

PROGRAMMATIC REVIEW OF THE DEPARTMENT OF PHYSICAL SCIENCES

Phase 2: Programme Review

PROGRAMME PANEL REPORT

SCHOOL: School of Science and Informatics

DEPARTMENT: Department of Physical Sciences

DATE: April 11th and 12th 2018

PROGRAMME(S) PROPOSED FOR RE-VALIDATION

MAJOR AWARDS

Higher Certificate in Science in Industrial Measurement and Control (NFQ 6, 120 ECTS)

Higher Certificate in Science in Applied Physics and Instrumentation (embedded award)

Bachelor of Science in Applied Physics and Instrumentation (NFQ 7, 180 ECTS)

Bachelor of Science (Honours) in Applied Physics and Instrumentation (NFQ 8, 60 ECTS)

Bachelor of Science (Honours) in Instrument Engineering (NFQ 8, 240 ECTS)

Bachelor of Science (Honours) in Environmental Science and Sustainable Technology (NFQ 8, 240 ECTS)

NON-MAJOR AWARDS

Certificate in Advanced Industrial Automation, (NFQ 8, Special Purpose Award, 30 ECTS)

PROGRAMME(S) PROPOSED FOR VALIDATION

Higher Certificate in Science in Environmental Science and Sustainable Technology (NFQ 6, 120 ECTS)

Bachelor of Science in Environmental Science and Sustainable Technology (NFQ 7, 180 ECTS)

PROGRAMME(S) NOT PROPOSED FOR RE-VALIDATION

Certificate in Process Control and Automation, NFQ 6, Special Purpose Award, 30 ECTS

PROGRAMME REVIEW PANEL MEMBERSHIP

Prof John Doran, Head of School, School of Physics & Clinical & Optometric Sciences, DIT (Chair)

Mr Gareth Roe, Lecturer, Department of Life and Physical Sciences, GMIT

Mr Joseph O’Gorman, Global Operations Manager, LZ Life Sciences

Mr John Linehan, Environmental Compliance Officer, GSK

Ms Anita Boyle, Global HR Manager, ESP Ltd.

Dr Stephen Cassidy, Dean of Academic Quality Enhancement, CIT

PROGRAMME REPRESENTATION

Programme Staff

Department of Physical Science

Ms Eleanor Baldwin, Lecturer

Mr Eamonn Butler, Lecturer

Dr Stephen Hegarty, Lecturer

Ms Eva Norris, Lecturer

Mr Conor O’Farrell, Lecturer

Dr Donagh O’Mahony, Head of Department

Department of Mathematics

Dr David Goulding, Head of Department

Dr Richard Peard, Lecturer

Dr Natalia Rebrova, Lecturer

Dr Josh Reynolds, Lecturer

Dr William Whelan-Curtin, Lecturer

Dr Martin Woods, Lecturer

Learner Representatives

Fay Clohessey, BSc (Hons) in Environmental Science and Sustainable Technology, Year 1

Ivan Kordic, BSc (Hons) in Instrument Engineering, Year 1

Ariadna Lopez Gil, BSc in Applied Physics & Instrumentation, Year 1

Simon Jeffers, BSc (Hons) in Instrument Engineering, Year 2

Sarah O’Connor, BSc (Hons) in Environmental Science and Sustainable Technology, Year 3

Stephanie Boyle BSc (Hons) in Instrument Engineering, Year 4

Patrick Corbett, BSc (Hons) in Instrument Engineering, Year 4

Graduates

David Sweeney, BSc (Hons) in Environmental Science and Sustainable Technology

Sharon Butler, BSc (Hons) in Applied Physics & Instrumentation, PhD student at CAPP

Emma Nichol, BSc (Hons) in Environmental Science and Sustainable Technology

Philip Lordan, BSc (Hons) in Instrument Engineering, Automation Engineer, PACIV

Shane Ward, BSc (Hons) in Instrument Engineering, Graduate Engineer, Pilz

Seamus McHugh, BSc (Hons) in Instrument Engineering, Senior Execution Systems Engineer, Janssen

