# Institute of Technology Sligo

## School of Science

## School Planning and Programme Revalidation

## Report

## Wednesday 24th/Friday 26th April 2013

# Contents of Report

# Part 1

## Executive Summary

In accordance with Chapter 5 of the Quality Assurance Procedures of the Institute, a School is required to produce a 5 year plan. The objectives of this plan are to:

a) optimise the resources of the School for the purposes of delivering the highest standard and quality of education and to meet the School strategic objectives;

b) specify how the School will respond to the Institute's Strategic Plan;

c) make proposals for changes in direction and focus of the School;

d) identify key performance indicators for the School and specify how these will be measured;

e) map the proposed actions to the strategic objectives;

f) update the procedures for monitoring.

Following from this plan, the School is also required to undergo a detailed self-evaluation and review of the content of modules and programmes must be carried out. This is to ensure that the School/Department updates its programmes so that they remain relevant to students and to employers. The School of Science undertook such a review in the academic year 2012/13 and an external panel of experts visited the school in April to evaluate the new programmes. The Panel evaluated the proposals of the School against the following objectives:

(a) Proposed improvements to programmes based on a formal feedback and evaluation process;

(b) Incorporation of feedback from staff, student and employers into the revised programmes

(c) Ensuring that programmes remain relevant to learners needs, including academic and labour market needs;

(d) Ensuring that learning modes are compatible with academic standards, coupled with the life style of learners;

(e) Achievement of enhanced integration between all aspects of learning, teaching and research incorporating any new pedagogical thinking, where appropriate.

A visit of the external Panel of assessors took place from Wednesday, to Friday, 24th -26th of April, 2013. The Panel met with the President, School Management Team, Programme Chairs and the full complement of academic staff. They also met with students and external stakeholders.

A draft report was circulated to the Panel members and corrections and feedback was sought. The School were also issued with the draft report to confirm factual accuracy. The final report was signed by the Chairperson and is due to be brought to the Planning and Coordination Committee of the Academic Council in May 2013. Once the Findings are accepted by the Academic Council, they will be implemented by the School. The achievement of these will be audited by the Chairperson within 6 months of completion of the process.

## Findings of the Panel

The Panel met with the President who outlined the basic features of the review process and emphasised the importance that the Institute places on these reviews. The Panel also had very detailed discussions with the Head of School, the Heads of the Departments and the Programme Chairpersons and staff as well as student representatives and industrial stakeholders. The Panel regretted that it had not had the opportunity to meet with non-Academic staff of the Institute.

The Panel recommends the revalidation of the Programmes that were presented to it for 5 years subject to the conditions and recommendations listed below. The Panel also recommended the adoption of the School 5 year Plan.

## Commendations

1. The Panel was encouraged by the energy and engagement of the Institute and also that of the staff and students of the School of Science.
2. The Panel noted the Institute's commitment to the development of the Connacht-Ulster Alliance initiative and its alignment with the national HE strategy and recognised the challenge that this presents.
3. The Panel acknowledged the objective of a Technological University and the intention to clearly differentiate this from other HE establishments.
4. The Panel was reassured that the School of Science is considered to be a key element in the CUA and the progress towards a Technological University
5. The Panel was impressed by the clarity of vision of the Plan of the School of Science and the clear demonstration that it is aligned with Institutional strategy.
6. The Panel acknowledged the success of the School in attracting and, most importantly, retaining high quality students, many of whom progress through the system to higher degrees. Coupled with this, the commitment to supporting relatively weak entry-level Level 6/7 students in 1st and 2nd year is acknowledged.
7. The commitment of the School to Online Distance Learning is commendable and is a clear strength in the changing financial and educational landscape. Similarly, the Panel was impressed by the range of innovative procedures that have been implemented for teaching, learning and assessment.
8. The Panel commends the School on being a founding member of the NIBRT consortium and acknowledges its leadership in the provision of industrially relevant training using online delivery at a national level.
9. The Panel commended the School for its strong proactive engagement with local industry and other stakeholders, a view clearly expressed by the External Stakeholders met by the Panel.
10. The Panel was very impressed by the clear commitment and enthusiasm of the staff for research. The research activities of the School are being increasingly recognised and rewarded by prestigious research grants and funding. The developing relationship with Australia was welcomed. The proposed strategic approach to the establishment and resourcing of Strategic Research Centres is also commended.
11. The Panel was reassured to hear that, in the present contracting employment environment, there have been a number of new recruits to the School and this has allowed for the refreshment of the range and level of expertise.
12. The School has demonstrated commendable flexibility and innovation in industrial placements for its students and it's record of repeat placement of students within local industry is acknowledged.
13. The "return to industry" model was regarded as an effective means of informing staff in their teaching and research.
14. The Panel commended the on-line maths tutorials, which were highly praised by all students. Teaching maths to Bioscience students and getting them to be enthusiastic is a real challenge and the staff involved concerned deserves credit for their efforts.
15. The commitment of the School and staff to improving EBL, lab-based PBL, group learning, and the development of key foundation skills is also entirely supportable.

16. The Panel applauded the staff for their obvious commitment to the welfare of the students and their excellent rapport with them. This was confirmed by meetings with the student representatives who praised the staff for their accessibility, approachability and their willingness to help them with their studies.
17. The Department of Environmental Science has secured a national and regional reputation of high standing in the area of environmental protection and management. Management of this reputation important and is a key to future success.
18. The Panel notes the growth of online programmes in the Department of Life Sciences and commends the range of postgraduate training programmes that respond directly to the needs of regional industry in the Pharma and Biopharma sectors, that are particularly targeted at SpringBoard and work-based learners.
19. The Panel further commends the significant growth in full time student numbers in the Department of Life Sciences, in the context of reducing resources.
20. The new Science building that is under construction is a very welcome development and will provide great opportunities to the School to become a regional centre for science education and research and industrial interaction.

## Conditions

1. The School should make corrections to all programme documentation, in particular the programme contact hours, credits and assessment breakdowns as presented in all programme schedules. All of the documentation should be diligently proof read and checked before the revalidated programmes are implemented. This should be completed in time for the timetabling of the 2013/14 academic year and should be audited by the Registrar.

## Recommendations

**NOTE:** The strategy in respect of all the recommendations should be developed by the end of October 2013 and should be implemented within two years.

### For the Institute

1. Ensure that members of staff are assisted to carry out research and compete effectively for external funding. Wherever possible, teaching duties should be arranged so as to enable staff to spend time on their research activities.
2. The School has set itself significant strategic KPI targets with regard to research activity (e.g. 20% p.a. growth in funding, 15% p.a. growth in publications). The Institute should review the time allocated to teaching for research-active staff to fully reflect the supervision and management of research. Improved time allocations, facilities, support services and training need to be provided to assist staff in the preparation of research grant applications.
3. Cross border activities should be encouraged and facilitated in regard to teaching and research.
4. The Institute should consider establishing peer- and student- nominated Presidential Awards for Teaching Excellence to recognise the achievements of gifted and committed teachers.
5. The Institute should examine and, if possible, rectify the problems caused by the BANNER system for the examination process, as identified by staff.
6. A strategy for ODL needs to be developed that recognises the challenges in balancing the provision of online delivered versus on-campus delivered programmes.
7. The costing model for ODL should be re-examined to be competitive with other providers.
8. The additional workloads associated with delivery to large class sizes should be recognised (e.g. assessments & pastoral care).

9. Following from strong feedback from students, the shortcomings in the availability of some computing services, including Wi-Fi, computing and printing, should, be addressed. The Panel regretted that they did not have the opportunity to meet with support staff to explore this issue further.
10. The management of the library should be reviewed to increase access to quiet study spaces, increase opening hours and to reduce the use of the facilities for social media and gaming,
11. While the Panel understand that the Support Staff in the School were involved in the review process, their absence as part of the Panel visit process was noted. A copy of the final report should be circulated to Support Staff for comment. In future, the Support Staff should be provided with an opportunity to meet with the visiting Panel.
12. The Institute should consider intensifying its graduate survey, at and immediately following graduation, to ensure high response rates and providing findings on a School/Department basis and possibly at programme level.
13. The Planning and Revalidation documentation was extensive and beyond the capability of Panel members to read through thoroughly. The Institute should review the process and give consideration to splitting up the task into smaller parts (e.g. conducting School Planning separately from Programme Revalidation and carrying out the latter one Department at a time), which is already facilitated in the academic quality assurance procedures.

## For the School

1. In future Reviews, the School should produce documentation that is much more reader-friendly and accessible. This should include clear and concise executive summaries with clear directions to the relevant supporting Tables and Charts. The number of outcome indicators listed for programmes should be consolidated and/or reduced where possible to provide a better and clear focus. The Panel had difficulty in navigating though the extensive data that were provided in a relatively raw and undigested format. A paperless review should be used if possible.
2. The School needs to develop effective strategies in the highly competitive field of recruiting more fee-paying international students.
3. Consideration should be given to the strategic direction of the School of Science nationally, maintaining its existing and active liaison with regional industry and potential employers but seeking potential new partners. In the development of the CUA, the School should develop a strategy in relation to the current programmes offered by the School and their strength (individually and collectively) identified.
4. The School should continue to pursue the development of cross-School and inter-School modules and programmes to enable access to a wider staff and expertise base. The process to enact this should take into account both academic and resource issues.
5. The Panel notes the use of innovative teaching and learning techniques, such as PBL, on some programmes. These examples of best practice should be shared with staff across the School.
6. The use of lab-based scaled experimental models, where appropriate, should be more widely applied.
7. The School should recognise the particular time commitments required by ODL and should consider greater time allocation for teachers for their out-of-hours contribution.
8. All final year projects should be laboratory-based or field based (where possible) and adequate time allowed for completion by students and for staff supervision.
9. The School should develop an assessment strategy, which should include the process of ensuring that over-assessment will not occur and also address the provision of timely, informative and constructive feedback to students.. Following feedback from the students,

particular attention should be given to the amount of assessment on modules where there is more than one lecturer.

10. Students should be informed of assessment specifications and submission deadlines in a timely manner and this should be coordinated across all modules on a programme to avoid a clash of deadlines.
11. PMDS should be fully implemented across the School at all levels with appropriate metrics to assess progress.
12. The School should develop a schedule of School meetings to ensure that staff are aware of upcoming meetings in a timely manner.
13. The purchase of basic laboratory equipment should occur prior to the purchase of more expensive research equipment, within the context of a School-wide equipment budget plan.
14. The successful provision of the Online maths module should be replicated for other topics and on other Programmes and Departments across the School.
15. With reference to Condition (1) above, the Panel notes that the contact hours for a number of programmes is proposed to increase over the existing approved programme (for example, Level 7 & 8 Forensic investigation; HC in Science; Level 7 Energy and Sustainability, Level 7 and 8 Environmental Science; Level 7, and BSc in Occupational Safety and Health). No substantive basis was provided for this increase in hours and, in the context of limited staff resources, the School management must retain or reduce contact hours or provide justification for any increase in hours. These changes must be agreed by the Registrar.
16. A Terms of Reference for the Programme Coordinator role should be developed and agreed between School Management and academic staff,
17. Time should be made available to staff to network effectively and validate course focus and content within the school and externally.
18. The School should consider embedding more information on how business works, understanding the role of the graduate within different companies and settings, and fostering of innovative and creative thinking in the solving of problems.

<u>For the Departments</u>

1. Following from the apparent success of the use of EBL in the Department of Environmental Science, this mode of delivery should be rolled out across other programmes in this Department and in the Department of Life Sciences..
2. The use of laboratory based team projects, as provided in year 4 of Biomedical Science should be considered for implementation in the Pharmaceutical Science programme.
3. Final year projects must be agreed with students in a timely manner, sufficient to provide adequate time for the project to be completed.
4. Inclusion of some elective modules in programme schedules should be considered to allow students have a more personalised learning experience. This might also include options to take module electives provided in other Departments or Schools from across the Institute.

## Programme Specific Recommendations

## Department of Environmental Science

## Recommendations

1. The design and use of lab scale projects similar to the very successful wastewater treatment plants should be developed for other areas of the programme where possible. Examples include a lab scale drinking water plant.
2. A project to find and identify 100 floral species should be developed.
3. The Department should organise a staff training day at which different lecturers from within the Department explain their teaching and learning procedures (e.g. OH&S problem solving methods).
4. The developments with the government decision to establish Irish Water should be monitored and opportunities such as collaborating with the single service provider (e.g. training, lab scale models) should be explored to the mutual benefit of the Department and Irish water.
5. The anticipated increased waste load from the agriculture sector, arising from Food Harvest 2020, provides an opportunity for the Department to work with the agri-food sector on minimising risks to the environment.
6. All opportunities for staff development through liaison with the EPA's Office of Environmental Enforcement should be pursued.
7. In relation to the School-wide recommendation on cross-School modules, the Department of Environmental Science might consider topics such as Food Science and Environment, the impact of new EU directives, the impact on environment of CAP reform, the focus of tourism on built and natural environment, fracking and its impacts ( for example, the BSc in Applied Archaeology would benefit from a link to programmes in Business, Tourism, Civil and Environmental Engineering).
8. For the BSc in Occupational Safety & Health:
    - The Panel notes that this degree is accredited by IOSH and recommended that the Department seek approval from the British Occupational Hygiene Society for its occupational hygiene modules. This would provide a fast-track route for graduates seeking Chartered Membership of the Faculty of Occupational Hygiene.
    - The Panel encourages an emphasis on eco-toxicology within the programme which would fit well with the expertise of the Department and also allow exploitation of opportunities originating from the European Chemicals Agency and regulatory state agencies within Ireland.
    - Links with the European Chemicals Agency to provide graduates with opportunities to seek regulatory science positions should be explored, for example, utilising the ECHA graduate scheme.
9. Explore the possibility of delivering the MSc in EHS Management by distance learning.

