assisting learners in charting their progression through the programme and making appropriate elective choices.

On its inception the programme attracted mostly mature applicants. The Panel was informed that the nature of the entrants had since changed. Many mature students who were part of the original 2006 intake had left due to economic circumstances, leading to high attrition. From the 2008 intake onwards, the programme began to attract more direct entrants through the CAO, which had helped to stabilise numbers. The points tariff for the programme had also risen, in line with trends for the other Biological Sciences programmes.

Department staff did not feel that the inclusion of more analytical content would lead to a loss of market niche. The programme still prepared students for postgraduate research, as well as employment, in clinical areas. The Panel noted the inclusion of modules on anatomy, physiology and pharmacology. The Panel was of the view that these subject areas needed to be clearly evident in the curriculum to support the student's employability and to allow progression into research. The Panel pointed out, however, that there was no module with pathophysiology in its title, although some modules appeared to cover this subject area.

Recommendation: The Panel recommends that the inclusion of pathophysiology in the programme content should be made visible in by inclusion of the area in the title of the appropriate module(s).

The possible use of an alternative broader programme title was discussed, but it was acknowledged that this might not attract the intended cohort of students.

While there was inclusion of natural products and nutrition in the programme, the Panel considered there was not as much on cosmetics, topical applications of herbs and topics relevant to cream and lotions. There were also a limited number of modules with chemistry in the title. It might appear to an employer that the programme was concerned mainly with food and natural herbs. The academic team pointed out that chemistry was included, but it was tailored towards requirements of BioSciences students.

The Panel noted that application statistics had remained stable. With regard to the presentation of the data provided, the Panel reiterated its observation from the previous panel

session that provision of actual numbers – rather than percentages alone – would have been useful.

The Panel noted that the data on graduate destinations provided in the programme documentation were interesting and reflected the distinctive strength of the programme in offering a broad skills set and varied career opportunities.

b) Programme Resources

The Panel was informed that the e-library been introduced in Cork Institute of Technology and that the Department of Biological Sciences was one of the pilot departments which had invested heavily in this facility. A suite of electronic books was now accessible through the Blackboard Learning System. From September onwards, up to 70,000 e-titles would be accessible to CIT students through the CIT Library. The Panel noted and commended this.

c) Programme Structure

- **Introduction of Elective Modules**

Commendation: The Panel commends the introduction of elective choice to Semesters 2 – 7 of the BSc (Hons) in Herbal Science.

- **Standardisation of Contact Hours**

The Panel noted that there was a standardisation of contact hours for modules to 4 hours per week for the majority of modules.

- **Mathematics / Statistics**

The Panel also noted there was no Mathematics module after Semester 1. The Head of Department pointed out that Semester 7 included a new *Planning, Bio-innovation & Statistics* draft module intended to support research. The Panel cautioned that if students were to fail the statistics component of this module they would have difficulty in the analysis of their

project data. Department staff stated that learners would also be able to take an elective *Biocomputing* module in Semester 2.

- **Free Choice**

While cognate electives are now included in Semesters 2 – 7, the Panel noted that the Free Choice module has been omitted from the schedules.

Requirement: The Department is asked to include Free Choice in the semester schedules for Semesters 2 – 7 of the BSc (Hons) in Herbal Science.

- **Terminal Exam Requirement**

In addition, Semester 5 as proposed exceeded the Institute maximum of 4 terminal examinations per semester.

Requirement: The Panel asks that the Department review the Semester 5 draft modules with a view to identifying a module or modules which could be 100% continuously assessment. Alternatively, a derogation request would need to be made to the Academic Council of the Institute via the Registrar's Office.

d) **Modules**

- **Module Titles**

It was noted that the topics of pest and weed control were covered in the programme (e.g. in *Greenhouses, Soils & Media*, BIOL6011, Fundamental, Sem. 2 M), but that it was not obvious from the module titles where these topics were included.

Recommendation: Module titles should reflect the inclusion of pest and weed control as appropriate.

- **Module: *Principles of Nutrition* (BIOL7021, Intermediate – Sem. 3 M)**

In the view of the Panel, this module exhibited significant similarities with the Fundamental-level module *Fundamentals of Human Nutrition* used on other Biological Sciences programmes. The Panel queried whether there was a necessity to retain both modules. The programme team stated that they would investigate the issue.

Recommendation: The necessity to retain both *Principles of Nutrition* and *Fundamentals of Human Nutrition* should be investigated as appropriate.

- **Module: *Plant Propagation* (AGRI7004, Intermediate – Sem. 3 M)**

Recommendation: The Panel considers that the recommended 1975 textbook on this module is outdated and should be replaced with the new standard Irish text (Lamb, J.G.D., *Nursery Stock Manual* / Keith Lamb, James Kelly, Peter Bowbrick, Swanley: Grower, new edition 1995).

- **Modules: *Nutritional Analysis* (BIOL7018, Intermediate – Sem. 4 M) and *Bioanalytical Techniques* (BIOT7002, Intermediate – Sem. 4 M)**

The Panel noted that there might be overlap in practical elements of modules from a technique point of view. Department staff outlined that *Bioanalytical Techniques* was much broader. This was noted.

- **Module: *Applied Enzymology* (BIOL7001, Intermediate – Sem. 5 M)**

The Panel asked whether learners would understand the relevance of this module to herbal science. The programme team confirmed that enzymology was also picked up in other modules on materia medica.