External Stakeholders

Barry Glavin, Service Director, Hanley Calibration

Martin Howley, Manager, Energy Policy and Statistical Support Unit, SEAI

A. PROGRAMME SUMMARY AND MAJOR CHANGES PROPOSED

1. HIGHER CERTIFICATE IN SCIENCE IN INDUSTRIAL MEASUREMENT AND CONTROL

1.1. Programme Summary

The Higher Certificate in Science in Industrial Measurement & Control (CIMC) is a part-time evening Level 6 programme consisting of 120 ECTS credits. It was originally developed to replace the City & Guilds 275 course when the latter was withdrawn over 20 years ago.

The primary aim of the CIMC programme is to provide cognate craftsperson's (Electrical, Instrumentation and Electrical & Instrumentation crafts) an opportunity to upskill in the field of measurement and control.

1.2 Major Change(s) Now Proposed

It is proposed that there will be two entry mechanisms for candidates with differing qualification backgrounds:

Option 1: Cognate Craftsperson

Option 2: General Entry Candidate

Stage 1 of this programme contains modules reflective of the on-the-job learning that cognate craftspersons would have acquired. Thus craftspersons holding formal qualifications in the areas of Electrical, Instrumentation or Electrical & Instrumentation are granted advanced entry into Stage 2 of the programme. All other candidates are enrolled into Stage 1 of the programme. Individual candidates make seek module credit(s) or exemptions based on their formal, non-formal or informal prior learning in line with the Institute's policy of recognition of prior learning.

2. BACHELOR OF SCIENCE IN APPLIED PHYSICS AND INSTRUMENTATION

2.1. Programme Summary

The Bachelor of Science in Applied Physics and Instrumentation aims to train graduates for technician and junior engineering roles primarily related to instrumentation and automation in the various regional and national manufacturing sectors. Understandably, the majority of graduates work in the BioPharmaChem and associated industries owing to its regional significance. Many of these graduates have progressed to senior roles within a wide range of industry sectors, for example as Electrical and Instrumentation site leads. The **Higher Certificate in Science in Applied Physics and Instrumentation** is an embedded programme and comprises the first two stages of this award. It is no longer a target award and is used now as an exit award for students who are unable to complete Stage 3 of the Bachelor of Science Award.

2.2 Major Changes Now Proposed

The stream of mathematics modules has been revised across all departmental programmes and specific modules have been revised on the BSc Applied Physics and Instrumentation and BSc (Hons) Instrument Engineering programmes to better align the mathematics content with other core streams such as process control.

Feedback from graduates students and industry highlighted a lack of fundamental knowledge of electronics relevant to instrumentation. The proposed revision is to significantly enhance student's understanding and competence in signal measurement and circuit analysis by the end of Stage 1 of the programme.

The programme team are also proposing to generally update module content in line with industry feedback and refresh module resources such as book lists, websites etc.

3. BACHELOR OF SCIENCE (HONOURS) IN APPLIED PHYSICS AND INSTRUMENTATION

3.1. Programme Summary

The Bachelor of Science (Honours) in Applied Physics and Instrumentation is a one year add-on programme to the Bachelor of Science in Applied Physics and Instrumentation. Graduates take up a broad variety of roles, in automation, manufacturing, IT and various service engineering, primarily. The programme places additional emphasis on advanced learning and decision making relating to roles in instrumentation and automation.

3.2. Major Changes Now Proposed

The programme team are proposing to generally update module content in line with industry feedback and refresh module resources such as book lists, websites etc. They are also proposing to

only list electives which are likely to be offered rather than a more extensive list of electives which, under current financial constraints, are not feasible to offer.

4. BACHELOR OF SCIENCE (HONOURS) IN INSTRUMENTATION ENGINEERING

4.1. Programme Summary

The Bachelor of Science (Honours) in Instrument Engineering is an *ab initio* 4 year programme. Students have the option after completing three stages of the programme to apply to exit the programme with the Bachelor of Science in Applied Physics and Instrumentation. The majority of graduates find employment as Automation Engineers with this number increasing to 75% if “Instrument Engineer” is included. Graduates are working with companies specialising in automation & control whereas the Applied Physics and Instrumentation graduates appear to have a broader variety of employee destinations. The vast majority of graduates work with regionally-based companies.