## Department of Life Science

## Recommendations

1. All final projects should have a laboratory based project with provision made for the necessary supervision.
2. The special purpose regulation requiring 75% attendance for practical modules should be applied consistently across all programmes.
3. Where modules have a practical element, a requirement exists for the student to achieve a minimum of 25% in the final exam. Consideration should be given to moving this to a 30% minimum especially where the theoretical concepts of one module form a basis/foundation for a subsequent module.

4. Arising from Panel meetings with External Stakeholders, and in particular industry employers, greater emphasis should be placed on the teaching and assessment of concepts of accuracy, precision, simple laboratory skills such as pipetting, dilutions, and practical applications of GMP/GLP. These are identified as areas of common weakness amongst graduates.
5. The BSc in Health Science & Physiology appears under resourced with regard to laboratory and sports facilities. The School should consider how this might be redressed in the new science block extension.

# Part 2 Introduction

A Programmatic Review is a process by which a School assesses its progress comprehensively over recent years and sets down proposals and plans for future developments. Under the Institute's QA procedures, this must take place at least every 5 years, if not more frequently. It is a very significant part of the quality assurance process as it enshrines the concept of continual improvement and development based on self-evaluation. A Programmatic Review is a self-monitoring quality-assurance activity carried out by the Academic Council of the Institute.

At IT Sligo, the process is divided into two parts: (a) School Planning, and (b) Programme Revalidation. The self-evaluation process includes the production of documentation by the School and formal evaluations by an external review Panel. The overall process is controlled by the Academic Council. The Head of School manages the process within the School and the Registrar has overall responsibility for managing the process on behalf of the Academic Council.

Typically, the process takes 12 months to complete and the output is a set of documents that report on the findings of the self-evaluation and specify the Plans of the School and the proposed changes to the various programmes (with supporting justification). At the discretion of the School, the documentation may be considered by an internal Panel (a 'dry-run'), and subsequently by a Panel of external experts established by the Registrar on behalf of the Academic Council. This latter Panel comprises representatives from other 3rd level providers, state agencies and from relevant employer sectors. This Panel is expected to read through the documentation and visit the Institute over a 2 day period. A report of the visit is issued together with a set of conditions and recommendations from the Panel. The Panel makes specific recommendations in regard to the continued validation of the proposed modified programmes. This report is sent to the Academic Council for approval and subsequently the list of approved programmes is sent to QQI for inclusion on the order of Council for the new period of validation.

The School of Science completed its last Programmatic review in 2008. This current submission incorporates the considerable changes that have occurred in the sector since then and presents the proposals of the School in its efforts to prepare itself for the years ahead.

A visit of the external Panel of assessors took place from Wednesday, to Friday, 24th-26th of April, 2013. The agenda for this meeting is contained in Appendix I. Membership of the Review Panel is listed in Appendix II. The list of documentation received by the Panel is contained in Appendix III.

## Part 3: Meetings of the Panel of Assessors

The Panel held 5 private meetings at which a number of points were raised for discussions with staff of the School. A summary of the comments is contained in Appendix IV.

## Part 4: Meeting with the President

The President welcomed the Chair and the Panel and outlined to the Panel the review process in the School and the stages involved. Under Delegated Authority it is a requirement to conduct such a review at least once every 5 years. The Institute takes this process seriously and welcomes the commitment and involvement of the Panel from academia, State Agencies and the world of work.

The President provided a brief presentation (see Appendix v). This addressed the mission and profile of the Institute, which focuses on supporting and driving the economic development of the region. Online delivery is an important strategy. Access and diversity is strongly promoted, as evidenced by the participation in the NIBRT consortium and the related suite of programmes delivered world-wide. The President described the emergence of the Connacht-Ulster Alliance, and explained how this aligns with the national HE strategy. A core objective is to ensure that the quality and quantum of Higher Education in the region meets the requirements of the region.

The Panel asked about the timeframe of the CUA initiative. The President responded that this is a changing target as we are awaiting the response of the Minister and legislation will need to be put in place to facilitate the establishment of Technological Universities. The president noted that the institute has already achieved the criteria in terms of industry engagement and the provision of programmes from level 6 to 10. The institute is currently challenged to achieve the Level 10 targets in terms of staff qualifications and number of post graduate researchers. There is a discussion to happen nationally to agree the research metric – not only in terms of research outputs but also the niche areas of research and having an industrial relevant portfolio of research. This should be achieved in 5 years. The President clarified that the Institute is not intending to be a traditional university. The objective is to be designated as a TU – which is very different from the traditional universities. The relevance to the industrial sectors is important. There is a requirement to have research specialisms in at least 3 areas and this will be achieved by having complimentary research activities across the Alliance. It is intended to raise the quantum and quality of HE provision in the region. Improving the quality of what the Institute is doing is building on where the Institute has come from. The focus has been and will remain on the applicability of teaching and research. The capability of the Institute to respond to the needs of industry by delivering the programmes to suit their needs has been demonstrated.

The Panel asked about cross border collaborations. The President referred to the Ballyhanna project and the long standing research project with QUB. There are a number of Innovation Vouchers with UU and with LYIT. There are a number of INTERREG projects with colleges of FE in Northern Ireland. The Institute has worked closely with South West College in the area of apprentice provision. The President noted that there is a Connacht-Ulster Regional Assembly (as a designated EU region) that aligns with the catchment covered by the CUA.

The Panel queried the recruitment of research active staff and how these resources can be freed up (from teaching duties) to do research. There is a danger of losing such people to other HEIs where there are greater supports for research. The President agreed with this and made reference to innovations such as reusable learning objectives in the delivery to avoid having to repeatedly deliver the same teaching. Research active staff have the facility to 'buy-out' their teaching time. There is a growing number of staff availing of this facility. There is a President's Bursary Award (with an annual budget in excess of €300K) for research students and a Capacity Building Fund. There are supports for research clusters and strategic research centres. There are travel bursaries for delivering conference papers. The Institute recruited 6 new staff into the School in 2012 (by rolling up a number of part time hours) and these recruits are research active.

The Panel asked how the Institute views the future of the School of Science within the CUA. The President explained that all of the programmes across the CUA have been mapped, to identify areas of overlap and also unique programmes. It is not anticipated that staff or students will need to physically relocate. It is possible to deliver the programmes online across a multi campus organisation. Initiatives such as the CSL delivery to students in Australia or MSL in Cork allow the Institute to build an expertise in specialist areas (such as biopharmaceutical science) that is of value to local industries. The provision of the first MOOC in Ireland is another example of the position of the Institute as a leader in the provision of online learning, which improves the profile with, and the perceived relevance to, industry.

The Chair thanked the President for her contribution and clarification on the issues raised.

## Part 5 Meeting of Panel with Head of School and Heads of Department

The Chair outlined the process for this session, introduced the Panel and welcomed the School Management team. The Head of School introduced his team. The Chair emphasised that this should be a positive experience and that they will get an opportunity to address a wide range of issues over the two days.

### Presentation

The Head of School gave a presentation on the School Plan (see Appendix vi). This provided (i) an overview of the purpose of the review, (ii) key facts about the School, core programmes, (iii) a summary of the consultation process in preparation for the review, (iv) School metrics identifying the changes in KPIs in the School since the last programmatic review in 2008, (v) key points under the headings of students, research, teaching and learning, staff profile, external engagement, and (vi) significant changes in both Departments. Particular issues were identified, including the new building plans, and the KPIs for growth and development.

### School Plan

The Panel complimented the Head of School on the presentation and the clarity of the School objectives that are aligned with the Institute strategy as outlined by the President earlier. The Panel opened the discussion on the topic of how the School is responding to the national changes in Higher Education. The School referred to its development in ODL, including the suite of NIBRT training programmes and the role of IT Sligo as the primary training provider of this company. Internally, this has led to a process of continuous updating and changes to programmes to ensure that they are relevant to the industry. To enhance this process, there is a proposal to establish a forum with the biopharmaceutical industry.

### Staff awareness of current Industrial practices

The Panel pointed to the School proposals for CPD and the relatively low current uptake by staff. The Head of School referred to the profile of staff and the importance of staff with industrial experience as well as research experience. The School would like to maintain staff engagement in the industrial work experience programme as a refresher on industrial processes and to provide an understanding of what graduates are expected to do in the work place. Industry representatives acknowledged the high quality of graduates from the School of Science in the workplace. They queried the process of ensuring that the technological skills of students are maintained and updated. Examples were provided of industrial representative who have been invited to the Institute to talk to students about current industrial practices. The School referred to the experience of graduates who might be presumptuous in assuming that they are well qualified and know about the relevant best practices in technologies and processes. The school makes a point of advising students that each employer will have its own way of doing business and the graduate will be expected to be capable of adapting to those business and scientific practices. There was a discussion about the student learning processes and the difference between full time and online (part time) student learning processes. Typically, the online learner is based in industry and has strong motivation to undertake the particular course of study in the specific discipline.

The School explained the 'return to industry' staff training initiative and claimed that this is an effective means of informing staff in their teaching and in building personal relationships with industry contacts. A number of examples of staff who had taken this programme where provided, including a staff member who worked in TEAGASC for a number of weeks and this has led to a collaborative research project under which the lecturer will undertake a Ph.D. by research. Another staff member worked in Enterprise Ireland's Toxicology Laboratory in Shannon to up-skill in the area of ecotoxicology.

### Teaching, learning and Work Placement

The Panel referred to the meeting with the President and the discussion on the tension between teaching and research. They asked about the changes in the learning process for practical skills. In the Department of Life Sciences, programmes typically start with learning the vocabulary and fundamental principles, and progress to practical applications. There is a 15 credit module in 3rd year where the student is brought through a scientific production process. This culminates in the final year, typically with a group of students working on one project. These projects are of a standard that can lead to academic publications. It was clarified that each student is assessed in their own right on these group projects. In disciplines such as Forensics, Health Science and Physiology and in Biomedical, there is a high emphasis on practical work. This has been facilitated with the NIBRT facilities that provide free access to high specification laboratories. The School acknowledged that there is a high resource cost associated with providing this level of practical work for students.

In the Environmental area, practicals have evolved from taking samples of local water for testing to setting up a scaled environmental treatment plant. This has improved the student's understanding of industrial processes and sufficient time is allowed for the student to develop a high level of competency in the process. The point was also made that the standard of research conducted in final year projects acts as the seed ground for post graduate research and that, therefore, the staff supervision of these projects needs to be protected. An industry representative on the Panel noted that there are opportunities to take students on for work placement. The School welcomed this and referred to their policy of supporting students to get work for a number of weeks with companies over the summer months which has led, in a number of cases, to longer term placements. The School has facilitated these opportunities. The industry representatives emphasised the importance of placement for the student employability and that a 6 months or longer placement gives more value to the employer.

The Panel asked for clarification on the level of accredited placements that occurred as part of the programmes. The School referred to examples, and the student survey reported 70% of students in employment had undertaken a work placement as part of their qualification.

The Panel opened the discussion on the national developments in Higher Education and the Hunt report and asked about the evidence in the School proposals to integrate the objectives set in the national strategy – e.g. in research, internationalisation, teaching and learning and civic engagement. The School referred to the greater choice for students to progress in different discipline directions. The Panel noted, however, that there are not many electives offered, to which the School responded that the experience is that certain electives become popular because they are relevant to certain industries – so they in effect become a mandatory module. The Panel proposed that electives could be offered across programmes to facilitate greater levels of learning and exposure to civic engagement. The School suggested that they could introduce evening options in a diverse range of modules and that the existing civic and sporting endeavours of students should be accredited.

The Panel asked, if a student can take modules in other Departments? The School provided a number of examples of modules that are delivered to students across programmes in the two Departments in the School. Electives act as taster learning in other disciplines.

### Connacht-Ulster Alliance

A discussion followed on the relationship with CUA partners and where the School sees this heading. The School referred to the work that has been completed in comparing programmes across the three partners. Common programmes have been identified and opportunities proposed for joint projects. The objective in these discussions and in respect to the HEA rationalisation objective is to have a suite of programmes that are in the best interest of the students and the region.

### New Programme Development

The Panel asked, what big picture changes the School hopes to have achieved in 5 years? The School referred to the demographics in the region and the profile of the population. The School intends to strengthen its position on online delivery to better meet the demand from an older, work based, cohort. The School also referred to the high level of CAO preference for Health Science and Physiology and this indicates an opening for a programme in Human Nutrition. The CUA offers a mechanism to do this as there is a wider staff base and a greater student catchment. This model can be applied to other programmes so that the CUA effectively provides a way to rationalise the existing number of programmes, to maintain existing, relevant programmes, and to more easily commence new programmes as a result of the wider base of academic expertise and student population. In the environmental area, opportunities are envisaged in food processing, energy and sustainability.

The Panel referred to the last Programmatic Review and the recommendation that cross-School modules and programmes should be developed. The Panel noted that this had not happened. The School referred to programmes that were proposed in relation to this recommendation (for example, in biopharmaceuticals, biotechnology and business and medical devices) but these did not get approved for delivery.

The Panel asked about the impact of the staffing constraints and the perceived shortages of staff for the development of new programmes. They referred to opportunities that could be exploited for cross-School programmes which would allow access to a wider staff and expertise base. The School commented that it has recruited a bioengineer to drive forward such initiatives in medical devices.

The Panel observed that, typically, Science faculties are reluctant to take on modules addressing business topics such as innovation and entrepreneurship and business start-ups. The School referred to the experience of staff in the commercial exploitation of their research that feeds back into the teaching. For example, one of the current final year projects in forensics is likely to lead to an Innovation Voucher as the supervisor has experience in commercially relevant research. The School is also involved in Innovation Week which is a face-to-face engagement with industry. There is positive support for student visits to industrial plants and industrialists are regularly invited in to make a presentation to students. The current building developments means that research students will be accommodated within the School, which will enhance the graduate-undergraduate cross learning.