- **Module: *Herbal Placement* (PLAC8001, Advanced – Sem. 6 M)**

Recommendation: The title of this module should be reviewed, as the Panel considers it misleading.

- **Module: *Regulatory Affairs and Compliance* (BIOT8002, Adv. – Sem. 7 M)**

The Panel was informed that whereas the old programme had required a module specific to Herbal Science, it had been possible to include the generic module descriptor into the revised programme. In the new programme, more quality work was done overall, and layers of information were being put into place over time. The programme team considered it advantageous that the learners would be part of a larger class group in this module.

Finding: The Panel noted this, but considers that it would still be important to allow learners to see the importance of this module within their own Herbal Science context.

- **Removal of Entrepreneurship module / Retention of *Product & Process Development* (BIOL8005, Advanced – Sem. 8 M) in Semester 8**

The Panel heard that with the introduction of new regulations on the production of herbal products and the outlined changes in graduate destinations, the module *Innovation & Entrepreneurship* included in the old programme had been removed from the proposed new programme. By contrast, *Product & Process Development* applied to the context of large multinationals as much as it did to small companies.

DEPARTMENT OF CHEMISTRY

Block 8

Membership of Chemistry Sub-Panel

Dr Michael Hall (Sub-Panel Chair)

Prof John Breen

Mr Garrett Dee

Ms Eva Juhl

Programme Staff Present

Dr John Wood, Head of Department of Chemistry

Dr Brendan Doyle, Lecturing Staff, Department of Chemistry

Dr Ambrose Furey, Lecturing Staff, Department of Chemistry

Dr Leo Goold, Lecturing Staff, Department of Chemistry

Dr Rosamund Hourihane, Lecturing Staff, Department of Chemistry

Dr Mary Lehane, Lecturing Staff, Department of Chemistry

Dr Mary McCarthy, Lecturing Staff, Department of Chemistry

Dr Maryanne Sheahan, Lecturing Staff, Department of Chemistry

Ms Carmel Devaney, Lecturing Staff, Dep't of Applied Physics & Instrumentation

Dr Helen O'Shea, Lecturing Staff, Department of Biological Sciences

Ms Frances Wood, Lecturing Staff, Department of Mathematics

PROGRAMMES REVIEWED

Major Awards

Higher Certificate in Chemistry (Embedded Award)

BSc in Analytical and Pharmaceutical Chemistry (APC)

BSc (Hons) in Analytical Chemistry with Quality Assurance (ACQA) – (ab-initio)

BSc Common Entry, Levels 7 and 8

Special Purpose Awards

Certificate in Quality Assurance, 10 credits, Level 6

Certificate in Quality Management (Part I), 10 credits, Level 7 (Professional Diploma)

Certificate in Quality Management (Part II), 10 credits, Level 7 (Professional Diploma)

GENERAL PANEL FINDINGS

The Panel indicated that the general module-related recommendations and findings presented in the context of the programmes of the Department of Biological Sciences also apply to the programmes of the Department of Chemistry.

- **Separate Pass Barriers for Practical and Theoretical Module Elements**

The Panel considered a proposal from the Department of Chemistry that special regulations be inserted for all modules with a practical laboratory element, to the effect that students must

achieve a minimum of 30% in both the practical continuous assessment and the theory assessment/ examination elements to pass the module.

The Department stated that the proposal was based on the observation that some learners abused the modular system by working towards a high enough level of performance in a particular module component to ensure the module could be passed overall, while neglecting the other element altogether.

The Panel notes this concern. It also notes that the *CIT Regulations for Modules and Programmes*, allow “exceptional special module regulations requiring a candidate to reach a minimum standard in an assessment task or tasks”, once these have been approved by Academic Council following the module quality assurance process.

In the view of the Panel, a clear separation between practical and theory-related learning outcomes in each module concerned would be a necessary prerequisite for the introduction of separate pass standards for each element. Where this separation is not given in the learning outcomes, separate pass barriers for practical and theory elements in its view cannot be satisfactorily introduced.

As the ability to perform safely is crucial in a highly regulated environment, the Panel considers that CIT therefore has an obligation to ensure that all successful graduates have achieved this ability on leaving the Institute. Therefore, any special regulation with regard to a separate pass standard for practical module elements should reflect this Health & Safety aspect. A minimum attendance requirement of e.g. 80% during labs, as was in place in other Institutes, could also be considered.

Though other Science Departments had decided not to go down the route of special pass barriers for practical and theory elements, the Panel considered that amongst others due to extensive module sharing, the introduction of such a regulation into modules of the Department of Chemistry would by necessity affect all Science Departments, and might also affect other Schools.

Recommendation: The Panel therefore asks the School of Science & Informatics to formulate a common School position on the introduction of separate pass barriers for

practical and theory-related module elements and to submit this to the CIT Academic Council for approval.

Recommendation: Should the CIT Academic Council allow the proposed revision of the relevant module descriptors to introduce separate pass barriers for particular assessment tasks, an appropriate separation between theoretical and practical elements in the module learning outcomes should be ensured.