4.2. Major Changes Now Proposed

This programme mirrors the Applied Physics and Instrumentation suite of programmes and thus shares the majority of its modules with this programme suite. Changes being proposed for this programme thus follow the changes proposed for the Applied Physics and Instrumentation suite of programmes.

5. BACHELOR OF SCIENCE (HONOURS) IN ENVIRONMENTAL SCIENCE AND TECHNOLOGY

5.1. Programme Summary

The Bachelor of Science (Honours) in Environmental Science and Sustainable Technology prepares students to work in roles that address some of the current national and international environmental challenges. These environmental issues are complex and wide ranging but central to a healthy environment is good quality air and an adequate supply of good quality water. Companies and organisations are required by EU and Irish legislation to monitor restrict pollutant emissions to the environment. The EU Water Framework Directive, the CAFE directive, and subsequent EU legislation impose ever more stringent restrictions on the levels of pollutants permissible in our environment.

The aim of this course is to produce graduate scientists with specialist skills and knowledge in the areas of water quality, air quality and waste management. Graduates will also have the necessary skills to assist companies in performing green audits and working towards various international standards such as ISO 14001- Environmental management.

5.3. Major Changes Now Proposed

In line with Institute policy, the Department is proposing to develop two step-off or exit awards for students who, for a variety of reasons, are unable to complete the programme. The two proposed programmes are

- Higher Certificate in Science in Environmental Science and Technology (NFQ 6, 120 ECTS)
- Bachelor of Science in Environmental Science and Technology (NFQ 7, 180 ECTS)

Both of these programmes are to be validated solely as exit awards and are embedded in the Bachelor of Science (Honours) programme. Students who initially enrol on the Bachelor of Science (Honours) programme would be eligible to apply for the Higher Certificate award if they have successfully completed the first two stages of the programme. Similarly if they have successfully completed the first three stages of the Bachelor of Science (Honours) programme and wished to exit the programme, they would be eligible to apply for the Bachelor of Science award.

The programme team are also proposing to generally update module content in line with industry feedback and refresh module resources such as book lists, websites etc. They are also proposing to only list electives which are likely to be offered rather than a more extensive list of electives which, under current financial constraints, are not feasible to offer.

6. CERTIFICATE IN ADVANCED INDUSTRIAL AUTOMATION, NFQ 8, SPA, 30 ECTS

6.1. Programme Summary

This certificate is a Special Purpose Award aimed at candidates with an existing relevant qualification working in the instrument/automation sector. The programme was initially supported through the HEA's upskilling initiative and targeting candidates that may have found themselves unemployed during the downturn in the economy but has since proved very relevant to the growing automation sector.

The aim of this programme is to provide students with the advanced skills and knowledge necessary to become specialists in the application of state-of-the-art automation techniques across a range of industries. This is a specialised hands-on course that deals with essential topics for today's automation engineers. The module content has a heavy emphasis on practical programming of a range of automated processes using a range of software tools such as DeltaV and SCADA.

The programme involves a 10 credit Industrial Automation project that students often take through their place of work.

6.2. Major Changes Now Proposed

The programme team are proposing to generally update module content in line with industry feedback and refresh module resources such as book lists, websites etc.

B. PANEL FINDINGS AND RECOMMENDATIONS

1. OVERALL RECOMMENDATION TO ACADEMIC COUNCIL ON REVALIDATION

Contingent upon confirmation of [the fulfilment of any Panel conditions and] the successful completion of the internal programme and module moderation process, the Panel **recommends to Academic Council that the listed programmes be validated or revalidated** as appropriate for five years or until the next Programmatic Review, whichever is sooner, with effect from September 1st 2018

2. GENERAL

2.1. **Commendation:** The Panel would like to commend the obvious engagement and enthusiasm of the Department of Physical Science staff with the Programmatic Review process.