The Panel asked, in a contracting environment, how does the School plan to meet the needs of industry in specific technologies. The School noted that there have been a high number of new staff recruits (17%) in the School in the last year which has allowed the opportunity to refresh the range and level of expertise. The School also referred to the high number of SPAs developed directly in response to the requests from industry and this is reflected in the emphasis on ODL delivery. The School acknowledged that, because of this strong focus on new programmes for industry, it may have lost traction in a number of programmes areas targeted at the CAO cohort..

## Part 6 Meeting of Panel with Head of School, Heads of Department, Programme Chairs

The Chair welcomed the Programme Chair persons and outlined the range of topics that were addressed in the earlier session.

### Staff CPD

The Panel opened the discussion on the topic of staff development and how staff remain up-to-date with their discipline. The management confirmed that the PMDS process is in operation across the School, albeit progressing slowly. The School conducted a training needs analysis (as reported in Volume 1, p128). This was broken down into professional development, academic engagement, and technical training. Examples of training were discussed. There is a CPD budget and all staff are supported and facilitated in their training requests.

The Panel asked how is research training supported. The School gave examples of staff and research students who visit other collaborators to develop particular skills. There is also a structured graduate training programme that will be re-validated as part of this review. A Principal Investigator present commented that it is mostly up to researchers to identify their own needs. For example, a few years ago, a specialist course was organised (delivered by Penn State) on statically analytical methods. The development of the Strategic Research Groups within the Institute will provide a platform for a more structured training plan for researchers. In some areas, Journal Clubs have been set up to report on current research publications. The Panel referred to opportunities for guest expert lectures. In archaeology, there have been a series of lunch time lectures delivered by staff and external experts, which has helped to promote in-house research and to introduce staff and students to the wider body of national research. There are also joint training seminars with the Research and Development at Sligo General Hospital.

In the area of Safety and Health, there has been training in pedagogical techniques, particularly in Problem Based Learning (PBL), organised by the education development unit. Health and safety specialist and environmental specialists are routinely invited in to deliver guest lectures.

At an Institute level, training in areas such as Moodle© have been provided and there is a 50% uptake on this to-date.

### Research Collaborations

The Panel moved on to explore the international research collaborations and the depth of the relationships. An example was provided in the area of the European policies on agricultural reform, and the management of farming systems. The Institute is directly involved in informing and contributing to the development of these EU projects. This work feeds directly into the undergraduate teaching, as evidenced by examples provided. Reference was made to the upcoming Horizon 2020 EU funding and the extent to which the School is developing its international partnerships and the motivation of staff to join EU expert Panels.

The School clarified that its key research strengths are in environmental research and in biomedical research. There is also research in the areas of analytical science and in archaeological science. The staff outlined the sources of funding from various local agencies and international funding bodies (as outlined in Volume 1), amounting to in excess of €1M in 2013. Over the next 5 years, the School will be looking, with the development of Strategic Research Groups, primarily towards international sources of funding. Staff provided examples of research that had been undertaken directly with Industry, funded by, and at the request of industry.

### International Students

In respect of international students, the School confirmed that they have 10 non-EU international students. It has a developing relationship with Oman (with students on campus) and it is participating in the Science without Borders with Brazil as the target country. Online delivered programmes open up further opportunities for international students, as evidenced by CSL programme delivered to students in Australia.

### Open and Distance Delivery

The Panel asked about the online delivery and the challenges that this presents to the School. The School confirmed that, in the current climate of the employment control framework, the challenge is

to find the staff to respond rapidly to the needs of industry. Staff can be recruited on specific purpose contracts. An example was provided of the bespoke programme that was developed specifically for GSK Ltd., recently based on Sligo. This led directly to the retention of the facility and jobs in the region. This was facilitated though a specific purpose contract. This programme may be rolled out to the GSK family of companies world-wide.

The School, went on to provide other examples of delivery to industry, including a research project that is investigating models of developing bespoke programmes and how best to identify and articulate the benefits to the company.

A discussion followed on the administrative and management structures necessary to deliver online programmes effectively and the costing model. The Panel pointed out that this could be supported through the CUA. An example was provided of the proposal to validate one programme across the Alliance in GMP. The discussion included reference to the recognition of prior learning and the need for adequate supports for this.

The Panel asked about the quality assurance of online programmes. The School explained that all programmes go through a rigorous accreditation process, ultimately overseen by HETAC/QQI under delegated authority. There are continuous improvement processes in terms of online student feedback surveys, and there are formal processes for making changes to programmes through the Academic Council. The Centre for Online Learning is working to improve these processes. It was commented that, in general, online students perform better than full time students. There was some discussion about the assessment of online learning and the assurance that the registered student is the person doing the assessment. The School referred to a recent initiative to conduct online proctoring of exams.

### Industrial Relevance of Programmes

The Panel asked how the School goes about looking to the future to determine what the graduate in, say, 4 years -time will need to be proficient in. The Heads of Department provided examples related to awareness of the changing legislation (in environmental science), recent developments in energy and sustainability, and developments in medical devices sector. Reference was also made to the surveys of industry and of recent graduates that have informed the changes to programmes. Also, some staff regularly meet with industry and state agencies to update on developments. In the area of archaeology, the significant changes have arisen from the down turn in the national roads building projects. There may be opportunities to integrate more environmental protection topics and indeed the humanities into the archaeology programme. The relevance of this programme to the region was noted.

### Student Retention and Performance

The Panel opened the discussion on student throughput and retention and asked about the EAP7 review process. There was a discussion on the limitations of the feedback provided by students. These may not provide a meaningful overview of the programme or reliable indications for areas of improvement – they tend to be more beneficial to identify immediate problems such as access to labs or computers. The student committee structure has been found to be more effective in entering a dialogue with students to identify longer terms areas for improvement (for example, the introduction of awards being based on results over 2 years of a programme).

The Panel noted from the documentation the difference in student performance between the two Departments. There is a higher attrition in Environmental Science as compared with Life Sciences. The Head of Department of Environmental Science responded that, because of the down turn in the economy, the numbers of students in environmental science, occupational safety and health and archaeology have dropped and the quality of the incoming student has also dropped as this is not considered to be an area of high employment. Unlike other sectors, such as the biopharmaceutical industry, there are fewer opportunities to recruit a large cohort of part-time students or provide bespoke courses in the areas of environment, occupational safety and health, and archaeology because of the low numbers of people employed in these sections of an organisation. However, the Department has identified new opportunities and are developing programmes in these areas. In 2012, a system of student peer mentoring was introduced (based on the GMIT model) and this is

likely to have benefits over the coming years. Already, it has improved the level of student engagement across all years of programmes. In Archaeology, the staff organised a series of lunch time meetings and invited students from all years. There is a notable low attrition in 1st year on this programme.

In relation to awards, the Panel queried the pass rates of students (e.g. ) and how border line students are advised. The School explained a new policy that was adopted by the Academic Council whereby a student, in exceptional circumstances, can repeat a failed module and still attain an honours award.

### Promotion of Programmes

The Panel queried how the School informs itself of the demand for programmes and what it does to encourage more students to apply for its programmes. Based on student feedback, the primary modes of student information on new programmes is the web site and social media. Improvements have been made in these areas. There was a discussion about the CAO, open days, and other promotional initiatives.

There is a process of reviewing programme titles - surveying 2nd level pupils and industry to ensure that the title not only fits the programme learning outcomes but also acts as a good marketing tool (e.g. Forensics Science).

The Panel referred to the graduate survey and sought clarification if this was done solely for science graduates. The School explained that this is an Institute-wide survey, conducted at conferring, and it is difficult to interpret the data to understand what is the graduate profile and their potential opportunities. This is of limited value.

### Learning, Teaching and Assessment

The Panel asked how the School is training students to communicate, in the context of the national literacy problem. The School referred to the number of communication modules in all programmes, and the number of laboratory reports and final year projects conducted by students. A recent initiative was the introduction of team-based projects on a pilot basis. This is still being assessed for effectiveness.

The Panel queried the range of assessment types and the spread of continuous assessment versus final exam percentages. The staff defended the range, as being appropriate to the modules and programmes. They agreed, that there is a possibility of over assessing students and this needs to be investigated further. This will be discussed at the programme break out session. Examples were provided of integrated assessments and joint projects, such as analytical chemistry and formulations and the joint assessment of a paper review from a statistical and a technology aspect.

Finally, the Panel commented on the extent of the documentation submitted as part of the review and the range of the metrics. They asked, as a general comment, what were the indicators for learning that the School would like to be using, while acknowledging it might be constrained by ‘expected’ outcomes. Suggestions were provided, such as enhanced industry-focused teaching and the level of the understanding of the fundamental principles and analytical thinking ability of students.

# Part 7 Meetings with each Department to consider proposed changes to Programmes, including a staff-only session

## Department of Environmental Science

**Staff in Attendance – Appendix VII**

**Panel members in attendance**

**Chair:** Dr. Margaret Gowen

**Panel:** Dr Des Foley, Mr Gerard O'Leary, Dr Padraic Larkin, Mr Darren Arkins

### General discussion on the Department

The Thursday session opened with a review/presentation to the group of the points highlighted by the Panel meeting for discussion as summarised in the Memo circulated at midday.

The topics alluded to were:

- The process of conducting self-evaluation and how changes were identified (the responses lacked clarity on the nature of the process)
- The process of managing programme boards (not addressed)
- Teaching and learning and assessment (dealt with under the main agenda headings, below)
- Pedagogy and delivery strategies (extensively discussed and described under a variety of agenda headings)
- Expansion plans (the impact and opportunities this presents were also discussed at length, including provision of essential technical/lab teaching - and dedicated research equipment)
- Communication, literacy and report writing (extensively discussed under a range of headings – notably in the context of the merits of group work)
- Student experience, throughput and retention (extensively discussed, especially the questionable merit of trying to retain very weak/unhappy students ill-suited to the course chosen. The role of mentoring also discussed,)
- Wider context and CUA (extensively discussed especially in the context of flexibility of course content and access to elective module in other departments/Schools within the institute (Jerry suggested the central timetabling was a huge constraint). Plans on how to formulate and achieve flexibility in the context of CUA are not yet formulated.
- Staff development (not really discussed – but staff feel they have very little time for research due to necessary contact hours with students. What research is being conducted, e.g. in archaeology, does not appear to be of a kind that has been accredited – e.g. PhD awards for staff)
- International collaboration (this is very active in the ODL programmes but has not been maximised elsewhere).
- Science practicals and industrial placement and other topics (the challenge of placement in areas of industry that are currently struggling due to the economic climate were outlined, together with a very useful discussion about the value of courses that might be experiencing a relatively short-term cyclical 'slump', 1. below).

The afternoon commenced with a 20-minute presentation from Dr. Billy Fitzgerald (see Appendix VI), after which there was a general discussion and points raised for discussion by Panel members.

The statistics shown in the presentation suggested to the Panel members that there might be a degree of competition for resources within the School of Science. This was felt not to be the case, although the discrepancy in numbers was a concern.

Panel members made the point that Environmental Science should not feel compromised by its lower student numbers relative to Life Sciences as it currently offers 27 courses, while Life Sciences offers 40 courses. The point was also made that the School of Science's reputation was originally built upon the excellence of its offering in Environmental Science and the Panel members agreed that this reputation – of tremendous value to IT Sligo - should be both protected and managed.

The point was raised that the Department of Environmental Science perhaps needs to look more carefully to what is coming down the line from the European Commission to inform its future development, for example: the potential industry/professional response requirements of the REACH regulation; and in the area of Eco-toxicology.

**The Panel asked about the Feedback process to and from students, employers and external examiners**

**The Staff responded as follows:**

***Students:*** Each module teacher is provided with some direct feedback from students; all students can provide feedback (however, the subsequent Student Meeting on Friday indicated that it is a 'tick-box' questionnaire - and many students felt that it was not particularly helpful/effective).

Of greater importance, is the fact that staff on each programme operate an 'open door' policy for student queries and support, including e-mail. There is an emphasis on students' personal development as well as completion of course content – all geared to prepare students for the 'real world' and their eventual workplace roles. In the context of ODL, it was pointed out that isolation and feedback is not an issue, as these students are extremely pro-active in communicating with teaching staff, although they do not receive feedback forms for every module.

The challenges of checking the integrity of individual student responses to course work in ODL was also discussed – along with developing mechanisms for invigilated examination.

Student profile has changed somewhat in recent years with increasing numbers of students re-educating and retraining. Many students have 'other lives' and a greater range of responsibilities, such as family commitments which can sometimes have an impact on their ability to submit work in a timely manner. Each case, however, is adjudged on its merit.

The ODL programme includes very valuable 'ice-breaker' workshops at the start of courses, MCQs related to mandatory reading and periodic meetings and fieldtrips thereafter. These latter are considered particularly important.

***Employers:*** Apart from discussion about industry liaison, this was particularly effectively covered in the discussion. Certainly, one indicator – repeat placement in regional corporate industries – suggests that the School is well-focused with regard to its offering and the quality of its graduates. However, there are currently understandable challenges in securing appropriate work placements for some courses and some students.

***Extern Examiners:*** These provide reports on their findings after each round of examinations. Reports are considered very useful and have led, in particular, to a focus on standardising the levels of award especially at 2.1 and 1st class honours level.

**The Panel asked about Graduate Employability**

**The Staff responded as follows:**

Graduates are trained (using group work, requirements to present group work, lab-based micro-modelling, technical training other relevant pedagogical approaches) to prepare them to 'hit the ground running'. The example of micro-modelling water quality analysis was especially highlighted. Another was a simple, but extremely effective, exercise for students in plant identification. Other similar approaches were identified: EBL also mentioned. The growing evidence for the value of group work in all contexts was emphasised. The EPA representative pointed out that staff might require up-

skilling/re-focusing in order to have greater cognisance of EPA and IPPC licencing requirements and developments in EIA directives.

Staff mentioned lack of time to network effectively and validate course focus and course content in this regard.