PANEL FINDINGS ON SPECIFIC PROGRAMMES

1. BSC IN ANALYTICAL AND PHARMACEUTICAL CHEMISTRY (APC)

a) Demand for the Programme

The Panel heard that the Ordinary Bachelor was still a recruitment grade for laboratory workers. Most graduates entering employment were employed locally or in the region. Some of the former graduates of this programme had achieved middle management positions and were now responsible for recruitment. The majority of Level 7 graduates continued in education to complete the Honours degree, with some returning for further study after a period in the workplace in order to progress into management.

Recommendation: The Panel recommends that the Department should acknowledge its additional role in progressing Level 7 graduates who return for a ‘top-up’ Honours degree after a period in the workplace.

The Panel also noted that a significant number of students entered 3rd Year came from a French partner college, the École Technique Supérieure de Chimie de l’Ouest (ETSCO) in Angers, where they had previously completed a 2-year Brevet Technicien Supérieur (BTS) programme. In addition, the programme also usually attracted a number of ERASMUS students from French and Spanish partner institutions. Graduates who had come into the programme from the Angers BTS usually continued to further study in French institutions. These graduates were included in the progression statistics for the APC.

Commendation: The Panel commends the Department on its pro-active approach to maintaining class sizes and ensuring programme viability through partnership arrangements. In addition, Irish students benefited from the introduction of an international perspective.

b) Programme Structure

- **Free Choice**

The Panel noted that Free Choice was now incorporated into the semester schedules for APC. The Department confirmed that this had not previously included in the programme. One reason for inclusion at this point was that the Department of Biological Sciences was no longer able to provide appropriate cognate modules. The Department of Chemistry, along with the other Science Departments for programmes where there was Free Choice, would however direct learners into relevant cognate modules over unrelated modules. This was for example the case for Fundamental Physics in Semester 3, which had been made elective to allow for creation of a mandatory Biotechnology stream across all years in response to industry demand.

- **Physics**

When asked why the revised Chemistry programme included different Physics modules to the programmes of the Department of Biological Sciences, the Department noted that this reflected the re-introduction of material tailor-made to the needs of Chemistry as had been the case before modularisation. Chemistry in recent years had had to increasingly tailor its modules to the interests of BioSciences students, as many Science entrants had only had Biology in the Leaving Certificate, and Biosciences students constituted the largest Science cohort. However, the Department had found that the degree of commonality was not as great as it had been led to believe when modularisation commenced. For a number of reasons, therefore, the Department was returning to more tailored approach to programme design.

- **Programme Streams / Paths**

The Panel noted that a number of streaming options were present in the programme, but questioned if students would be in a position to identify the ‘bigger picture’ from the outset, so as to make the necessary elective choices. Department staff noted that they endeavoured to make this visible to students in their First Year induction. In addition, 10% of the module mark in the common CIT module went on development of a learning plan, i.e. the student’s planned progression through the programme. A visual overview was provided in the programme brochure. Department staff however acknowledged that there was a limited amount that First Year students could take in.

- **Placement v Project**

The Department confirmed that there was no formal Project included in the Ordinary degree. When Industrial Placement had been devised, it had been decided to include this in the final year of the BSc in preference over a project. The Project was conducted in the add-on Honours year instead, to which many graduates progressed in any case. Department staff still considers this sequencing of placement and project the more beneficial option. The Department stated it was only in the last two years that it had experienced difficulties in placing students. Students who could not be placed in industry were given a placement ‘in-house’ or assigned a project by research students. Placements and research projects in-house also took place in a regulated environment in which students were given a work plan and were expected to produce outputs to set deadlines.

- **Mathematics / Statistics**

The Panel members noted that CIT Chemistry students were doing more Mathematics than was the case in other institutions. The Panel heard that quality was a particularly strong aspect of the CIT programmes and required a solid core statistical facility. Department staff expressed surprise at the Panel’s observation, as they considered the programme included less Mathematics than pre-modularisation. The Department confirmed that statistics was used across a variety of modules as well as in the Project in the add-on Honours degree.

- **Quality Assurance**

The Panel noted that despite the emphasis on quality assurance, there was only one mandatory QA module included in the Ordinary BSc programme, though the Department owned a lot of QA-related modules overall. Department staff pointed out that there was also an elective Quality & Validation module in Year 2.

Recommendation: As the Panel considered experience of laboratory work in a highly regulated environment a necessity, the Panel wishes to encourage the Department to investigate ways of including more quality assurance material in the BSc in Analytical and Pharmaceutical Chemistry.

- **Semester Schedules**

Requirement: The Elective Regulations should be revised to ensure there is clarity on possible choices for stages in which the same basket of elective modules is offered in both semesters.

c) **Modules**

- **All Modules** – Rationale for Removal or Replacement

Finding: The Panel noted that the term ‘inappropriate’ as repeatedly used in programme documentation (p. 33 ff.) was not meaningful enough to in itself provide a sufficient rationale for the removal or replacement of a module. However, on consideration of the proposed semester schedules and the Book of Modules the Panel was happy to support the module substitutions proposed.

2. BSC (HONOURS) IN ANALYTICAL CHEMISTRY WITH QUALITY ASSURANCE (ACQA)

a) **Demand for the Programme**

The Panel heard that entry numbers for Honours Bachelor programme were low. No specific findings were made by the Panel in this context. The Panel did however make findings

related to this point in the context of the Ordinary degree programme (see above) and the Science Common Entry (see below).

b) Programme Structure

- **Semester Schedules**

Requirement: The Elective Regulations should be revised to ensure there is clarity on possible choices for stages in which the same basket of elective modules is offered in both semesters.

c) Modules

The Panel reviewed the modules differentiated from those in the Ordinary BSc programme in Stages 1 – 3 of the programme as well as the Year 4 modules.