2.2. **Commendation:** The Panel would like to commend the Department on a very well-presented, clear and concise programme submission and on the high standard of the documentation in general.

2.3. **Commendation:** The panel would like to commend the Department on their clear engagement with local industry in the re-design and updating of their suite of programmes.

3. ENTRANT AND GRADUATE PROFILE, AWARD AND PROFESSIONAL ENVIRONMENT

Finding: The suite of physics-based programmes operating within the Department were reviewed by the panel. Feedback from all stakeholders, in particular, employers indicate that graduates from these programmes are highly sought by industry. This suite of programmes has been designed to meet the needs of the local industry with most graduates finding employment in the local BioPharmaChem sector.

Finding: The Bachelor of Science (Honours) in Instrument Engineering (ab-initio) was originally developed as a parallel programme to the Bachelor of Science and Bachelor of Science (Hons) in Applied Physics and Instrumentation. Under CIT policy, the Instrumentation Engineering programme must contain a minimum number of differentiated modules. At present, there are three differentiating modules between the Bachelor of Science in API and the first three stages of the Instrumentation Engineering degree. When originally designed, there were substantial differences between the award stage of the Instrumentation Engineering degree and the add-on Bachelor of Science (Hons) in Applied Physics and Instrumentation. However, due to low enrolment numbers and resulting budgetary pressures, the two programmes have, over time, come together such that

there is little or no difference in the modules undertaken by both cohorts of students. In other Departments where a similar situation arose, students on successful completion of the Level 7 award would transfer into the Stage 4 of the parallel ab-initio programme. The one year add-on option would not be offered.

3.1 Requirement: The Department should increase the differentiation between the add-on Bachelor of Science (Hons) in Applied Physics and Instrumentation and the award stage of the Bachelor of Science (Hons) in Instrumentation Engineering to justify the making of separate awards.

3.2 Recommendation: The Department, as part of the above programme modification process, may wish to re-introduce more advanced physics modules into the programme to reflect the title of the award. The Department, when introducing more advanced physics modules, may wish to align these physics modules with the impressive research activity of the Department in areas such as photonics and process analysis. Graduates from this revised programme could readily progress into postgraduate research programmes within the Department.

4. PROGRAMME OPERATION AND PERFORMANCE

Finding: In terms of the CAO-entry programmes, the Department has seen a decline in the number of students enrolling in their programmes. In 2016-2017, 29 students enrolled in the Bachelor of Science in Applied Physics and Instrumentation, Bachelor of Science (Hons) in Instrumentation Engineering and the Bachelor of Science (Hons) in Environmental Science and Sustainable Technology programmes combined. Of these, 16 progressed into Stage 2 of their respective programmes.

4.1 Recommendation: In conjunction with the School of Science & Informatics and the Faculty of Engineering and Science, the Department should develop an updated marketing strategy to recruit students into their CAO-entry programmes. This updated strategy may include, inter alia,

- a) The development, in conjunction with industry, of promotional videos such as 'A Day in the Life of ...' describing the roles of instrumentation and automation engineers.
- b) A renewed focus of traditional marketing routes such as school visits etc.
- c) Updated promotional materials such as websites, social media channels and brochures etc.
- d) Liaising with the staff and students of the Department of Marketing and International Business by way of projects or otherwise to inform the marketing of the Departmental suite of programmes.

4.2 Recommendation: The panel recommends that the School and Faculty put in place sufficient resources to implement the updated marketing strategy. This may include allocating or part-allocating staff to undertake this work.

Finding: The reduction in the number of students has come with a general reduction in the CAO points of the students entering the programmes. The Department believes that students entering the programmes with low CAO points are finding the programmes academically challenging hence leading to high non-completion rates particularly in the first stage of the programmes. The Department is considering the introduction of minimum CAO entry points for these programmes. Their belief is that in the short term it may cause a slight decrease in the number of students enrolling in the programmes but that the overall number of students progressing into Stage 2 of the programmes may be largely unaffected given the likely improved progression rates. These higher entry points level, the Department believes, may also have the effect of making the programmes more attractive to high calibre students in subsequent years.