A very interesting and lively discussion occurred on the flexibility to 'tweak'/alter module content and introduce new content from other Schools. It was suggested that, within the School of Science, this is relatively easily done - and that approval from the Academic Council, while required, is readily forthcoming when the appropriate case is made. For example: i) the introduction of an emphasis on nuisance issues in environmental and waste management studies, notably including a focus on noise (of relevance to energy also); and ii) the introduction of a GIS module in Applied Archaeology and Environmental Science.

However, at a time when the Applied Archaeology course needs to adjust its offering, the opportunities presented in the teaching of tourism studies, business modules and engineering (linked to materials science) were less easy to justify to the Institute's management/administration.

**The Panel asked about links with employers**

**The Staff responded as follows:**

This discussion was, inevitably, coloured by the current economic climate. Environmental Science cannot always identify exactly which area of industry might employ its graduates.

The discussion included reference to the entirely supportable merit of foundation level and generic education and training in environmental science (basic data collection, observation skills, analysis, quality control, analytical writing, problem solving, presentation of findings and management systems).

**The Panel asked about programme design modification and titles of awards**

**The Staff responded as follows:**

The discussion reiterated the Panel members' views on the merit of foundation level and generic education and training in environmental science and modifications to that, maintaining the elements of problem solving, basic data collection, analysis, and presentation of findings.

The Panel progressed the discussion to the topic of assessment load and questioned the scope of it, while accepting the rationale for its current scope and the need for transparency in standards. There was a feeling that students might be over-assessed – a result that might limit the scope of a students self-directed reading/learning.

Student opinion in this regard is that there is a tendency (possibly due to poor integration of communication across modules) that assignments end up being unmanageably clustered. Increases in student numbers may result in this becoming a very serious issue for students and staff alike.

Also, modules delivered by 2 or more lecturers tend to lead to 2 or 3 assignments and examination within 5 credit modules.

There was some discussion about the 25% barrier for theory papers – a principle roundly supported by the Panel members and staff representatives alike; practical training applications and competency are sometimes easy for students, but without theoretical grounding they have no 'place' in research, industry or professional life.

There is an entirely supportable focus on weak entry-level students at Level 6 and 7, in particular there was a concern voiced about dealing with poor literacy skills at this stage.

The place of Innovation Vouchers/Awards was explained.

The Occupational Safety and Health course explained its EBL and EDU platforms for training/learning - one that led to comment from other staff that some of the developments in teaching delivery, such as EBL are resources developed 'in-house' that staff could greatly benefit from. It was suggested that a networking/workshop day annually could be beneficial in this regard,

allowing staff to discuss the possible application of novel ways of delivering teaching and practical training.

A Panel member also mentioned the HSA's BeSmart programme and the course's capacity to support SME's who want to develop H&S systems.

In response to a query from the Panel the Head of Department explained that the proposal to make the first 3 years completely common for the Level 7 and Level 8 courses was the most significant change proposed. The rationale for the replacement of certain modules with others was discussed for the different courses on offer. Unusual numbers of PT teaching hours was explained as a calculation from total semester hours.

**The Panel asked about the establishment of learning outcomes at different Levels**

**The Staff responded as follows:**

The value of facilitating foundation level science education at third level should not be neglected in favour of (potentially short-term) industry-focused/employment-focused training.

ODL has a special, developmental –and very active - place in IT Sligo. The strategy for its development however, must have regard for the resourcing and value of on campus courses and the pedagogical offering to these students.

Research was highlighted as an important element in staff and course content development - with some frustration that the Institute of Technology 'system' does not allocate as much time to staff for research as other 3rd level institutions. Primary level students are not exposed to research, but they are aware - and need to be aware - of its scope within their chosen area of study from the earliest stages of their education at 3rd level. It was unanimously agreed that research has the capacity to excite student interest in their subject area and there is an enthusiasm for research-led teaching among staff.

The invasive species issue was highlighted as one that requires special – and urgent – attention (cf. zebra mussels and cryptosporidium).

The Panel also mentioned proposed developments in the area of Energy and to possible Level 8 links to business in this area – including the 'up-cycling' of waste..

**The Panel asked about delivery methodologies**

**The Staff responded as follows:**

The 'mix' of taught modules (foundation level and specialist studies), group projects, practical skills-based training (especially lab-based PBL and training and EBL) were all alluded to in each of the discussion areas detailed above. The merits of elective modules was particularly highlighted – and the difficulties for staff in promoting extension to their core areas of competency in teaching (taking Archaeology – described as the 'cuckoo in the nest'. Applied archaeology already uses the core science teaching in biology, chemistry and environmental science. It could benefit greatly from access to Forensics and the School of Engineering (linked to materials science/chemistry and buildings/materials/structural conservation).

It seems the challenge for electives is timetabling and resourcing additional contact hours – but that is an administration/ management issue, and not a pedagogical issue.

The costs of equipment/lab infrastructure were also discussed and the decisions that have to be taken for entry level students and the need for dedicated research student equipment/labs. Entry-level students need quite basic –and robust – equipment to learn the skills of observation/recording/data collection & management.

Serious consideration has to be given to the provision of basic equipment for undergraduates, as their lab experiences are formative and have been identified as one of the most effect methods of learning for them.

It was agreed that, while research student need to be located within the School to add value to the undergraduate courses their equipment does need to be 'ring-fenced' for research use only. A comment was made that a new suite of microscopes for undergraduates would be welcome.

A particular point was made about the cut back in time allocated for student undergraduate projects. There is a justifiable concern about down-grading the focus on these projects, although the challenges of managing these with large classes must be acknowledged and catered for.

The point was made that some areas of the Life Sciences programme provision could be considered as an elective for the current programmes within Environmental Sciences.

Areas discussed included: food technologies, the impacts of CAP reform and possible changes in land-use (possibly more livestock/more livestock effluents/effects on soil/water), new directives from the EU, forensics/forensic archaeology, fracking impacts, wind energy and its infrastructure implications for the quality of the natural environment, e.g. on raised and blanket boglands/bog drainage and discharge systems etc.).

More flexibility (entrepreneurship) is required across the two elements of the School of Science provision, especially in the context of their offering to the students in potential elective modules. Consideration also could be given to the development of programmes across Schools within the institute, for example between Environmental Science and Engineering.

### Panel: Other considerations:

The Panel felt strongly that the reputation of the School in the area of Environmental Science merits special focus within the institute. Reputation management must be a consideration for this Department, in particular with the growing demand for ODL courses. A particular concern was voiced by staff with regard to the delivery and quality control of these courses – especially if budgeting considerations result in the outsourcing of teaching and on-going management in the future.

The current focus on research was mentioned by staff and it was pointed out that there are approximately 50 researchers out of a student population of 1,200 – which is still a small percentage. The comment was made that, the remit of the old RTCs was to enrol and nurture the weaker students with the aim of turning out graduates who were ready for the workplace. The selection of KPIs for the School needs to reflect this important role in the future strategy of the Institute.

## Department of Life Sciences

### Staff in Attendance – Appendix VII

### Panel members in attendance

**Chair:** Dr Donal Coveney

**Panel:** Professor James Houghton, Dr Ken Carroll, Professor Jaqueline McCormack, Mr Billy Bennett , Mr Padraig Gavin, Dr Martin Danaher, Mr Noel McLoughlin

### General Departmental Discussion

James Brennan gave a presentation showing an overview of the Department of Life Sciences (see Appendix VI).

The 1st programme to be looked at was Pharmaceutical. There have been ongoing changes since the last programmatic review so there are few proposed changes. Proposed changes as follows:

**Panel:** Commended the staff on the huge amount of work done.

**Panel:** Slight concern from industry about the practical content of the course

**Staff:** Practical content is high, we are generating graduates who are employable. The feedback from industry is not negative. Some programmes have greater practical content than others. Pharmaceutical would have less practical content than Biomedical.

**Panel:** Industry consultation – seems to be a great amount. How is this structured?

**Staff:** Went to a number of companies. There is also on-going dialogue with industry. Going forward, it is the intention to talk to companies on a bi-annual basis. SPA's have come about directly from what industry wants. Many labs are conducted in NIBRT which started 5 years ago.

**Panel:** Have there been meetings in the last 5 years?

**Staff:** Forum groups at least once per year, either in the college or NIBRT

**Panel:** Is this review backed up by consultation with groups?

**Staff:** Yes

## Discussion on Programmes

### Certificate in Science in Pharmaceutical Science – Exit Award – 120 credits

**Staff:** title has been changed because of reducing numbers.

Proposed changes

- Year 1 – Change of "Introduction to Regulatory Affairs" to "Introduction to Drug Discovery and Development".
- Year 2 - Introduction of Organic Chemistry practical instead of Communications 1, which is in year 2.
- Year 3 – New module "Colloidal Science"
- Year 4 – split Project over 2 semesters

There is a contribution element in this programme, 10% from year 2 goes towards year 3, 20% from year 3 goes towards year 4.

**Panel:** Do other IT's operate this system? Some. In UU it was changed back to 100% in year 4.

**Panel:** How do we accommodate transferees?

**Staff:** Year 4 is based on 100%

**Panel:** Are the contact hours the agreed as per the School?

**Staff:** proposed hours for the School are 24 for 1st year, 22 for 2nd year, 20 for 3rd year, 18 for 4th year for 1.7 geared courses but this is not set in stone.

**Panel:** How is independent learning measured?

**Staff:** there are suggested hours but not measured

**Panel:** Are projects lab or library based?

**Staff:** Almost all are library based.

**Panel:** Is there a particular skills component available in year 4?

**Staff:** this programme is multidisciplinary. Not crucial to have lab based skills in year 4. There is a workplace module which uses problem solving skills and is done in consultation with industry.

### Higher Certificate in Science in Good Manufacturing Practice and Technology Level 6

There are no changes proposed for this course. It has recently gone from being delivered by distance learning to 100% online learning with much help from the Centre for Online Learning.

There is now a new suite of ODL dedicated rooms in science to deliver modules online. This programme will be delivered in conjunction with GMIT as part of the CUA.

**Panel:** Can you go online without being registered?

**Staff:** Strictly speaking no, but some students have been registered in Moodle without having been fully registered.

**Panel:** What is the allocation for online teaching?

**Staff:** Currently it is 2 hours per week per 5-credit module but a new model is being developed by the Head of Business.

**Panel:** How does the workload compare between online and face to face lecturing?

**Staff:** Twice as much work for online because of the follow up queries.

**Panel:** Are there problems with access to the Learning Environment for online students?

**Staff:** The process from the initial enquiry to being registered is very time consuming but is being looked at to try and improve this.

**Panel:** Is there induction for online students?

**Staff:** Yes, 1 day in the Clarion Hotel. There is also online induction as not all students can come to the college.

**Panel:** Can students get induction online before registering?

**Staff:** No

**Panel:** Are central services supporting online learning?

**Staff**: There is scope for more support.

### Certificate in Biopharmaceutical Processing – no changes

### Certificate in Biopharmaceutical Operations – no changes

### Certificate in Sterile Operations – no changes

These 3 courses are delivered in conjunction with NIBRT, theory is done by the Institute, labs in NIBRT. The students do most of the theory and then go to NIBRT for the labs.

**Panel:** Is IT Sligo a vital part of NIBRT?

Bernadette Gallagher, NIBRT: Yes, NIBRT does the industry training, IT Sligo does the educational part.

### Certificate in Pharmaceutical Processing – no changes

### Certificate in Pharmaceutical Science and Management – no changes

These 2 courses are being done by Abbott employees. There are small numbers on the course but it may be of interest to other companies.

**Panel:** How does the exam process work for online students?

**Staff:** The students can take their exams in Sligo, Dublin or Cork. We have a link with Melbourne University for the CSL students so they can take their exams in Melbourne.

### BSc in Pharmaceutical Science (Add on level 7) – no changes

This course is being run for GSK employees over 2 years. The practical elements will take place in GSK with an industrial mentor. Students must have a level 6 to register on this course.

**Panel:** Why is the split 40/60 for exams instead of 50/50?

**Staff:** This course was designed for fulltime students so no change was made.

**Panel:** There are no contact hours etc. for Colloidal Science on the schedule.

**Staff:** This will be looked at and adjusted.

**MSc in Pharmaceutical Science – is not seeking validation as it is validated by RCSI**

**BSc in Biomedical Science L7 and L8**

The 1st 3 years of this programme are common.

The proposed changes are:

- Introduction of more systems biology
- Introduction of a Research and Scientific Communications module
- Combining of year 3 Legislation and Quality Systems with Compliance Auditing
- 10 credit Final Year project across 2 semesters with a possible team element and a larger emphasis on project management

**Panel:** How is team work assessed?

**Staff:** There is no group mark. Each individual hands up a thesis and is given a mark on this.

Panel: Contact hours in the final year are very high, all subjects are mandatory, there are no electives. Could an elective from another department be offered?

**Staff:** This is a resource and timetable issue. It will be looked at.

**Panel:** Why is the project a team? Are they funded by the School?

**Staff:** Because teams are formed in industry and academia. It gives students a flavour of working in teams. They also learn from each other. It is efficient from a resource issue as a team of 3 or 4 are being supervised by 1 lecturer, particularly if there are high numbers in a class.

**Panel:** Is the supervisor involved in the teamwork?

**Staff:** Initially

**Panel:** How do you evaluate teamwork?

**Staff:** The chairperson is evaluated which is rotated but no group mark is given.

**Panel:** EBL should be incorporated in more programmes.

**Panel:** Personal medicine?

**Staff:** It is incorporated in Medical Diagnostics

**Certificate in Biopharmaceutical Operations (20 credits) Level 7 – no changes.**

**Panel:** This needs to be changed to 20 credits on the course schedule. Modules 7010 and 7011 to be taken out.

**Certificate in Biopharmaceutical Processing (30 credits) Level 7 – no changes**

**Panel:** Should contact hours be 7.07 as self-directed learning of 5 hours are included?

**Staff:** This will be changed to include only contact hours

**Panel:** Is there a practical element?

**Staff:** Yes, it is done in NIBRT

**Certificate in Bio analytical Techniques (10 credits) Level 7 – no changes**

This consists of 2 modules.