No specific findings or recommendations over and beyond those included in respect of the Ordinary BSc programme were made by the Panel.

3. SCIENCE COMMON ENTRY (LEVEL 7 AND LEVEL 8)

The Panel was informed that for operational reasons within the School of Science, the BSc and BSc (Hons) Common Entry are managed by the Department of Chemistry on behalf of the School.

The approved Common Entry provided a general entry platform for all undergraduate programmes of the Departments of Applied Physics & Instrumentation, Biological Sciences and Chemistry.

The Panel was informed that Semester 1 was common across the board for both the Level 7 and the Level 8 Science Common Entry year. In Semester 2, students are inducted into their chosen programme specialisation through their choice of group elective. Differentiation in terms of programme level takes place through delivery of one differentiated module per group.

An analysis of progression data had indicated that the present Common Entry had been moderately successful at best in attracting students to the Physical Sciences. Instead, the great majority of entrants progressed to programmes of the Department of Biological Sciences, which were already oversubscribed. This had also been detrimental to learner performance, both in the Common Entry year and following progression into the specialised programmes.

Therefore, the Department of Chemistry was now proposing that future intakes into the Common Entry should be restricted to the Chemistry and Physics options only. This would not be possible for September 2012 due to the necessary changes to the CIT's literature and marketing, but should be in place for September 2013. The present Common Entry would be kept on the CAO list in the interim.

The Department expected that the removal of the Biological Sciences option would lead to a drop in applications for the Common Entry. However, the Common Entry as presently configured was not working as originally envisaged. Biological Sciences did not derive benefits from the additional entry route, as students who progressed from the Common Entry did not tend to perform as strongly as might be wished for. By contrast, Chemistry and Applied Physics students might derive benefit from a more tailored approach.

The Panel heard that it was intended to rename the revised programme "BSc / BSc (Honours) Common Entry for the Physical Sciences".

Recommendation: The Panel endorses the proposed changes to the Common Entry, including the re-titling to "BSc / BSc (Honours) Common Entry for the Physical Sciences", as outlined above. It recommends that any marketing efforts and programme literature should make it clear that the existing Common Entry was being replaced by a programme of a different nature.

4. SPECIAL PURPOSE AWARDS

- **Certificate in Quality Management Part 1 and 2 (EIQA Professional Diplomas)**

No changes were proposed to these Excellence Ireland Quality Association (EIQA) professional certification programmes.

Recommendation: The Panel advised the proposers to keep in mind the necessary distinction between the professional certification (the EIQA Diploma) and the academic award to which it is aligned, which has to be titled ‘Certificate’ where it is given.

- **Certificate in Quality Assurance**

The Panel was informed that the content of this professional development programme had been extensively revised after CIT had become the awarding body under delegated authority.

Recommendation: The Panel requested the Department to ensure use of the correct award title on the parchment for this Special Purpose Award (‘Certificate’, rather than ‘CIT Certificate’).

DEPARTMENT OF APPLIED PHYSICS & INSTRUMENTATION

Blocks 3 and 6

Membership of Applied Physics & Instrumentation Sub-Panel

Dr Dermot Douglas (Chairman)

Dr Norman McMillian,

Mr Eamonn Burke,

Mr Don Crowley

Programme Staff Present

Dr Liam McDonnell, Head of Department of Applied Physics & Instrumentation

Ms Eleanor Baldwin, Lecturing Staff, Dept. of Applied Physics & Instrumentation

Mr James Barrett, Lecturing Staff, Dept. of Applied Physics & Instrumentation

Mr Eamonn Butler, Lecturing Staff, Dept. of Applied Physics & Instrumentation

Ms Carmel Devaney, Lecturing Staff, Dept. of Applied Physics & Instrumentation

Dr Brendan Doyle, Lecturing Staff, Dept. of Applied Physics & Instrumentation

Dr Anthony Grant, Lecturing Staff, Dept. of Applied Physics & Instrumentation

Dr Guillaume Huyet, Lecturing Staff, Dept. of Applied Physics & Instrumentation

Mr Harvey Makin, Lecturing Staff, Dept. of Applied Physics & Instrumentation
Ms Eva Norris, Lecturing Staff, Dept. of Applied Physics & Instrumentation
Mr Conor O'Farrell, Lecturing Staff, Dept. of Applied Physics & Instrumentation
Mr Richard Peard, Lecturing Staff, Dept. of Applied Physics & Instrumentation
Mr Denis Polley, Lecturing Staff, Dept. of Applied Physics & Instrumentation
Dr Josh Reynolds, Lecturing Staff, Dept. of Applied Physics & Instrumentation
Dr Martin Woods, Lecturing Staff, Dept. of Applied Physics & Instrumentation
Dr Michael Brennan, Lecturing Staff, Department of Mathematics
Dr Helen O'Shea, Lecturing Staff, Department of Biological Sciences

PROGRAMMES REVIEWED

Major Awards

Higher Certificate in Science in Applied Physics & Instrumentation (*embedded award*)
BSc in Applied Physics & Instrumentation
BSc (Hons) in Applied Physics & Instrumentation
BSc (Hons) in Instrument Engineering
Higher Certificate in Science in Industrial Measurement & Control
BSc (Hons) in Environmental Science & Sustainable Technology

Special Purpose Awards

Certificate in Process Control & Automation (L6 SPA)
Certificate in Advanced Industrial Automation (L8 SPA)

1. Career Path and Workplace Profile

The Department clearly outlined the programme outcomes to typical career paths in the workplace. However, the Panel was concerned that while the programmes are held in high esteem by employers, the titles of some awards did not give a clear picture of the knowledge and competency of graduates.