4.3 Recommendation: The panel recommends that the Department undertake a rigorous analysis to quantify the likely effect of setting higher minimum CAO entry points on student enrolment number and progression prior to implementation.

Finding: The Department have been considering re-naming some of their programmes in order to better reflect the content of the programmes and to increase their appeal to prospective students.

4.4 Recommendation: The panel believes that the programme title 'Applied Physics and Instrumentation' is well established and respected in the region amongst graduates and employers. The panel recommends therefore that no change be made to this title.

4.5 Recommendation: Notwithstanding the fact that the term environmental science may imply that the programme is focussed more in the biology domain, the panel believe that the title 'Bachelor of Science (Hons) in Environmental Science and Sustainable Technology' reflects the content of the programme. As the programme is relatively new, the panel believe that name is still being established in the minds of prospective students, parents, guidance councillors and employers and that changing the title at this stage may lead to confusion. Therefore the panel recommends that the title of this programme would remain unchanged.

4.6 Recommendation: In respect to the Bachelor of Science (Hons) in Instrumentation Engineering, the panel considered whether the introduction of the term Automation in the title of the

programme may be suitable as the majority of graduates find employment as automation engineers. The panel recommends that the Department would survey potential students to see if the inclusion of the term Automation would be beneficial in terms of recruiting students.

Finding: The operation of programmes relies on clear communication and oversight of the programme. Good informal communication channels between programme lecturers and between programme lecturers and students should be underpinned by formal communication channels such as programme boards.

4.7 Recommendation: The Department ensures that there is programmes boards operating for the suite of programmes within the Department. These boards should be made up of class or year co-ordinators, students and other potential members such as service department nominees.

5. PROPOSED PROGRAMME SPECIFICATION (INCL. DELIVERY AND ASSESSMENT)

Finding: In general, the programmes, as specified, are fit-for-purpose and are producing graduates who find ready employment in industry. However, the panel note that, due to budgetary constraints arising from exchequer funding models and the decline in student numbers, the programmes considered by the panel have undergone significant changes since the last programmatic review.

5.1 Recommendation: The panel finds that a key strength of the programmes under consideration is the practical skills developed by the learners over the course of their studies. The panel therefore recommends that the Institute maintain the current balance of practical and theory elements on these programmes.

5.2 Recommendation: The panel finds that, since the last programmatic review, there has been a substantial increase in the proportion of modules being shared across these programmes and with other programmes within the Department. The panel believes that a programme should generate a graduate with a unique graduate profile of knowledge, skills and competences specific to that programme. Therefore, every programme leading to an award should have sufficient modules specific to that programme to produce a unique graduate cohort. The panel finds that the level of module sharing on the programmes under review has been maximised and that any further diminution of modules unique to each programme would be detrimental to that programme. The panel recommends that the Department maximises the number of programme-specific modules on each programme to differentiate graduates of each programme from other graduates within the Department.

5.3 Recommendation: The panel recommends that the programme team consider the introduction of cross-disciplinary projects into the curriculum.

5.4 Recommendation: During its meetings, the panel heard that the departmental first year laboratory is in need of renewal. The panel recommends that the School and Faculty would make the necessary funds available to undertake this work.

6. MODULES

This section presents the findings and recommendations from an indicative review of modules carried out by the members of the Peer Review Panel. The Panel notes that a comprehensive survey of module specifications could not be carried out in the context of this review.

Therefore, a recommendation of the Panel to revalidate the programme(s) under review is contingent on the successful completion of the subsequent internal programme and module moderation process carried out by, or on behalf of, the CIT Registrar's Office.

6.1 Commendations

The Panel welcomes the proposed changes to the Maths stream of modules which are now better aligned to the requirements of the listed programmes.

6.2 Recommendations

PHYS8026 Project

6.2.1 The panel recommends that the Department provide students with their final year project title earlier in the academic year. This may facilitate students starting their literature review during Semester 1 and over the six weeks between the end of Semester 1 exams and the commencement of Semester 2.