**Panel:** The credits required on the course schedule say 60, this is not correct.

**Staff:** This will be corrected to show 10

**BSc (Hons) in Pharmaceutical Science (60 credits Add on) Level 8**

The only proposed changes are modules being switched between semesters.

**Panel:** The subject Recombinant Drug subject should be P/T and not F/F

**Staff:** This will be corrected

**Panel:** What's the difference in electives?

**Staff:** New students take practical subjects, industry people can take a project instead.

**Certificate in Biopharmaceutical Science (SPA minor award L8 30 credits) – no changes**

This course in delivered in Australia, the 1st group graduated last year, 2nd group has now started.

**Panel:** The contact hours should not include self-directed learning

**Staff:** This will be corrected.

**Panel:** Can the students go further and take 60 credits?

**Staff:** No, they would have to come to Ireland

**Panel:** Perhaps if we partner with a college in Australia, they could take the further 30 credits?

**Staff:** This will be looked in to.

**Post Graduate Diploma in Biopharmaceutical Science (Level 9 - 60 credits)**

Proposed Changes

- 4 modules that have not been run have been removed
- 1 module has been changed from mandatory to elective
- 2 electives have been changed from electives to mandatory

**Panel:** Put required credits in course schedule

**Staff:** Will be corrected

**Panel:** What if a student has 20 credits per semester instead of 15

**Staff:** This can be balanced between the 2 semesters. Industry wants a flexible programme.

**Panel:** Consider delivering in 2 blocks, 30 credits each year over 2 years

**Staff:** Will be considered

**MSc in Biopharmaceutical Science (Level 9 – 90 credits) – no changes**

Students must have completed the PGD to do the MSc.

**Panel:** Work based project – is there a problem with IP?

**Staff:** We have our own non-disclosure document. If it is commercially sensitive material, we do not accept them.

### Health Science & Physiology (Level 7)

Changes have been proposed in consultation with industry and employees

- Lecturers feel students needed accreditation for Competencies and Professional Standard for Health Promotion and European Health & Fitness Association
- Change of module titles

**Panel:** Where do students find work?

**Staff:** The level 8 students no longer have the HSE as an option, they mostly find work in voluntary organisations or go on to do post grads leading to Physiotherapy, Occupational Therapy etc

**Panel:** Special regulations in course schedules – there are different pass rates for different subjects?

**Staff:** In 1st year, where a module has a practical component, students must achieve a minimum of 25% in the final exam. As the exam is only worth 35%, they could pass on practicals alone if this wasn't in place.

**Panel:** Can the 25% drift to 20%

**Staff:** No

**Panel:** Do the students get conceptual knowledge in the practical modules?

**Staff:** Theory and practical are done either the same week or the following week. They also have theory assessments.

**Panel:** Is PBL the same as EBL?

**Staff:** Yes, involves a lot of group work

**Panel:** Where is that shown in semester 1 or 2?

**Staff:** It is incorporated into various modules – particularly facilitation skills

**Panel:** Perhaps all modules should have an EBL basis?

**Staff:** Staff would have to be familiar with EBL/PBL.

**Panel:** Science is not a requirement for students applying for this course?

**Staff:** No, but the majority of students would have 1 science subject in Leaving Cert

**Panel:** How do you keep students engaged who have done e.g. Biology for Leaving Cert?

**Staff:** There is an element of peer teaching

**Panel:** Is there a correlation between students who have science subjects in Leaving Certificate vs those who do not?

**Staff:** No, these students come in on high points. Students who transfer or go to colleges in e.g. the UK or Northern Ireland seem to do very well.

**Panel:** The proposal is to introduce a Human Nutrition course. Will there be an overlap with teaching the Health Science course?

**Staff:** There will be elements of commonality

**Panel:** There may be scope to add in e.g. Sports Nutrition to the proposed new course?

**Staff:** Yes

**Panel:** Do the staff have links with e.g. UCC/UCD regarding Nutrition?

**Staff:** Not to date but hope to do so. The intention is to engage with other Institutions

**Panel:** Links with the Health Research Board?

**Staff:** Currently no but this would be a very important part of the programme. Will also look at competencies in GMIT/LYIT

**Panel:** Is there much cross School activity?

**Staff:** The 4th years in the module Professional Development frequently target the student and staff population here e.g. Come Dine with Me. They also completed a nationwide project on the suicide issue called "Who would you tell" and this has been very successful. Today, there are 20-30 people with intellectual disabilities in the Knocknarea Area.

**Panel:** Leadership as part of a team is a very topical issue. Is this being taught?

**Staff:** It is built into the module Professional Development

**Higher Certificate in Forensic Investigation and Analysis (Level 6) Embedded Award of the BSc in Forensic Investigation and Analysis**

**Bachelor of Science in Forensic Investigation and Analysis Level 7**

**BSc (Honours) in Forensic Investigation and Analysis (Level 8)**

This course is accredited by the Teaching Council for Chemistry so not many changes have been made. There is also a significant amount of commonality with Biomedical and Pharmaceutical programmes.

Proposed Changes

- Introduction of a new module in Human Genetics in Year 3
- Replacing the year 3 module Toxicology & Pharmacology with a year 4 module in Analytical Toxicology
- Separation of the new year 4 project into 2 parts, part 1 literature review and part 2 laboratory practical
- Minor changes involving moving a module from 1 semester to another

**Panel:** There are no electives. Is there enough chemistry?

**Staff:** The fact that the teaching council approved this course for teaching chemistry at 2nd level shows there is enough chemistry. It is also incorporated into the modules Spectroscopy, Separations and Advanced Instrumentation.

**Panel:** Is this course approved as a route to the H Dip?

**Staff:** Yes

**Panel:** Are Bioanalytical Methods taught?

**Staff:** Yes, in Forensic Analysis

**Panel:** Could more Biology be taught in this programme?

**Staff:** This is mainly a Chemistry programme, Biomedical Science is a Biology programme. The interdisciplinary nature of this programme makes students very employable.

**Panel:** Are the projects lab based?

**Staff:** The majority are

**Panel:** If you are a 3rd year student with mainly Biology, can you transfer to a chemistry based programme?

**Staff:** It is easier if you transfer in year 2, there is not much commonality in year 3.

**Panel:** Do students transfer?

**Staff:** Yes, some do

**Panel:** As there are not many jobs in the Forensics area, has the staff thought about the Agri Food sector? Sample preparation in Chemistry?

**Staff:** This is done in the modules Forensic Science 2 and Forensic Analysis. Will try and incorporate more sample preparation.

**Panel:** Instrumentation Analysis – is this done by GC, HPLC or LCMS?

**Staff:** mainly HPLC which is primarily used in the pharmaceutical industry

**Panel:** Are there practical exams in lab skills?

**Staff:** Yes, in both Chemistry and Biology modules

**Panel:** Maths skills – are they tested on them?

**Staff:** Yes, they do a lot of work through Moodle and seem to do quite well but of course some have difficulties.

### Pharmaceutical Programme

### Certificate in Science in Biopharmaceutical Processing (30 credits) Level 6 – no changes

**Panel:** What is the duration of labs in NIBRT

**Staff:** 2 days

**Panel:** Is this done after lectures are completed

**Staff:** Yes towards the end of lectures

### Certificate in Science in Aseptic Processing (20 credits) Level 6 – no changes

No issues

### BSc (Hons) in Pharmaceutical Science with Drug Development (Level 8 Add on)

This is an add-on to the level 7. It does not recruit at level 6.

**Panel:** Is there a 75% attendance requirement for all practical modules?

**Staff:** Yes, this is a School of Science requirement and has been in place for a long time

**Panel:** There are no electives?

**Staff:** No, because of resource and timetabling issues

### Post Graduate Diploma in Pharmaceutical Regulatory Affairs – Level 9 – no changes

This programme was developed with RCSI but has not run because of resource issues in RCSI. It will hopefully run in conjunction with the CUA.

**Panel:** Are the modules common with the MSc in Industrial Pharmaceutical programme?

**Staff:** Yes, some modules are common but these modules are owned by RCSI.

**Panel:** This course could be attractive to engineers

**Staff:** A lot of engineers are currently on the MSC in Biopharmaceutical Science programme

Certificate in Research Practice (Level 9) – no changes

Diploma in Research Practice (Level 9) – no changes

These courses were designed to provide skills to postgrad students and staff.

There are no proposed changes. It is hoped to roll this out to industry.

The Panel thanked all the staff involved for the huge amount of work done on the programmatic review. They particularly commented on the quality of the documentation, particularly Volume 1A and the enthusiastic staff

## Meeting between Panel members and Academic Staff

There was a discussion on a wide range of topics related to the School Plan, management and the process of conducting the review.

A number of points were made, including:

### Research

- No clear strategy for new staff on how to do research or support on how to get started, prepare grant applications etc.
- Time needed for grant proposal and support.
- Need support on how to write grant applications and support for staff (e.g. DCU has a Centre for Research).
- It would be good to be able to 'buy time' to spend time on proper proposal production.
- Research students can feel isolated as there are no research laboratories in the School (as yet), and students are located in the Innovation Centre.

### Teaching

- No differentiation in time allocation for staff lecturing large classes and small classes.
- There should be greater time allocation for Academic staff involved in out-of-hours teaching commitment.
- There should be greater resourcing of support staff.
- Lack of coordination hour for Programme Chairpersons, who are expected to coordinate everything to do with the programme and the students.

### Management/Resources

- Staff acknowledged that there are pressures to get TU status.
- Staff are very innovative and staff have always kept quality in mind in their teaching.
- Every single exam board is confounded by problems with Banner.
- Health Science – resource issues – need dedicated resources with fitness having to share with the public facilities at the moment.
- Need for increased technical resources, in particular to research

- Appropriate notice in advance of meetings: often, important meetings are called with only a few days, or even, hours notice. This is not feasible for busy staff with heavy work schedules.

# Part 8 Meeting with Student Representatives and External Stakeholder

## Meeting with Student Representatives

**Chair:** Jim Houghton

**Panel Members:** Darren Arkins, Margaret Gowen, Padraig Larkin, Des Foley, Jaqueline McCormack,

The Chairperson gave an overview of the purpose of the School Planning and Programme Revalidation for the School of Science. He stated that the purpose of the review is to consider how the Schools processes can be improved and changed. The student perspective and thinking about the weakness and strengths of the institute are welcome.

The Chairperson commented that, from the meetings with the academic staff, it was evident there is a very high level of commitment to giving students a good training and they genuinely care about student welfare. Staff want to do a good job and the Panel want to hear how they can do that job better.

**Panel:** when you attend a programme that is not good, do the staff get to know about your views?

**Student responses:**

- They are very approachable generally. The archaeology courses provided an example.
- At the end of each module, 50% of the time, you are asked what you think.
- Others said that they are asked 100% at the end of modules.
- Others asked on Moodle©, it's anonymous. Survey is too general, would prefer a more specific, tailored survey.
- Students prefer qualitative feedback rather than tick box forms.
- Online student – only asked for feedback on one module only- ecology. You have to wait for the workshops for feedback, don't have consistency being able to give feedback.

**Panel:** Are student surveys done at national level and is it based on a standard?

**Student responses:**

- Recommend - That student surveys are more related to the subject.

**Panel:** Are there class reps?

**Student responses:**

- no formal structure for online.
- There are Student Committees. Meet once a semester - very good, and action requirements are forwarded to higher up level, however feedback not always given that the problem has been solved. Once a year meeting with the Head of School.

**Panel:** any issues for online?

**Student responses:**

- Communication on issues is via Moodle©– can write a general email to course coordinator. There is no formal set up.
- Each year has a year head and if there is an issue they bring it forward. No issues.
- Pharmaceutical science very good for feedback – following up on complaints.

**Panel:** do you think that good lecturers should get rewarded? For example there are Presidential Awards for Teaching Excellence in NUIG – medal/financial. Lecturer(s) proposed by students – nominate and justify why lecturer making good commitment. Good for lecturer for CV. What do you think?

**Student responses:**

- All agreed it was a very good suggestion.

**Panel:** In general re lecturing - is it good, medium or poor?

**Student responses:**

- Full range from good to bad. In their general experience, newer lecturers seem to be better at getting their message across.
- It would benefit to have guest lecturers for online students.

**Panel:** Do you know staff that go out to industry?

**Student responses:**

- Yes in Environmental Chemical analysis, transfer of knowledge is very good.
- Budget cuts, you could see the work load increasing and the delivery decreasing in lectures.
- Occupational Health and Safety – lecturers often give feedback on trips they have been on – students doing scenario based year – very beneficial. All modules tie into work placement, very well run.
- Online perspective – Occupational Safety and Health offered recorded lecturers and Field trips. Prefer the field trips and get better results.

**Panel:** Do you feel you are over assessed/under assessed?

**Student responses:**

- Too much continuous assessment for some. These are normally all due at the end of the semester: this represents a significant challenge for students
- Students with thesis, recommend having it earlier in the semester to allow time to do the background research.
- Don't get their title soon enough, only got their thesis in mid February.
- Medical Biotechnology lecturers very good but the sequence of delivery is laid out badly.
- Labs starting at different time – started early – divided the work early in first semester.
- Allocated, desk based projects – badly organised – 2 lab subjects.
- Students are quite unhappy about the limitations of library-based projects.

**Panel:** Noting that resources limited, which do you prefer, work in teams or on your own?

**Student responses:**

- Laboratory work is a major part of the learning process. It is better to design your own project rather than being allocated a project. You learn the techniques better.

**Panel:** Which would you choose - a literature review project or a lab-based project with a group?

**Student responses:**

- the lab work is better, getting hands on experience.
- with the new buildings – this will accommodate some lab space.

**Panel:** For lecturers supervising a number of different projects and laboratories, this can be very demanding – how do you find they manager their supervision?

**Student responses:**

- Technicians are very helpful.
- Complaints about some supervisors. Emails not being responded to. During mid- term break, not all staff respond. Overall laboratory projects are better than literature review (only) projects.