The Panel was satisfied that changes made to the programmes were appropriate and necessary. Industrial members of the Panel endorsed the high quality of graduates from the programmes and the esteem in which they are held by industry.

2. Student Performance

The Department provided the Panel with sufficient statistical data on the ‘life cycle’ of students over the past five years to allow the Panel make judgement on longitudinal trends and retention and completion of students.

3. Graduate Performance

Graduate data was available to the Panel. The quality of the graduates and their relevance to the workforce was discussed.

4. Programme Changes / Proposed Programme

The Panel received full documentation on the changes to programmes that were being proposed and the rationale for these changes was fully discussed. The Panel, subject to implementation of the requirements below, and with due regard to the recommendations made, recommend acceptance of the revised programmes.

GENERAL PANEL FINDINGS

The Chairman noted that since the previous Programmatic Review CIT had changed the nature of its programme structure from year long subjects to shorter modules provided over two semesters. The Chairman invited the Department to outline the challenges, issues, learning achieved with regard to the change from year long provision.

The main issues identified were:

- The changes had helped in terms of efficiencies and new programme development. However, faculty believed that challenges remain in terms of reduced contact hours and shallow learning. The drop in the level of numeracy and literacy with new applicants is also a challenge.

- The validity of the current application of a modular delivery system was questioned on a range of fronts and there was consensus in the Department its introduction has impacted the delivery of the Applied Physics & Instrumentation programmes. There is an acceptance that this is the system within which the Department will have to work and it is appreciated that embedding the approach and devising more appropriate methods through improvements in the modular approach is a long term issue.
- The structure appeared detrimental to students' grades and was felt to have a significant negative effect on retention. The decision that all 1st semester modules would be 100% continuously assessed was designed to address this problem.
- Teaching staff were concerned about how difficult it is for students to face into assessments without some time to absorb the material. Staff indicated that there was no time between the end of semester and the beginning of examinations.
- Placement in third year was very successful.
- Graduates work mostly in the Instrumentation and Control area and the changes in modules had been introduced to better prepare graduates for this market.
- Staff felt that with a 13 week semester finishing on a Friday and examinations beginning the following Monday there was no time available to students to absorb and integrate material across the range of modules delivered in the semester.

Recommendation: The Panel was of the view that a module could be introduced that required the students to integrate their knowledge across a range of modules. This, it was felt, would alleviate the 'soak time' issue and the examination could be an 'Open-book Examination' as in German "Diplom-Ingenieur" programmes. Use of the project module as another way of 'connecting the dots' is sensible but requires good project selection to ensure it achieves this aim. The Panel recommended that the Department explore these options.

Finding: The Applied Physics & Instrumentation management and staff are of the opinion that the extended January break is damaging, particularly for First Year Programmes. The Department believes that this needs to be reviewed. The Panel support the recommendation

but feels that decisions need to be based on evidence rather than beliefs. Such a change has wide ranging implications for the semesterised model being applied by the Institute, and cannot be a unilateral. Data needs to be gathered and discussed at Academic Council before any change can be introduced.

Finding: Despite the perceived shortcomings of the modularized/semesterised system amongst a significant number of staff in the Department, the standard of output remains high and employers have complimented the excellent quality of both placement students and graduates. However, within the Department there remains a strong feeling that they are producing good graduates despite, rather than as a result of, the current delivery system.

PROGRAMMES AND MODULES

The Panel, in general, were happy with the modules comprising the Programmes under review. The approach to the meeting, therefore, concentrated on exploring the rationale behind the changes proposed since the last Programmatic Review.

- **Documentation**

- Not all Panel material was received by the Panel ahead of time. In order to give changes appropriate attention, it would have been better to have received all documentation beforehand.
- Numbering/Pagination of documentation was very confusing, as each programme descriptor and Book of Modules is paginated separately by the Course Builder database.

- **General Issues**

- The courses all have well defined learning outcomes. The testing of these outcomes is done through examination, continuous assessment, projects, team exercises etc. The Panel noted that there are additional, well-known, methods of testing various skills (practical and theory) that should be included in future documentation and strongly

supported the clear linkage of assessment methodologies with individual learning outcomes.

- The differentiation in the testing of many of the practical outcomes was explained as distinguishing between ‘Problems’ and ‘Tasks’. This was seen by the Panel as a useful distinction but insufficient to meet the proposal made above.

Recommendation: The Panel recommends that the range of assessment tools be broadened and modernized and that clear links be established in programme literature between particular assessment tools and specific learning outcomes.