6.2.2 The panel recommends that the Department consider requiring students to undertake a health and safety assessment of their intended project prior to commencing their project and to submit the associated report for assessment as part of the overall assessment schema of the project.

7. OTHER FINDINGS AND RECOMMENDATIONS

7.1 **Recommendation:** Given the difficulty that the Department is experiencing in recruiting students through the CAO entry mechanism for the suite of programmes listed in this report, the Department should investigate the feasibility of developing programmes which would operate under the apprenticeship model. Given the close relationship between the Department and local BioPharmaChem industry, the panel believe that there is an opportunity to develop apprenticeship programmes, in conjunction with this sector, which may prove attractive to students.

7.2 **Recommendation:** During the series of meetings, Departmental staff raised the issue of the Departmental name. Staff feel that the title “Physical Sciences” is not well understood by the public at large and that prospective students are not associating physics and chemistry subjects with this term. The panel recommends that the Institute consider re-titling the Department.

8. DEROGATIONS SOUGHT

8.1 The Department is requesting derogation from free choice in each semester of its programmes. It is requesting that free choice be limited to 5 ECTS per stage of its programmes. The panel is supportive of this derogation request.

C. PROGRAMME FINALISATION

1. IMPLEMENTATION OF PANEL REQUIREMENTS

Requirement(s) <i>[Please copy & paste from the report, adding rows as necessary. Completed recomm. can also be indicated.]</i>	Department Response <i>[Academic Department to complete]</i>
<p>3.1 Department should re-design the add-on Bachelor of Science (Hons) in Applied Physics and Instrumentation to include sufficient differentiation between it and the award stage of the Bachelor of Science (Hons) in Instrumentation Engineering to justify the making of separate awards. [Requirement]</p>	<p>Completed.</p> <p>15 credits of differentiation exist in the level 7 programme. Two new modules are introduced as mandatory <u>only</u> on SPHYS_7: Thermo and Fluid Physics (PHYS7020, sem 4) & Physics of Materials (PHYS7007, sem 6). The programmes are also differentiated in semester 5 by their mathematics modules (MATH8005 vs MATH7022). For stage 4, the mandatory modules are differentiated by 5 credits (PHYS8017 vs PHYS8007) and different 15 credit project module themes will be adopted for students taking SPHYS_8 vs SINEN_8 (Y4), i.e. physics-based and control/automation, respectively. The programme also shows 5 credit of different elective modules.</p>
<p>4.1 In conjunction with the School of Science & Informatics and the Faculty of Engineering and Science, the Department should develop an updated marketing strategy to recruit students into their CAO-entry programmes. This updated strategy may include, inter alia,</p> <p>a) The development, in conjunction with industry, of promotional videos such as 'A Day in the Life of ...' describing the roles of instrumentation and automation engineers.</p> <p>b) A renewed focus of traditional marketing routes such as school visits etc.</p>	<p>In progress.</p> <p>(a) An alumni and industry advisory board will be developed.</p> <p>(b) A targeted schools outreach programme has been initiated.</p> <p>(c) Social media pages developed and updated regularly.</p> <p>(d) Proposal regarding resourcing of part-time marketing personnel.</p> <p>A departmental outreach committee has been formed to address areas such as school/industry/general public outreach planning and activities. Personnel include lecturing, technical, research and postgraduate students.</p>