**Panel:** Are you happy with exam assessment process?

**Student responses:**

- Very happy with the exam assessment structure – 50% exams and the continuous exams every 2 weeks which is excellent for the Online students. Multiple choice, there is no feedback.
- Most students get an assessment plan –
- Problem with feedback of results, two-weeks notice.
- Timely feedback is very important.
- Archaeology – feedback is very good, staff are very approachable, there is assistance.
- Health Science year 3 – had to learn a lot about exercise, which was up to the professional standard, but this was not certified to the level of a gym instructor. Some form of certification is requested.

**Panel:** Has anyone heard of MASS?

- Maths – do a Moodle© test – 10 multiple choice every week, you can keep taking the test during the week. You need to get 100% in this exam plus view a video tutorial. This is invaluable. It is open book and you keep revising over it. The lecturer was highly commended by all students.
- EPL and PBL – Occupational H&S– given a scenario and you need to research in groups of 5. Feedback given and it is very good.
- Pharm Science – feedback not as much. Scenario could be better defined. Good to work with different groups
- Environmental – Pilot plant – Water treatment project is excellent, great way to see how it works, each group has a plant to carry out the treatment test.

**Panel:** Did anyone come into the programme without a science background?

**Student responses:**

- Lack of Chemistry is difficult – lot of work.
- Biochemistry was first subject and joined in 2nd year. The lecturer is excellent, everything is in Moodle©. Lot of quizzes, worth every 2%. Audio lectures excellent.

**Panel –** is Moodle© more used by online students?

**Student responses:**

- Needs to be more consistency with the application of Moodle© across all modules and programmes irrespective of the mode of delivery.
- Some lecturers are concerned that students will not attend class. However, students find teaching presentations very beneficial to have in advance. Useful for note-taking in class. .

**Panel –** any reasons why students drop out – PAL did you hear of it?

Student responses:

- This seems like a good idea for first years. It should be offered to more than three programmes.
- One of the student mentors – suggest that students don't understand the relevance of their programme. Their course is different to what they thought – it is not until they get further into a programme that they understand the discipline. Students don't understand that they need to learn the basics first.
- Careers guidance – mixed views on the effectiveness of this.
- The open day is very good – the students can give their real experience of the institute and the particular programme.
- It is difficult to see the relevance of programmes.
- There are a number of staff who act as the coordinator for the entire programme.

Panel – How do you find the student learning support services?

Student responses:

- Wifi is terrible, lack of printers is terrible.
- Lots of new TVs around the campus but no printers. Very expensive to print. Recommend to lower the price of printing. Very poor quality, when you can print.
- Library – love it. The open hours too limited. Better opening hours. More study space is needed. Supervision also needed.
- Suggest blocking- off the upper floor of the library – because students are playing computer games in the lower level.
- Should be a time limit on computer use in the library and a time limit on absence from occupied desks

Panel: is there sufficient supervised study space?

Student responses:

- Postgraduates – quality of materials and facilities is critical.
- There was mixed view about the access to journals although it was agreed that there was no problem getting articles within a week.
- Sometimes difficult to get copies of other thesis work.

Panel: Any burning issues?

Student responses:

- Forensics - Difficult to get work placements. Would be beneficial if staff could source work placements.
- Pharmaceutical – work experience is very good
- Pharmaceutical Science - 2 lecturers delivering 15 credit module in biopharmaceutical analysis. There is an overload of assignments from the 2 staff.
- Environmental Protection– 3 lecturers for one exam 2 hours – continuous assessment too much for 5 credits.
- a suggestion was made to incorporate maths into 4th year.
- Spring board student –the advertisement said that I7 places will be available but now being told that it will not be available. Part-time offered but no suitable for spring board funding.

## Meeting with External Stakeholders

**The list of external stakeholders is in Appendix VIII**

**Chair:** Padraig Gavin

**Panel Members:** Donal Coveney, Martin Danaher, Ken Carroll, Noel McLoughlin,

The Chair welcomed the External Stakeholder and asked them to introduce themselves.

RB – Completed the Archaeology programmes currently looking for work.

PB – A graduate, now working in Elanco – employed for the last 10 years in H&S

JM - MD of Charles River, employs graduates

AC – A graduate, now working in Abbott Laboratories, employs graduates

SS - A graduate, now working in a local authority, employs graduates

MMcD – largest employer of archaeologists

RMcP – MD of GSK Ltd. – have a relationship with the IT on the GMP course and have taken IT Sligo Graduates

The Panel members introduced themselves.

The Panel introduced a number of themes including, preparedness of the students applying for jobs, in relation to CVs and their performance at interview; the experience of work placement.

### Student Job Applications

RB – referred to, as a recent student, the lack of learning on preparing for interview, in writing the CV and generating a covering letter. This has been addressed in the proposed changes to the programme with a new re-evaluation module.

SS – there should be a greater emphasis on preparing for employment and on job interviews, at the latter end of the programmes.

***The Panel queried the expectation of students in terms of what industry might require rather than the expectations of students by the Institute.***

The External Stakeholders stressed the importance of the CV and the attention to detail (e.g. in spelling). The poor level of grammar and poor report writing was commented on. This could be facilitated on the programme by external employers presenting to students on their sector.

SS – when he has returned to present to students, he does emphasis the difference between student life and the world of work.

### Student Work Placement

JM – emphasised the importance of the placement module, as the student gets the first-hand experience of what is required by employers and it provides an opportunity for the employer to observe the student in action.

AC – there must be a realistic expectation by the student on what is required of them on the placement – i.e. starting at a low level and to build up with experience and for their competency to be evidenced. Some students presume that they are entitled to a high level in a company once they have a primary degree.

It was confirmed that the placement students are selected by CV. It was commented that many of the CVs are identical and students do not put sufficient effort into promoting their unique skills through their CV.

*The Panel asked for views on the preferred duration of placement.*

PB – expressed the view that this should be of 6 months minimum, duration (effectively a year out of the course). Not all students are paid, but it is more likely that payment would be made for longer duration placement. Some companies have the policy to pay students on the basis that the work the student will be doing is of value to the company. The amount of training required to get value from a placement student supports the case for longer term placements.

The Panel referred to the challenge for the Institute to secure long term placements, and asked for views as to how this could be addressed in partnership with employers. The industrial representatives commented that one reason for supporting placements is to build relationships with the Institute, to get good graduates.

*The Panel referred to the ECF and what impact taking a placement student has on this, particularly for longer term paid placements.*

RMcP – asked could the placement work be conducted at the Institute using Institute facilities. It was confirmed that this can be facilitated and a number of examples of this, including at 4th year level, were outlined.

*The Panel asked for clarity on the assessment of students on placement.*

The external stakeholders were generally satisfied with the process used by the Institute, including the assessment forms returned by the companies.

On placement the student should understand about the impact of poor work standards on the product, which is more critical than errors made in the laboratories.

Graduate preparedness for employment

*The Panel asked about the level of technical preparedness of graduates when they enter the work force.*

AC and PB – commented that the H&S focus was on construction industry which was not directly relevant to manufacturing facilities.

JM – commented that, in general, a lot of time has to be spent on training new employees on laboratory techniques – e.g. pipetting techniques, practical applications of GMP/GLP. This could be improved in all HEIs and in fact IT Sligo is good in this area.

SS – there could be more teaching on GIS as this is a growing application for all employment, at Local Authority.

*The Panel queried the teaching techniques and the balance of topics, including business processes.*

RMcP – commented that the quality of the IT was one of the primary reasons they did not pull out of Sligo. He observed that business awareness and an innovative frame of mind of graduates (in general) could be enhanced. He would like to see more of this theme embedded into the learning process.

*The Panel asked for clarification of the meaning of innovation.*

RMcP –Having an understanding of why the company exists. Understanding what they do in the company (producing products) and the impact that this has on a person/user in another country. It is important that graduates are trained to think differently, to deal with challenging ideas, and to be competent in applying science rigorously. Would like the Institute to incorporate issues, such as how the competition works, into the teaching and to produce graduates that can do the technical and analytical work while also being innovative thinkers.

For example, some companies have developed innovation teams to think laterally (not being scared when faced with something different), while still maintaining strict SOPs for the routine manufacturing processes. This can be facilitated with enquiry based learning approaches, where students have the space to work through novel ideas for the first time.

JM – wanted it noted that the experience of his company is that IT Sligo is by far the most proactive HEI in approaching the company for collaborations – student visits, work placements, research collaborations. The high level of enthusiasm of the staff was commended in promoting this relationship and they should be encouraged to do this with other companies. This experience was confirmed with the industrial representative from Allergan.

PB – asked if the Institute could provide more training and preparedness on lean 6 sigma.

MMcD – suggested that the Archaeology course is unique and produces high standard graduates. The Institute should better market its graduates, particularly the high standard of research work that is underway. The pro-activeness of the Head of School in this regard was commended. The programme could make better access to the large amount of national archaeological materials available unanalysed. Stronger relationships could be developed with Institute of Archaeologists in Ireland and the National Museum of Ireland.

The Panel thanked the external stakeholders for their time and for their contribution to the process.

# Part 10 Findings and Recommendations

The Panel met with the President who outlined the basic features of the review process and emphasised the importance that the Institute places on these reviews. The Panel also had very detailed discussions with the Head of School, the Heads of the Departments and the Programme Chairpersons and staff as well as student representatives and industrial stakeholders. The Panel regretted that it had not had the opportunity to meet with non-Academic staff of the Institute.

The Panel recommends the revalidation of the Programmes that were presented to it for 5 years subject to the conditions and recommendations listed below. The Panel also recommended the adoption of the School 5 year Plan.

## Commendations

1. The Panel was encouraged by the energy and engagement of the Institute and also that of the staff and students of the School of Science.
2. The Panel noted the Institute's commitment to the development of the Connacht-Ulster Alliance initiative and its alignment with the national HE strategy and recognised the challenge that this presents.
3. The Panel acknowledged the objective of a Technological University and the intention to clearly differentiate this from other HE establishments.
4. The Panel was reassured that the School of Science is considered to be a key element in the CUA and the progress towards a Technological University
5. The Panel was impressed by the clarity of vision of the Plan of the School of Science and the clear demonstration that it is aligned with Institutional strategy.
6. The Panel acknowledged the success of the School in attracting and, most importantly, retaining high quality students, many of whom progress through the system to higher degrees. Coupled with this, the commitment to supporting relatively weak entry-level Level 6/7 students in 1st and 2nd year is acknowledged.
7. The commitment of the School to Online Distance Learning is commendable and is a clear strength in the changing financial and educational landscape. Similarly, the Panel was impressed by the range of innovative procedures that have been implemented for teaching, learning and assessment.
8. The Panel commends the School on being a founding member of the NIBRT consortium and acknowledges its leadership in the provision of industrially relevant training using online delivery at a national level.
9. The Panel commended the School for its strong proactive engagement with local industry and other stakeholders, a view clearly expressed by the External Stakeholders met by the Panel.
10. The Panel was very impressed by the clear commitment and enthusiasm of the staff for research. The research activities of the School are being increasingly recognised and rewarded by prestigious research grants and funding. The developing relationship with Australia was welcomed. The proposed strategic approach to the establishment and resourcing of Strategic Research Centres is also commended.
11. The Panel was reassured to hear that, in the present contracting employment environment, there have been a number of new recruits to the School and this has allowed for the refreshment of the range and level of expertise.
12. The School has demonstrated commendable flexibility and innovation in industrial placements for its students and it's record of repeat placement of students within local industry is acknowledged.

13. The "return to industry" model was regarded as an effective means of informing staff in their teaching and research.
14. The Panel commended the on-line maths tutorials, which were highly praised by all students. Teaching maths to Bioscience students and getting them to be enthusiastic is a real challenge and the staff involved concerned deserves credit for their efforts.
15. The commitment of the School and staff to improving EBL, lab-based PBL, group learning, and the development of key foundation skills is also entirely supportable.
16. The Panel applauded the staff for their obvious commitment to the welfare of the students and their excellent rapport with them. This was confirmed by meetings with the student representatives who praised the staff for their accessibility, approachability and their willingness to help them with their studies.
17. The Department of Environmental Science has secured a national and regional reputation of high standing in the area of environmental protection and management. Management of this reputation important and is a key to future success.
18. The Panel notes the growth of online programmes in the Department of Life Sciences and commends the range of postgraduate training programmes that respond directly to the needs of regional industry in the Pharma and Biopharma sectors, that are particularly targeted at SpringBoard and work-based learners.
19. The Panel further commends the significant growth in full time student numbers in the Department of Life Sciences, in the context of reducing resources.
20. The new Science building that is under construction is a very welcome development and will provide great opportunities to the School to become a regional centre for science education and research and industrial interaction.

## Conditions

1. The School should make corrections to all programme documentation, in particular the programme contact hours, credits and assessment breakdowns as presented in all programme schedules. All of the documentation should be diligently proof read and checked before the revalidated programmes are implemented. This should be completed in time for the timetabling of the 2013/14 academic year and should be audited by the Registrar.

## Recommendations

### For the Institute

1. Ensure that members of staff are assisted to carry out research and compete effectively for external funding. Wherever possible, teaching duties should be arranged so as to enable staff to spend time on their research activities.
2. The School has set itself significant strategic KPI targets with regard to research activity (e.g. 20% p.a. growth in funding, 15% p.a. growth in publications). The Institute should review the time allocated to teaching for research-active staff to fully reflect the supervision and management of research. Improved time allocations, facilities, support services and training need to be provided to assist staff in the preparation of research grant applications.
3. Cross border activities should be encouraged and facilitated in regard to teaching and research.
4. The Institute should consider establishing peer- and student- nominated Presidential Awards for Teaching Excellence to recognise the achievements of gifted and committed teachers.