SPECIFIC ISSUES

1. APPLIED PHYSICS & INSTRUMENTATION PROGRAMMES

- The Panel is of the view that naming of the final awards / positioning of the award should be reviewed on an ongoing basis. Target industries/employers need to be made aware of the intended /potential role of graduates from these programmes.
- The extensive network of graduates from the course is useful in publicising the course / finding placements & employment. However, undue reliance should not be placed on this source as the course needs to be sufficiently regarded in the marketplace to stand up to the competition.
- Titles of programmes and awards need to achieve a balance in terms of attracting students onto the course and in convincing employers that the course is ‘fit for purpose’.
- Given the potential employment areas for many graduates – the Department should consider making the Chemical/Electrical systems introductory module in Semester 5 of the Level 7 programme mandatory rather than elective. As there are already five mandatory modules in this semester, the knock-on effect for the semester structure has to be taken into account.

Recommendation: The Panel recommends that the Department considers making more use of the process control / measurement aspects of the course in the title.

Recommendation: The Applied Physics & Instrumentation staff should take the opportunity provided by the planned industrial survey to revalidate the position of Applied Physics & Instrumentation Courses in their target industries. This should include a review of the course naming / marketing in the target employer population, while at the same time being cognisant of the need to attract students.

Recommendation: Programme descriptors should be changed in the software (Banner) so that these are flexible enough to enable the academic staff to properly describe the programme.

Recommendation: The Panel approves the Programme Outcomes for the Applied Physics & Instrumentation programmes.

Requirement: The Panel approves the Programme Outcomes but requires that the Level 8 learning outcomes – particularly PO 6, 7 and 8 on page 2 of 5 in the programme document, be expanded so as to clearly distinguish them from Level 7 outcomes.

The Department proposed that students who exit from CR360 (the BSc (Hons) in Instrument Engineering) at year 2 be allowed to receive the award of HC in Science in Applied Physics & Instrumentation.

Recommendation: The Panel supports this proposal.

The Department proposed that the 5 credit research phase in semester 7 and the 10 credit project phase in semester 8 of the BSc (Hons) in Applied Physics & Instrumentation be combined into a single 15 credit module, undertaken over 3 days each week.

Recommendation: The Panel approves this proposal.

2. CERTIFICATE IN PROCESS CONTROL & AUTOMATION (LEVEL 6 SPA) / CERTIFICATE IN ADVANCED INDUSTRIAL AUTOMATION (LEVEL 8 SPA)

Discussion on the Certificate in Process Control & Automation (Level 6) and Certificate in Advanced Industrial Automation (Level 7) centred on whether these should be defined as Special Purpose awards or Minor Awards as they had derived from the BSc (Ordinary) and BSc (Honours) programmes. The Department felt that these were better described as Special Purpose Awards.

Recommendation: The Panel recommends approval as Special Purpose Awards.

Requirement: While Specific Learning Outcomes are available for the modules that comprise these awards, Programme Learning outcomes are to be completed for each of them.

Recommendation: An assessment grid detailing the schedule of assessments should be given to students to avoid overburdening them and to allow them properly plan their work.

Recommendation: Text books and recommended reading should be reviewed on each module to ensure that material is up-to-date.

3. ENVIRONMENTAL SCIENCE AND SUSTAINABLE TECHNOLOGY PROGRAMME

- This is a new programme (started in 2010) that has yet to have its first graduates.
- The Essential Mathematics module is a pragmatic change to enhance the mathematics competence of students and is welcomed by the Panel.
- The addition of Statistical Calculations in Semester 2 is endorsed. The plan to further adapt the mathematics programme to suit the needs of this course (“bespoke mathematics”) is welcomed.
- The JRC data for Ireland should be used by the Environmental course as this is specific for geographic locations in the whole of the country and takes into account local features such as shading from hills and buildings - for example on the performance of Photovoltaics.

- Adjustment of the Project Management programs is welcomed as it reflects a better fit to the planned outcomes for these students.
- As the first cohort progress through the programme (particularly at time of work placement and graduation), the faculty should consider revisiting the companies surveyed, when setting up the course, to update their views on the course content/employment prospects etc.
- The development of an exit qualification to allow for early exit/recognition of work completed is under consideration in the Department and the Panel supports this approach.

Observation: The Applied Physics & Instrumentation programmes are strategically important for industry in the Munster Region and beyond. These courses provide essential manpower for industry. The advance of the programmes in CIT is seen by the Panel to be of national importance. Senior management in CIT need to be aware of the importance of these Applied Physics & Instrumentation programmes and the necessity to communicate this to the HEA, Government and other relevant agencies.

GENERAL RECOMMENDATIONS

Recommendation: The Panel recommends that all the programmes of the Department of Applied Physics & Instrumentation presented, as listed at the outset of this section (p. 41), be approved for a period of five years or until the next Programmatic Review, whichever is soonest, subject to implementation of the Requirements above, and with due regard to the Recommendations made.

Recommendation: The Panel approves the Department's plans in relation to exit awards and progression from Level 7 to Level 8.

Recommendation: Programme Outcomes need to be completed in respect of each programme for which an award (whether Major, Minor, Special Purpose or Embedded/Exit) is given.

DEPARTMENT OF MATHEMATICS

Block 9

Membership of Mathematics Sub-Panel

Dr Dermot Douglas (Chairman),

Prof D. MacHale,

Ms Karina Kelleher,

Mr Don Crowley

Departmental Staff Present

Dr Hugh McGlynn, Head of School of Science

Dr David Flannery, Head of Department of Mathematics

Dr Declan O'Connor, Lecturing Staff, Department of Mathematics

Dr Noreen Quinn, Lecturing Staff, Department of Mathematics

Dr Michael Brennan, Lecturing Staff, Department of Mathematics

Mr Pat Ahern, Lecturing Staff, Department of Mathematics.