<p>c) Updated promotional materials such as websites, social media channels and brochures etc.</p> <p>d) Liaising with the staff and students of the Department of Marketing and International Business by way of projects or otherwise to inform the marketing of the Departmental suite of programmes</p>	
<p>4.2 The panel recommends that the School and Faculty put in place sufficient resources to implement the updated marketing strategy. This may include allocating or part-allocating staff to undertake this work.</p>	<p>In progress. Department proposes to request funding for part-time marketing personnel, e.g. share marketing resource with CAPP.</p>
<p>4.3 The panel recommends that the Department undertake a rigorous analysis to quantify the likely effect of setting higher minimum CAO entry points on student enrolment number and progression prior to implementation.</p>	<p>The department strongly agrees with raising the min CAO level. Based on previous 3-4 years data, preliminary analysis indicate that increasing the CAO threshold by 50 points would result in approx. 25% enrolment reduction at Y1, which is comparable with the Y1 attrition rate. It is proposed that raising the points threshold to a minimum of 350 would make programmes more attractive in the longer term to LC students.</p>
<p>4.4 The panel believes that the programme title 'Applied Physics and Instrumentation' is well established and respected in the region amongst graduates and employers. The panel recommends therefore that no change be made to this title.</p>	<p>Completed. The department agrees with the recommendation and the title will remain as is.</p>
<p>4.5 Notwithstanding the fact that the term environmental science may imply that the programme is focussed more in the biology domain, the panel believe that the title 'Bachelor of Science (Hons) in Environmental Science and Sustainable Technology' reflects the content of the programme. As the programme is relatively new, the panel believe that name is still being established in the minds of</p>	<p>In progress. The department feels that alternatives should be considered but agrees to leave the name unchanged until at least September 2019. The department has initiated a survey with guidance counsellors and prospective students to review alternative programme titles.</p>

<p>prospective students, parents, guidance councillors and employers and that changing the title at this stage may lead to confusion. Therefore the panel recommends that the title of this programme would remain unchanged.</p>	
<p>4.6 In respect to the Bachelor of Science (Hons) in Instrumentation Engineering, the panel considered whether the introduction of the term Automation in the title of the programme may be suitable as the majority of graduates find employment as automation engineers. The panel recommends that the Department would survey potential students to see if the inclusion of the term Automation would be beneficial in terms of recruiting students.</p>	<p>In progress. The department has engaged with current part-time and full-time students as well as with alumni & industry. The majority of respondents are in favour of the inclusion of the term “automation” in the title and the new title of “Instrumentation and Automation” will be presented to school and faculty BoS.</p>
<p>4.7 The Department ensures that there (are) programmes boards operating for the suite of programmes within the Department. These boards should be made up of class or year co-ordinators, students and other potential members such as service department nominees.</p>	<p>Completed. Programme (course) and year coordinator structures have been revised and course board meetings have taken place with staff and students in the current academic year. Meetings will continue once per semester.</p>
<p>5.1 The panel finds that a key strength of the programmes under consideration is the practical skills developed by the learners over the course of their studies. The panel therefore recommends that the <u>Institute maintain the current balance of practical and theory elements</u> on these programmes.</p>	<p>Completed. Lab/practical split will remain as is for the lifetime of the current programme validation. The department agrees with the recommendation and agrees with further sentiment expressed during panel discussions that the lab element is critical to the value of the programme from an employer’s perspective and should not be further reduced.</p>
<p>5.2 The panel finds that, since the last programmatic review, there has been a substantial increase in the proportion of modules being shared across these programmes and with other programmes within the Department. The panel believes that a programme should generate a graduate with a unique graduate profile of knowledge, skills and competences specific to that programme. Therefore, <u>every programme leading to an award should have sufficient modules specific to that programme</u> to produce a unique</p>	<p>In progress No further dilution (i.e. sharing) of programmes is proposed. As outlined in 3.1, additional physics modules are included in SPHYS_7.</p>

