Institute of Technology Sligo

Faculty of Engineering and Design

Programmatic Review

Report

Tuesday 7th & Wednesday 8th May 2019
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Part 1

Executive Summary

The Faculty of Engineering & Design, Institute of Technology Sligo undertook a review of its programmes during the academic year 2018-2019. A self-evaluation report was produced. An external peer-review panel was established by the Registrar. This panel met with staff on May 7th & 8th as both a collective cohort and then in Department groups. This report presents the findings of the panel.

The panel commended the Faculty on the rigorous process undertaken by the Faculty and Department teams in preparing for the programmatic review. A number of recommendations were made in relation to work placements, marketing of online programmes, further development of alumni relationships, capacity planning and strategies for increasing the intake of students identifying as other than male. In addition, Department and programme specific commendations and recommendations were advanced. A small number of conditions focusing on accuracy of documentation were also made.

Part 2

Introduction and Terms of Reference

This report outlines the proceedings of the programmatic review in the Faculty of Engineering & Design and the findings of the external panel of assessors Tuesday and Wednesday 7th & 8th of May 2019 respectively.

In accordance with the Quality Assurance Procedures of the Institute, a detailed evaluation and analysis of the content of modules and programmes must be carried out at least every 5 years. This is to ensure that the School updates its programmes and that they remain relevant to students and employers. It is also an opportunity to make the necessary changes to the programme structures and content to keep them current. 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).

The Panel examined how the School and each Department have achieved the objectives of the programme revalidation process.

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These are to:

a. Propose improvements to programmes based on a formal feedback and evaluation process

b. Incorporate feedback from staff, student and employers into the revised programmes

c. Ensure that programmes remain relevant to learners needs, including academic and labour market needs

d. Ensure that learning modes are compatible with academic standards, coupled with the life style of learners

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

f. To achieve revalidation of all programmes, incorporating the agreed changes (for up to a maximum of 5 years)

The Panel also considered the following:

a. How each Department has addressed and dealt with issues and questions raised in the last programmatic review.

b. The relationship of revalidation to the Strategic Plan of the School and the Institute

c. The contribution of active research to learning

d. Proposed changes to programmes submitted for revalidation by the Departments

The agenda for this meeting is contained in Appendix 1. Membership of the review panel is listed in Appendix 2. The list of documentation received by the panel is contained in Appendix 3.
Part 3  Private meetings of the Panel of Assessors

6.5.2019 19.00hrs; Clayton Hotel:

The chairperson provided panel members with an overview of the objectives of the Programmatic validation process and the general running order of the next two days. No further discussions took place, as not all panel members were in a position to attend.

7.5.2019

The Chairperson welcomed all panel members. Members were advised that the forthcoming discussion with the Institute and Faculty Senior Management should focus on issues they wished to explore in relation to the Institute’s strategic plan and ascertain the progress made on conditions/recommendations since the Faculty review in February. Panel members were furnished with a copy of the validation report from the Faculty Review in February 2019 to inform their discussions.

The panel were also informed that the Faculty’s research metrics in terms of capacity, research centres, plans etc. will require exploration as part of the validation process is to validate the Faculty’s Level 9/10 research degrees.

The panel discussions highlighted a number of areas that panel members wished to address such as the strategy that IT Sligo deploy to keep their online delivery product contemporary and a leader in the HEI sector, the transferable skills students acquire through project work, work placement parameters/ guiding principles, the manner in which climate action and sustainability are addressed at programme level, strategies used to prepare students to work in the global engineering market; the manner in which a community of learning is created and cultivated in the online space, internationalisation, ethical and professional issues. It was agreed that the aforementioned topics should also frame the individual department discussions. A discussion on Gender was also deemed appropriate to ascertain how the Faculty are trying to address the current imbalance.
Part 4 Meeting with the Institute VP Academic Affairs/ Head of faculty

Mr Colin Mc Lean & Ms Una Parsons

The Chairperson introduced the panel members.

The Vice President for Academic Affairs represented the President, and gave a presentation (Appendix 4) which provided an overview of the Institute in terms of its strategic plan, vision & mission, facilities, proposed infrastructural developments, achievements in the online teaching & learning space, range of international collaborations, TU ambitions and the required research metrics for attainment of same. Reference was also made to the Institute’s participation in the first of QQI’s cyclical review periods, the CINNTE review cycle in April 2018. The outcomes of same was shared with the panel. The Institute’s strategic objectives until 2022 were detailed for the panel.