- **Career Path and Workplace Profile**

Mathematics is a service department that provides input into the major and special purpose programmes offered in the school. Career and workplace issues are addressed, therefore, in the sections dealing with programmes in computing, biology, chemistry, applied physics & instrumentation.

- **Student Performance**

The level of mathematical knowledge and skill available to a significant number of new entrants continues to be a concern. The request for the provision of a fundamental module which would address this issue emanated from the Heads of the Departments of Applied Physics & Instrumentation, Biology, Chemistry and Computing. Accordingly, staff in the Department of Mathematics designed a new module - MATH6000: Essential Mathematical Skills.

The purpose of this module is to ensure that the student acquires a high proficiency across the spectrum of numerical calculations encountered in science and engineering and a thorough competence in algebraic manipulation. It is hoped that the student will acquire these essential competencies through classroom exposition and self-solving of practical mathematical problems which arise in contexts familiar to them from the study of their first-year related subjects.

Certain ‘strict’ design criteria were agreed upon viz. all the questions in each test to be mandatory.; the pass mark to be set at 60% overall; the class size not to exceed 40; the module to be continuously and vigorously assessed; students who fail must repeat the module in its entirety. These are fundamental changes and need to be agreed at the highest level.

Recommendation: The criteria for passing and repeating the Essential Mathematical Skills module to be discussed and agreed by Academic Council.

- **Proposed Changes**

The Department provided a fully documented rationale for the changes to modules and for the new modules it is proposing to replace those that are no longer fit for purpose.

Recommendation: The Panel recommends acceptance of these changes with the caveat that the changes in the passing level in MATH6000 – Essential Mathematical Skills require the agreement of the Academic Council.

- **Range and Integration of Mathematics Modules**

The Head of Department briefed the Panel on the Department’s 25 mathematics modules and their integration across the SoSI Programmes.

Recommendation: It was felt by the Panel that it would have been better if these modules had been looked at first, as they were components of each of the other programmes being reviewed. Thus when a whole programme is being reviewed, the Panel at that time would know that the mathematics components have been approved or need modification. As it is, a Panel could recommend a programme in its entirety, whilst a sub-panel could subsequently

refuse to endorse the mathematics component. This would compromise the decisions taken by a panel. An appropriate procedure for the conduct of similar reviews in the future should be put in place.

GENERAL FINDINGS IN RELATION TO MATHEMATICS

Twenty-five (25) modules were presented, of which 5 are new or revised modules.

- The Panel was impressed by the MATH6000 module. It was felt that it would be improved if it included a descriptive geometry element. Setting the pass mark at 60% was endorsed but it was pointed out that this is a departure from the Institute's policy regarding the pass mark and any modification would have to be agreed by the Academic Council.
- The Panel felt that the mathematics modules for Science were good. However, it is important that in the Biological Sciences the content reflects "biological" mathematics.
- MATH7023 is due to replace MATH6004. The Panel felt, however, that 0.50 hours per week for lab may not be enough and advised the staff to review this.
- The Panel consider MATH7002 to be an excellent module.
- The Department raised the issue of a name change for itself. Whilst noting that this is a Strategic Development issue, solely within the remit of CIT, the Panel support and approve the proposed title change.
- The Panel was strongly supportive of the Department's plans to develop its own niche programmes leading to major awards on the National Framework of Qualifications.

Recommendation: The Panel recommends that all the modules presented, and listed below, be approved for a period of five years or until the next Programmatic Review, whichever is soonest.

MATH6000	MATH6003
MATH7001	MATH7002
MATH6002	BIOM8009
MATH8009	MATH7010
STAT9003	MATH6029
MATH6019	STAT8003
PHYS8019	MATH8001
STAT6006	MATH7023
MATH6037	MATH6028
MATH6013	STAT6000
MATH6038	MATH7024
MATH6004	MATH8006
MATH8005	

APPENDIX 1: TIMETABLE OF PHASE 2 (PROGRAMME REVIEW), 19 – 20 JANUARY 2012

Programmatic Review of the CIT School of Science & Informatics – Phase 2 Timetable

DAY 1 – THURSDAY 19 JANUARY 2012				
Venue:	Time:	Event:		
<i>Conference Room</i>	8:30 AM	Panel convenes		
	9 AM – 10:30 AM	Private Panel briefing session		
<i>AC Landing</i>	10:30 AM – 11 AM	Tea & coffee / meet & greet Senior Staff		
<i>AC Chamber</i>	11 AM – 12:30 PM	Discussion w/ Institute Management & School Senior Staff on outstanding Phase 1 issues		
	12:30 PM – 12:45 PM	Brief private Panel session		
<i>Bistro</i>	12:45 PM – 1:45 PM	Panel Lunch		
		Programme Block 1	Programme Block 2	Programme Block 3
		<i>Conference Room</i>	<i>AC Chamber</i>	<i>Library Conference Room</i>
	2 PM – 3:30 PM / 3:45 PM – 5 PM (inc. tea break)	Computing I <i>Programme Panel:</i> Joan Condell, Barry Feeney, Sean Kelly, Daithi Fallon	Biological Sciences I <i>Programme Panel:</i> John Breen, Garrett Dee, Michael Hall, Francis McHugh, Eva Juhl	Applied Physics & Instrum. I <i>Programme Panel:</i> Eamonn Burke, Dermot Douglas, Norman McMillan, Brendan O'Regan, Don Crowley
<i>AC Chamber</i>	5 PM – 5:30 PM	Brief private Panel session (full Panel)		
<i>Fenn's Quay</i>	7 PM	Panel Dinner (<i>Fenn's Quay Restaurant, 5 Sheares Street, Cork</i>)		