5. The Institute should examine and, if possible, rectify the problems caused by the BANNER system for the examination process, as identified by staff.
6. A strategy for ODL needs to be developed that recognises the challenges in balancing the provision of online delivered versus on-campus delivered programmes.
7. The costing model for ODL should be re-examined to be competitive with other providers.
8. The additional workloads associated with delivery to large class sizes should be recognised (e.g. assessments & pastoral care).
9. Following from strong feedback from students, the shortcomings in the availability of some computing services, including Wi-Fi, computing and printing, should, be addressed. The Panel regretted that they did not have the opportunity to meet with support staff to explore this issue further.
10. The management of the library should be reviewed to increase access to quiet study spaces, increase opening hours and to reduce the use of the facilities for social media and gaming,
11. While the Panel understand that the Support Staff in the School were involved in the review process, their absence as part of the Panel visit process was noted. A copy of the final report should be circulated to Support Staff for comment. In future, the Support Staff should be provided with an opportunity to meet with the visiting Panel.
12. The Institute should consider intensifying its graduate survey, at and immediately following graduation, to ensure high response rates and providing findings on a School/Department basis and possibly at programme level.

## For the School

1. In future Reviews, the School should produce documentation that is much more reader-friendly and accessible. This should include clear and concise executive summaries with clear directions to the relevant supporting Tables and Charts. The number of outcome indicators listed for programmes should be consolidated and/or reduced where possible to provide a better and clear focus. The Panel had difficulty in navigating though the extensive data that were provided in a relatively raw and undigested format. A paperless review should be used if possible.
2. The School needs to develop effective strategies in the highly competitive field of recruiting more fee-paying international students.
3. Consideration should be given to the strategic direction of the School of Science nationally, maintaining its existing and active liaison with regional industry and potential employers but seeking potential new partners. In the development of the CUA, the School should develop a strategy in relation to the current programmes offered by the School and their strength (individually and collectively) identified.
4. The School should continue to pursue the development of cross-School and inter-School modules and programmes to enable access to a wider staff and expertise base.
5. The Panel notes the use of innovative teaching and learning techniques, such as PBL, on some programmes. These examples of best practice should be shared with staff across the School.
6. The use of lab-based scaled experimental models, where appropriate, should be more widely applied.
7. The School should recognise the particular time commitments required by ODL and should consider greater time allocation for teachers for their out-of-hours contribution.
8. All final year projects should be laboratory-based or field based (where possible) and adequate time allowed for completion by students and for staff supervision.

9. The School should develop an assessment strategy, which should include the process of ensuring that over-assessment will not occur and also address the provision of timely, informative and constructive feedback to students.. Following feedback from the students, particular attention should be given to the amount of assessment on modules where there is more than one lecturer.
10. Students should be informed of assessment specifications and submission deadlines in a timely manner and this should be coordinated across all modules on a programme to avoid a clash of deadlines.
11. PMDS should be fully implemented across the School at all levels with appropriate metrics to assess progress.
12. The School should develop a schedule of School meetings to ensure that staff are aware of upcoming meetings in a timely manner.
13. The purchase of basic laboratory equipment should occur prior to the purchase of more expensive research equipment.
14. The successful provision of the Online maths module should be replicated for other topics and on other Programmes and Departments across the School.
15. With reference to Condition (1) above, the Panel notes that the contact hours for a number of programmes is proposed to increase over the existing approved programme (for example, Level 7 & 8 Forensic investigation; HC in Science; Level 7 Energy and Sustainability, Level 7 and 8 Environmental Science; Level 7 and BSc in Occupational Safety and Health). No substantive basis was provided for this increase in hours and, in the context of limited staff resources, the School management must retain or reduce contact hours or provide justification for any increase in hours. These changes must be agreed by the Registrar.
16. A Terms of Reference for the Programme Coordinator role should be developed and agreed between School Management and academic staff,
17. Time should be made available to staff to network effectively and validate course focus and content within the school and externally.
18. The School should consider embedding more information on how business works, understanding the role of the graduate within different companies and settings, and fostering of innovative and creative thinking in the solving of problems.

<u>For the Departments</u>

1. Following from the apparent success of the use of EBL in the Department of Environmental Science, this mode of delivery should be rolled out across other programmes in this Department and in the Department of Life Sciences..
2. The use of laboratory based team projects, as provided in year 4 of Biomedical Science should be implemented in the Pharmaceutical Science programme.
3. Final year projects must be agreed with students in a timely manner, sufficient to provide adequate time for the project to be completed.
4. Inclusion of some elective modules in programme schedules should be considered to allow students have a more personalised learning experience. This might also include options to take module electives provided in other Departments or Schools from across the Institute.

## Programme Specific Recommendations

## Department of Environmental Science

## Recommendations

1. The design and use of lab scale projects similar to the very successful wastewater treatment plants should be developed for other areas of the programme where possible.
2. A project to find and identify 100 floral species should be developed.
3. The Department should organise a staff training day at which different lecturers from within the Department explain their teaching and learning procedures (e.g. OH&S problem solving methods).
4. The developments with Irish Water should be monitored with a view to capitalising on the experience of the Department with water and wastewater treatment.
5. The anticipated increased waste load from the agriculture sector, arising from Food Harvest 2020, provides an opportunity for the Department to work with the agri-food sector on minimising risks to the environment.
6. All opportunities for staff development through liaison with the EPA's Office of Environmental Enforcement should be pursued.
7. In relation to the School-wide recommendation on cross-School modules, the Department of Environmental Science might consider topics such as Food Science and Environment, the impact of new EU directives, the impact on environment of CAP reform, the focus of tourism on built and natural environment, fracking and its impacts ( for example, the BSc in Applied Archaeology would benefit from a link to programmes in Business, Tourism, Civil and Environmental Engineering).
8. For the BSc in Occupational Safety & Health:
    - The Panel notes that this degree is accredited by IOSH and recommended that the Department seek approval from the British Occupational Hygiene Society for its occupational hygiene modules. This would provide a fast-track route for graduates seeking Chartered Membership of the Faculty of Occupational Hygiene.
    - The Panel encourages an emphasis on eco-toxicology within the programme which would fit well with the expertise of the Department and also allow exploitation of opportunities originating from the European Chemicals Agency and regulatory state agencies within Ireland.
    - Links with the European Chemicals Agency to provide graduates with opportunities to seek regulatory science positions should be explored, for example, utilising the ECHA graduate scheme.
9. Explore the possibility of delivering the MSc in EHS Management by distance learning.

## Department of Life Science

## Recommendations

1. All final projects should have a laboratory based project with provision made for the necessary supervision.
2. The special purpose regulation requiring 75% attendance for practical modules should be applied consistently across all programmes.
3. Where modules have a practical element, a requirement exists for the student to achieve a minimum of 25% in the final exam. Consideration should be given to moving this to a 30%

minimum especially where the theoretical concepts of one module form a basis/foundation for a subsequent module.

4. Arising from Panel meetings with External Stakeholders, and in particular industry employers, greater emphasis should be placed on the teaching and assessment of concepts of accuracy, precision, simple laboratory skills such as pipetting, dilutions, and practical applications of GMP/GLP. These are identified as areas of common weakness amongst graduates.
5. The BSc in Health Science & Physiology appears under resourced with regard to laboratory and sports facilities. The School should consider how this might be redressed in the new science block extension.

## Part 11 Conclusion

The School of Science carried out a self-evaluation during the academic year 2012/13. This culminated in a School Planning and Programme Revalidation submission that was assessed by a Panel of external experts in April 2013, in accordance with the institute's Quality Assurance procedures.

The evaluation process included a review of the extensive documentation submitted by the School and meetings with the President, the School Management, all of the Academic staff and external stakeholders took place. There was a very positive meeting with students in which they indicated their satisfaction with the Institute, the School and the staff.

Following the review, the Panel recommended the revalidation of all existing programmes that were submitted by the School. The Panel also recommend the adoption of the School Plan.

The Panel specified 1 Condition, 12 Recommendations for the Institute and 18 School-wide recommendations. There were also a number of programme specific recommendations.

The outcome of this review will be submitted to the Academic Council for adoption.

| | |
|---|---|
| Professor James Houghton | Dr Brendan McCormack |
| Chairperson | Registrar |

Date: _____

## Appendix I Agenda (confirmed at the Panel meeting on 24th April, 2013)

*Wed 24th April*

| *Date/Time* | *Item* | *Room* |
|---|---|---|
| 17:00-19.00 | Private meeting of the Panel: Discussion of documentation and identification of points for special consideration. Confirmation of the agenda. Overview presentation from President. | Cygnus suite , Clarion Hotel |
| 20:00 | Panel dinner | Clarion Hotel |

*Thurs 25th April*

| *Date/Time* | *Item* | *Room* |
|---|---|---|
| 08:30-09:15 | Private meeting of Panel | Institute Board Room, IT Sligo |
| 09:15-09:30 | Meeting with Head of School and Heads of Department | Institute Board Room, IT Sligo |
| 09:30-11:00 | Meeting with Head of School, Heads of Departments on **School Plan**<br>- Approach taken to planning<br>- School Academic Plan & target market<br>- Initiatives for student throughput, retention; feedback processes<br>- Pedagogical and delivery strategies<br>- Research growth Plans<br>- Student support services<br>- School/Department Structure and management & administrative structures<br>- Staff compliment (academic, technical & administrative), deployment and development<br>- Physical facilities | Institute Board Room, IT Sligo |
| 11:00-11:15 | Coffee | Institute Board Room, IT Sligo |
| 11:15-13:00 | Continuity of meeting with Head of School, Heads of Departments, Programme Chairs and Research PIs on School Plan (as above) | Institute Board Room, IT Sligo |
| 13:00-14:00 | Lunch | Institute Board Room, IT Sligo |
| 14:00-16:00 | **Programme Revalidation:** (all staff)<br>Breakout of Panel with two Departments, Heads of Departments, Programme Chairs, all lecturing staff:<br>Presentation by HoD<br>- Feedback to and from students, employers and external examiners<br>- Graduate employability<br>- Links with employers<br>- Programme design, modifications and titles of awards<br>- Learning outcomes<br>- Delivery methodologies | **Room E1006**<br>Department of Environmental Science (Note Talker – A Currid)<br>**Room E1008**<br>Department of Life Sciences (Note Talker – D Collery) |

| | | |
|---|---|---|
| | - Departmental Research | |
| 16.00- 17.00 | Private meeting of Panel/Coffee | **Room E1008** |
| 17.00- 18.00 | Tour of facilities | School of Science |
| 20:00 | Panel dinner | Clarion Hotel |

***Fri 26th April:***

| *Date/Time* | *Item* | *Room* |
|---|---|---|
| 08.30- 09.00 | Private meeting of Panel | **Room E1008** |
| 09:00-10:30 | **Programme Revalidation continued:**<br>Breakout of Panel with two Departments, Heads of Departments, Programme Chairs, all lecturing staff and industrial representatives:<br>- Feedback to and from students, employers and external examiners<br>- Graduate employability<br>- Links with employers<br>- Programme design, modifications and titles of awards<br>- Learning outcomes<br>- Delivery methodologies<br>- Departmental Research | **Room E1006**<br>Department of Environmental Science (Note Talker – A Currid)<br>**Room E1008**<br>Department of Life Sciences (Note Talker – D Collery) |
| 10.30 – 11.00 | Meeting with all Staff | **Room E1006**<br>Department of Environmental Science (Note Talker – A Currid)<br>**Room E1008**<br>Department of Life Sciences (Note Talker – D Collery) |
| 11 -11:15 | Coffee | **Room E1008** and<br>**Room E1006** |
| 11:15-12:00 | Private meeting of Panel: break-out group work with note taker to have draft programme revalidation report to bring to the full Panel | **Room E1006** |
| 12:00-13:00 | Meet with Student Representatives and with external stakeholders | **Room E1007** Meeting with Student Representatives<br>**Room E1008** Meeting with external stakeholders |
| 13.00- 14.00 | Lunch | Institute Board Room, IT Sligo |
| 14-00-14:30 | Catch-up meeting with Head of School, Heads of Departments, Programme Chairs ***(if required)*** | Institute Board Room, IT Sligo |
| 14-30-15:30 | Private meeting of Panel to agree Findings including top line conditions and recommendations | Institute Board Room, IT Sligo |
| 15:30 | Feedback to School | Institute Board Room, IT Sligo |
| 16:00 | Finish | |

# Appendix II: Membership of Review Panel

## Group 1: Department of Life Sciences

| Title | Name | Surname | Role | Institution/Company |
|---|---|---|---|---|
| Dr | Donal | Coveney (Chair) | Managing Director | TopChem Pharmaceuticals Ltd |
| Professor | James | Houghton | Emeritus Professor of Microbiology | NUIG |
| Mr | Billy | Bennett | Registrar | Letterkenny IT |
| Dr | Ken | Carroll | Head of Research & Development | IT Tallaght |
| Professor | Jaqueline | McCormack | Associate Head of *School of Biomedical Sciences* | University of Ulster |
| Mr | Padraig | Gavin | Biologics Development Senior Manager | Allergan Ltd |
| Dr | Martin | Danaher | Food Safety Department | TEAGASC |

## Group 2: Department of Environmental Science

| Title | Name | Surname | Role | Institution/Company |
|---|---|---|---|---|
| Dr | Margaret | Gowen (Chair) | Managing Director | Margaret Gowen Ltd |
| Dr | Des | Foley | Head of School of Science | GMIT |
| Mr | Gerard | O'Leary | Director, Office Of Environmental Enforcement | Environmental Protection Agency |
| Dr | Padraic | Larkin | Director, Environmental Consultant | Environmental Consultancy |
| Mr | Darren | Arkins | Senior Inspector | Health and Safety Authority |
| Mr | Noel | McLoughlin | Estates manager/graduate | St Angela's College, Sligo |

## Appendix III: List of documentation circulated to the Panel

The following documentation relevant to the Review was circulated to the Panel in advance of the meeting.