<p>graduate cohort. The panel finds that the level of module sharing on the programmes under review has been maximised and that any further diminution of modules unique to each programme would be detrimental to that programme. The panel recommends that the <u>Department maximises the number of programme-specific modules on each programme</u> to differentiate graduates of each programme from other graduates within the Department.</p>	
<p>5.3 The panel recommends that the programme team consider the introduction of cross-disciplinary projects into the curriculum.</p>	<p>In progress. The department has facilitated several industry-based projects and projects in collaboration with other departments in the current academic year. Inter-programme (e.g. chemistry/physics) projects will be considered for final year and more team-based projects will be considered for non award stages (i.e. Y1/2). Recently, engagement with other departments has been realised for final year project work.</p>
<p>5.4 During its meetings, the panel heard that the departmental first year laboratory is in need of renewal. The panel recommends that the School and Faculty would make the necessary funds available to undertake this work.</p>	<p>In progress Proposals for lab facilities and equipment upgrades have been made at school and faculty executive level. Some additional 1st year equipment purchases are in progress with support from various outreach funding sources.</p>
<p>6.2.1 The panel recommends that the Department provide students with their final year project title earlier in the academic year. This may facilitate students starting their literature review during Semester 1 and over the six weeks between the end of Semester 1 exams and the commencement of Semester 2.</p>	<p>Completed. The department agrees with the recommendation and students are provided with their final year project title by wk 6 of semester 7. Furthermore, elements of their project planning have been included in the Engineering Project Management module INTR8009 (semester 7).</p>
<p>6.2.2The panel recommends that the Department consider requiring students to undertake a health and safety assessment of their intended project prior to commencing their project and to submit the associated report for assessment as part of the overall assessment schema of the project.</p>	<p>Completed. All students on programmes SPHYS_8, SESST_8 and SINEN_8 are required to complete a H&S and risk assessment as part of their final year project planning.</p>

<p>7.1 Recommendation: Given the difficulty that the Department is experiencing in recruiting students through the CAO entry mechanism for the suite of programmes listed in this report, the Department should investigate the feasibility of developing programmes which would operate under the apprenticeship model. Given the close relationship between the Department and local BioPharmaChem industry, the panel believe that there is an opportunity to develop apprenticeship programmes, in conjunction with this sector, which may prove attractive to students.</p>	<p>In progress. Springboard+ funding has been sought for a new Instrumentation-based SPA. The PT CIMC (SIMCT_6) programme has been revised based on student and industry feedback. A new programme aimed at training teachers with a qualification to teach Chemistry & Physics to leaving cert is under development.</p>
<p>7.2 During the series of meetings, Departmental staff raised the issue of the Departmental name. Staff feel that the title “Physical Sciences” is not well understood by the public at large and that prospective students are not associating physics and chemistry subjects with this term. The panel recommends that the Institute consider re-titling the Department.</p>	<p>In progress The department agrees with the recommendation and is currently surveying Guidance Counsellors, Teachers, students and industry. While the title “Analytical Chemistry and Instrumentation Physics” best describes the department’s core focus, it is proposed that the title should be changed to “Department of Chemistry and Physics” for clarity and effectiveness. The proposal will be brought to the School and Faculty BoS.</p>

2. MODULE AND PROGRAMME MODERATION

C.2.1 Completion of Programme and Module Moderation Completed

D. APPENDIX – TIMETABLE OF PHASE 2 MEETINGS

11.00 to 11.30 pm	Private Panel Meeting including presentation by Registrars Office
11.30 to 12.15pm	Department Overview Presentation / Discussion
12.15 to 12.45pm	Departmental Research Overview - Links to Teaching
12.45 to 1.30 pm	Private Panel Lunch
1.30 to 3.00 pm	Meeting with Dept. Teams re Programme Operation and Performance
3.00 to 3.30 pm	Private Panel Meeting (Tea/Coffee)
3.30 to 5.00 pm	Meet with Dept. Teams re Proposed Changes to Programme Structures
5.00 to 5.30 pm	Meet with Recent Graduates
5.30 to 6.00 pm	Meet with Employers
8pm	Panel Dinner
Day Two	
9.00 to 9.15 am	Private Panel Meeting - emerging themes
9.15 to 10.15 am	Meet with Students
10.15 to 10.45 am	Private Panel Meeting (Tea/Coffee)
10.45 am to 12.30 pm	Meet with Dept. Teams re General Review of Modules
12.30 to 1.30 pm	Private Panel Lunch
1.30 to 2.30 pm	Sub-panel meetings to draft outline reports
2.30 to 3.00 pm	Feedback to overall panel - themes
3.00 to 3.15 pm	Feedback to school and department management