Venues: Conference Room / AC Landing / AC Chamber: Administration Building, Bishopstown Campus, 2nd floor
 Library Conference Room: Library Building, Bishopstown Campus, 1st floor balcony

DAY 2 – FRIDAY 20 JANUARY 2012

Venue:	Time:	Event:			
See Blocks 4 – 6	8:30 AM	Programme Panels reconvene			
	9 AM – 10:30 AM	<table border="0"> <tr> <td style="vertical-align: top;"> Programme Block 4 Conference Room Computing II Programme Panel: Joan Condell, Barry Feeney, Sean Kelly, Daithi Fallon </td> <td style="vertical-align: top;"> Programme Block 5 AC Chamber Biological Sciences II Programme Panel: John Breen, Garrett Dee, Michael Hall, Francis McHugh, Eva Juhl </td> <td style="vertical-align: top;"> Programme Block 6 Student Centre Mtg Room 2 Applied Physics & Instrum. II Programme Panel: Eamonn Burke, Dermot Douglas, Norman McMillan, Brendan O'Regan, Don Crowley </td> </tr> </table>	Programme Block 4 Conference Room Computing II Programme Panel: Joan Condell, Barry Feeney, Sean Kelly, Daithi Fallon	Programme Block 5 AC Chamber Biological Sciences II Programme Panel: John Breen, Garrett Dee, Michael Hall, Francis McHugh, Eva Juhl	Programme Block 6 Student Centre Mtg Room 2 Applied Physics & Instrum. II Programme Panel: Eamonn Burke, Dermot Douglas, Norman McMillan, Brendan O'Regan, Don Crowley
Programme Block 4 Conference Room Computing II Programme Panel: Joan Condell, Barry Feeney, Sean Kelly, Daithi Fallon	Programme Block 5 AC Chamber Biological Sciences II Programme Panel: John Breen, Garrett Dee, Michael Hall, Francis McHugh, Eva Juhl	Programme Block 6 Student Centre Mtg Room 2 Applied Physics & Instrum. II Programme Panel: Eamonn Burke, Dermot Douglas, Norman McMillan, Brendan O'Regan, Don Crowley			
	10:30 AM – 11 AM	Brief private Panel session (Programme Panels)			
	11 AM – 11:30 AM	Tea & coffee			
	11:30 AM – 1 PM	<table border="0"> <tr> <td style="vertical-align: top;"> Programme Block 7 Conference Room Computing III Programme Panel: Joan Condell, Barry Feeney, Sean Kelly, Daithi Fallon </td> <td style="vertical-align: top;"> Programme Block 8 AC Chamber Chemistry / Sc. Common Entry Programme Panel: John Breen, Garrett Dee, Michael Hall, Francis McHugh, Eva Juhl </td> <td style="vertical-align: top;"> Block 9: Mathematics Modules Student Centre Mtg Room 2 Mathematics Modules Panel: Dermot Douglas, Karina Kelleher, Des McHale, Don Crowley </td> </tr> </table>	Programme Block 7 Conference Room Computing III Programme Panel: Joan Condell, Barry Feeney, Sean Kelly, Daithi Fallon	Programme Block 8 AC Chamber Chemistry / Sc. Common Entry Programme Panel: John Breen, Garrett Dee, Michael Hall, Francis McHugh, Eva Juhl	Block 9: Mathematics Modules Student Centre Mtg Room 2 Mathematics Modules Panel: Dermot Douglas, Karina Kelleher, Des McHale, Don Crowley
Programme Block 7 Conference Room Computing III Programme Panel: Joan Condell, Barry Feeney, Sean Kelly, Daithi Fallon	Programme Block 8 AC Chamber Chemistry / Sc. Common Entry Programme Panel: John Breen, Garrett Dee, Michael Hall, Francis McHugh, Eva Juhl	Block 9: Mathematics Modules Student Centre Mtg Room 2 Mathematics Modules Panel: Dermot Douglas, Karina Kelleher, Des McHale, Don Crowley			
Bistro	1 PM – 2 PM	Panel lunch (full Panel)			
AC Chamber	2 PM – 3:30 PM	Closing meeting (full Panel)			
AC Chamber	3:30 PM – 4 PM	Feedback to Senior Staff			

Venues: Conference Room / AC Landing / AC Chamber: Administration Building, Bishopstown Campus, 2nd floor
 Student Centre Meeting Room 2: Student Centre, Bishopstown Campus, 1st floor

APPENDIX 2: SCHOOL OF SCIENCE & INFORMATICS, REVISED PHASE 1 SUBMISSION – 23 NOV. 2011 (separate document)

APPENDIX 3: SCHOOL OF SCIENCE & INFORMATICS, REVIEW OF STUDENT PROGRESSION – 10 JANUARY 2012 (separate document)