- Chapter 5 of the QA Manual that explains the process of the School Planning and Programme revalidation.
- School Planning and Programme Revalidation: Terms of Reference.
- A proposed agenda and list of Panel members (The agenda was finalised when the Panel meets on Wednesday 17th April at 5 pm.)
- A hard copy of the School Self Evaluation document Volume 1 (School Planning)
- Hard copies of the proposed changes to programmes in the 2 departments, Volume 2 providing a summary of, and justification for the proposed changes to programmes)
- A USB key with soft copies of all documentation including further details pertaining to programmes and modules, by department
- Map of Sligo
- Panel Visit Claim form

## Appendix IV: Private meetings of the Panel

### 24th April 2013: Points raised for discussion by the Panel at a private meeting

1. Introductions
2. Explained the process
3. Resources are an issue – how can the maintain standards and grow with reducing staff numbers?
4. How does the documentation compare to the of the sector (e.g. LYIT)?
5. How have the broader external environment informed the proposed changes?
6. Graduates – need report writing, GMP awareness, pipetting
7. What can we say in the report, e.g. on need for more staff
8. What is the level of engagement at meetings/discussions?
9. What is the interaction with employers and the IT – e.g. Allergan who employs graduates, do they come back to the IT?
10. What is the extent of regular engagement with industry and opportunities to modify the programmes?
11. Tension between research and teaching – recruitment of staff.
12. Archaeology – is at a professional cross roads now that roads building has stopped. What is its niche and where will graduates go? Where is its research going? Where does it fit into the School?
13. What is the direction the School is going in and is it appropriate.
14. How does it differentiate itself from other providers? What is the direction? What does it offer to a student that is different?

### 25th April 2013: Points raised for discussion by the Panel at a private morning meeting

The Chair welcomed the Panel and opened the discussion on the agenda.

It was agreed that Margaret Gowen would Chair the Department of Environmental Science and Donal Coveney Chair the Department of Life Science.

It was agreed which Panel member would lead out on each of the topics, including implementation of recommendations of the previous review,

- the process of conducting the self-evaluation and how changes were identified,
- the process of managing programme boards.
- teaching and learning and assessment,
- research,
- pedagogy and delivery strategies
- expansion plans
- communication literacy and report writing,
- student experience, throughput and retention
- wider context and CUA,

- staff development,
- international collaborations,
- science practicals and industrial placement and other topics,

There were no exceptional issues identified beyond the above and the listed agenda.

The breakout groups for the School tour were discussed and agreed. The Panel agreed to change the agenda on Friday to incorporate an additional session for the Panel to meet with academic staff, without the management present. This will take place from 10.30 to 11.15am.

**25th and 26th April 2013: Points raised for discussion by the Panel at a private evening and morning meeting**

As the Departmental programme sessions continued later than expected, the Panel did not meet privately on the evening of April 25th. .

At the morning meeting of 26th April, the days agenda was discussed and clarification provided on the breakout sessions and their chairing.

The Panel reviewed the remaining set of Programmes to be considered.

The Panel asked for clarification on the purpose of the programme breakout sessions, i.e. should they be at a high level – related to overall purpose of the programme, assessment strategies, online strategies etc. and the relevance of the programme to industry – or at the level of auditing the details of the course schedules, contact hours and assessment breakdown. There were different views expressed as to where the emphasis should be placed during the meeting with staff. It was agreed that the Panel would meet with the Departments and focus on the wider discussions. As some members of the Panel had reviewed the course schedules in more detail, and identified errors and inconsistencies, the Panel noted that it was likely to make a recommendation that the detailed contact hours and assessments needs to be fully audit.

The Panel commented that, as the documentation was voluminous, it would be of significant assistance to future Panels if the School provided more concise summaries of the main changes to programmes, and their justification.

The Panel also suggested that, in future, there should be more clarification provided to the Panel on its terms of reference and mode of conducting its business during the visit. This could be facilitated if, in future, the breakout Panels meet privately in advance of meeting the Departments to clarify its terms of reference and the handling of the meeting with the staff.

The Panel also agreed that there was no need for a further Follow On meeting with the School management, as per the agenda.

## Appendix V Presentation made by the President to the Panel

## Appendix VI Presentation made by the Head of School and the Heads of Department to the Panel

## Appendix VII Staff members who met with the Panel

### Staff in Attendance for Department of Environmental Science meeting

| Staff | Discipline |
|---|---|
| Beglane Fiona | Archaeology |
| Broaders Michael | Microbiology |
| Connaughton Noel | Environmental Engineering |
| Considine Aideen | Microbiology |
| Coyle Cait | Environmental Science |
| Crowe Bill | Environmental Science |
| Dowd Marion | Archaeology |
| Duddy Ann Marie | Environmental Science |
| Feeney Declan | Environmental Science |
| Fitzgerald Billy | Environmental Science |
| Gillespie Eoin | Environmental Science |
| Hamilton Paul | Environmental Science |
| Keeney Maria | Archaeology |
| Moran Carmel | Archaeology/ Environmental Science |
| Moore Sam | Archaeology |
| Moran James | Environmental Science |
| O'Donohue Anne | Environmental Science |
| Read Chris | Archaeology |
| Rudden Lil | Environmental Science |
| Savage Margaret | Environmental Science |
| Taylor Cian | Environmental Science |
| Tonry Steve | Environmental Science |
| Touzet Nicolas | Environmental Science |

## Staff in attendance for the Department of Life Sciences meeting

| Staff | Discipline |
|---|---|
| Barrett Sharon | Biomedical/Forensic |
| Bartlett John | Head of Research |
| Brennan James | Head of Department of Life Sciences |
| Breen Ailish | Biomedical |
| Cadogan Aodhmar | Forensics |
| Collery Deirdre | Administration, Note Taker |
| Daly Stephen | Biomedical |
| Duignan Geraldine | Yes |
| Greaney Dermot | Life Sciences |
| Heneghan Mary | Biomedical Pharmaceutical |
| Joyce Oliver | Life Sciences |
| McArdle Fiona | Forensics/Chemistry |
| Mc Callion Maire | Health Science |
| McCarrick Orla | Health Science |
| Mc Gourty Padraig | Computing & Statistics |
| McGowan Ted | Forensics |
| McLoone Margaret | Health Science |
| Mc Loughlin Ian | IT/Stats/Maths |
| Monaghan Ken | Health Science |
| O'Connor David | Life Sciences |
| Patton Tom | Pharmaceutical Science |
| Regan Joanne | Health Science |
| Shelly Declan | Pharmaceutical |
| Sherlock Richard | Physics |
| Tobin Kieran | Centre for Online Learning |
| Tyrrell Eadaoin | Biomedical |
| Youell Azura | Health Science |

## Appendix VIII: External Stakeholders who met with the Panel

| Name | Title | Company |
|---|---|---|
| Aoife Conway | Graduate, Occ. Safety & Health | Abbott Laboratories Ltd |
| Patricia Brogan | Graduate, Occ. Safety & Health | Elanco Ltd |
| Russell Macpherson | Director New Product Introduction and Product Technology | Glaxosmithkline Ltd |
| Joe Moran | Technical Director | Charles River Ltd |
| Michael Mc Donagh | Archaeologist | NRA |
| Sean Scott | Waste Enforcement Office | Leitrim County County |
| Rene Balthasar | Archaeology graduate | Seeking employement |

## Appendix IX Students who met with the Panel

### SCIENCE STUDENT REPS MEETING WITH PROGRAMMATIC REVIEW PANEL 26.4.2013

| Student | Programme |
|---|---|
| Pamela Boyle | Postgraduate |
| Lorraine Archer | Postgraduate |
| Julia Powers | Postgraduate |
| Tara Westby | Postgraduate |
| Kathleen Love | Postgraduate |
| Alan Healy | Archaeology Year 2 |
| Claire Cusack | Archaeology Year 3 |
| Darren Ellis | Environmental Protection Year 1 |
| Olivia Brookes | Environmental Protection Year 2 |
| Colm Gallagher | Environmental Protection Year 3 |
| Patrick Taffe | Environmental Protection Year 3 |
| James Fearon | Health & Safety Year 3 |
| Mary Grimes | Energy, Sustainability Year 1 |
| Derek Hennessy | Energy, Sustainability Year 2 |
| Eoghan Kenny | Energy, Sustainability Year 2 |
| Oisin Brennan | Higher Certificate in Science Year 1 |
| Rachel Kelly | Biomedical Year 1 |
| Erikas Movinas | Biomedical Year 1 |
| Kayleigh Evans | Biomedical Year 2 |
| Mark Vaughan | Biomedical Year 2 |
| Evin O Connor | Medical Biotechnology Year 4 |
| Grace Golden | Medical Biotechnology Year 4 |
| Carl Van Rensburg | Health Science & Physiology Year 1 |
| Brid Killian | Health Science & Physiology Year 2 |
| Aisling Fitzgerald | Health Science & Physiology Year 3 |
| Roisin Mc Cafferty | Health Science & Physiology Year 3 |
| William Carey | Pharmaceutical Year 4 |
| Roisin Elliffe | HC in Environmental Mgt. by ODL |
| Paul Caprini | PGD in Environmental Protection by ODL |

## Appendix x Academic Programmes recommended to the Academic Council by the Panel for validation

1. B.Sc. in Environmental Protection (Level 7) Years 1-3
2. B.Sc. in Environmental Protection (Add-on, Level 7) Year 3
3. B.Sc. in (Honours) Environmental Science (Level 8) Years 1-4
4. B.Sc. in (Honours) Environmental Science (Add-on, Level 8) Year 4
5. B.Sc. in Environmental Protection (Embedded Award of Level 8)
6. Higher Certificate in Environmental Management (Level 6)
7. BSc in Environmental Management (Level 7, Add-on)
8. BSc (Hons) in Environmental Management (Level 8, Add-on)
9. MSc in Environmental Protection (Level 9)
10. PGD in Environmental Protection (Level 9, Embedded Award of MSc)
11. Certificate in Compost Facility Operation (SPA 10 credits, Level 6)
12. BSc in Applied Archaeology (Level 7)
13. BSc (Honours) in Applied Archaeology (Level 8)
14. BSc (Honours) in Applied Archaeology (Level 8, Add on)
15. BSc in Applied Archaeology (Level 7 Embedded Award of Level 8)
16. Higher Certificate in Science (Level 6)
17. Higher Certificate in Fisheries Management (Level 6)
18. BSc in Energy, Sustainability and the Environment (Level 7)
19. B.Sc. in Occupational Safety and Health (Level 7)
20. B.Sc. in Occupational Safety and Health (Level 7, Add-on)
21. B.Sc.(Honours) in Occupational Safety and Health (Level 8)
22. Certificate in Occupational Safety & Health (SPA 10 credits, Level 6)
23. B.Sc. in Occupational Safety and Health (Level 8, Add-on)
24. B.Sc. in Occupational Safety and Health (Level 7 Embedded Award of Level 8)
25. M.Sc. in Environmental, Health and Safety Management (Level 9)
26. PGD in Environmental, Health and Safety Management (Level 9 Embedded Award of MSc)

<u>Department of Life Science</u>

1. Higher Certificate in science in Pharmaceutical Science – Exit Award – 120 credits
2. B.Sc. Pharmaceutical Science (Level 7)
3. B.Sc. (Honours) Pharmaceutical Science (Level 8)
4. B.Sc. (Honours) Pharmaceutical Science (Add- on Level 8)
5. Higher Certificate in Science in Good Manufacturing Practice and Technology
6. Special Purpose Award – Certificate in Accredited Company Training

7. Certificate in Science and Technology (Level 6 - 15 credits)
8. Certificate in Science in Biopharmaceutical Processing (Level 6 - 20 credits)
9. Certificate in Science in Biopharmaceutical Operations (Level 6 - 20 credits)
10. Certificate in Science in Bio analytical Techniques (10 credits)
11. Certificate in Science in Sterile Operations (30 credits)
12. Certificate in Pharmaceutical Processing
13. Certificate in Science in Aseptic Processing (20 credits)
14. BSc. Pharmaceutical Science (level 7 Add on)
15. Certificate in Pharmaceutical Processing (Level 7 30 credits)
16. BSc. (Hons) Pharmaceutical Science with Drug Development (Level 8 Add- on)
17. BSc. Pharmaceutical Science with Drug Development (Level 7)
18. Certificate in Pharmaceutical Science and Management (30 Credits)
19. MSc in Industrial Pharmaceutical Science (validated by NUI but for note)
20. Postgraduate Diploma in Pharmaceutical Regulatory Affairs
21. B.Sc. Biomedical Science (Level 7)
22. B.Sc. (Honours) Medical Biotechnology (Add-on Level 8)
23. B.Sc. (Honours) Medical Biotechnology (Level 8)
24. Embedded Award B.Sc. Medical Biotechnology (Level 7)
25. Certificate in Science in Biopharmaceutical Operations (Level 7 - 20 credits)
26. Certificate in Science in Biopharmaceutical Processing (Level 7 - 30 credits).
27. Certificate in Science in Bio analytical Techniques (Level 6 - 10 credits)
28. BSc. Honours Degree Biopharmaceutical Science (60 credits- Add on)
29. Certificate in Biopharmaceutical Science (Minor Award L8 30 Credits)
30. Certificate in Principles of Cell Biology and Biotechnology (Special Purpose Award) Level9; 10 ECTS Credits
31. Post Graduate Diploma Biopharmaceutical Science (Level 9; 60 Credits)
32. M.Sc. Biopharmaceutical Science (Level 9; 90 Credits)
33. B.Sc. Health Science and Physiology (Level 7)
34. B.Sc. (Honours) Public Health and Health Promotion (Add-on Level 8)
35. Higher Certificate in Forensic Investigation and Analysis (Level 6) (Embedded Award of the BSc in Forensic Investigation and Analysis)
36. Bachelor of Science Forensic Investigation and Analysis
37. Embedded Award B.Sc. Forensic Investigation and Analysis (Level 7)
38. B.Sc. (Honours) Forensic Investigation and Analysis (level 8)
39. Certificate in Research Practice (Level 9 – 30 Credits)
40. Diploma in Research Practice (Level 9 - 60 Credits)