Research metrics in relation to the bid for TU status

The panel explored further with the Head of Faculty and VP of Academic affairs how the TU metric in relation to research is going to be achieved. They were informed that a number of Masters Programmes are being reconfigured so that the ECTS allocation for the thesis component is 60% of the programmes total ECTS weighting. The theses are going to be primarily industry/ practice focused so industry gets added value from their employee/student undertaking a Master level programme and the student gains a series of research competencies and skills. The aforementioned reconfiguration of some Masters programmes will assist the Institute attain the 4% research student target that is required for consideration of an Institute of Technology for TU status. The faculty are planning to reconfigure 5 programmes. In order to achieve the research metric aligned to number of staff with a PhD or equivalent (45% of full time academic staff) the Governing Body have committed €1.7 million to assist in the growth of research which will be utilised to fund a number of initiatives to support academic staff such as funding for Doctoral studies, reduced teaching loads and protected time to write up dissertation etc.

Student numbers

The Institutes strategic plan KPI in relation to the growth in student numbers was discussed with clarification sought if a growth in student numbers would mean a corresponding expansion in programme offerings. The panel were informed the numbers would be realised both through the development of new programmes developed as a result of an
identified industry need and through the recruitment of more students to existing programmes. The expansion of the Institutes virtualisation capacity should attract more students to programmes which can capitalise on virtualisation.

**Campus Facilities**

The development of the campus facilities to accommodate the predicted growth in student numbers was discussed and in particular the range of new academic supports that have been instigated such as the Academic writing support centre, Maths support centre and CELT to support academics expand their range of delivery and assessment modes. The panel were also informed of English language supports for international students. An increase in students’ services such as counselling, disability and healthcare professionals has also occurred. The capital investment in the IT infrastructure will realise more benefits to the student body such as the ability to engage with a range of software regardless of their place of residency. The aforementioned will reduced the need for some students to come on campus.

**Internationalisation**

Discussions on the Faculty’s international links revealed that the faculty accommodate a number of student placements under the Erasmus Plus scheme but are challenged to get a significant cohort of their own student body to avail of Erasmus funding to support them to study outside Ireland. The Faculty anticipate that the introduction of work placements across all level 8 programmes may address the current reluctance to engage with Erasmus.

The Chairperson thanked the Head of Faculty and VP for academic affairs for their contribution.
Part 5  Meeting of Panel with Head of School, Heads of Department & Director of PEM

Ms Una Parsons, Dr David Mulligan, Ms Diane O Brien, Mr Emmet Doherty, Dr Xavier Velay, Mr Trevor Mc Sharry, Dr David Tormey.

A presentation (Appendix 4) by the Head of Faculty provided the panel with a detailed overview of the Faculty in terms of facilities, organisational structure, student/staff numbers, industrial linkages and research and innovation activities. The keys changes since the last programmatic review have been growth in student and staff numbers, new programme development, growth in online delivery, faculty restructuring, significant capital investment, expansion of international collaborations, growth in R & I activities (PEM technology, CREST and I Form Centre) and the introduction of a series of promotional activities such and Engineering & Technology EXPO/ Engineering fair. The panel were advised of the current Faculty plan and vision - "A leading Faculty of creative innovative and technological education- and mission which shaped the 6 objectives set for achievement in the next 5 years.

The research activity of the Faculty was shared in terms of their research centres activities, research student numbers, compliment of staff with PhDs or equivalent, number of staff predicated to gain a PhD in the next 5 years, graduate numbers, funding and research outputs in terms of publications/conference presentations.

The Panel expressed how impressed they were by the growth in student numbers since the last programmatic review and by the fact that 47% of students are online students. They also noted the concurrent 13% rise in staff numbers but appreciated that there was still a reliance on HPALs to assist with programme delivery. The Head of Faculty informed the panel that the Executive committee recognised same and have committed to the recruitment of additional staff for the coming academic year, 2019-2020.

The Head of Faculty was asked to detail the numbers of staff with PhDs and the numbers currently studying for a PhD. These details were shared and the panel informed that the recruitment initiative alluded to above should yield additional doctoral qualified academic staff which will contribute to the existing research profile of the faculty. The panel explored
with the team what was driving the expansion of research in the Faculty- the bid for TU status and/or industrial links which require the conduction of research. The team believed that as the majority of their research activity is applied with a focus on innovation with the link with industry being the strongest driver and the one that consistently needed to be responded to, in order to maintain good links with industry partners as they are also the source of ideas and students for new programmes. It was recognised that a conceptual definition of what constitutes research in relation to YAADA needs consideration so their outputs which may include a range of artefacts are recognised at Faculty/Institute level.

Programme development in terms of rationale for, timelines and quality metrics were discussed between panel members and the team. The panel were satisfied with the response and appreciated that to adhere to all the required quality process that the timeline from idea inception to delivery is usually 12-18 months.

**Gender Balance**

The panel explored with the team what strategies were being deployed at Institute and Faculty level to address the current gender imbalance. The Institute’s commitment is evident in their signing up to the Athena SWAN Charter and the impending self-assessment that will have to be conducted as part of the Bronze award application. At Faculty level where only 16% of the student population and 23% of the staff area female a number of strategies are in place such as flexible working arrangements, initiatives such as women in engineering coffee mornings, the establishment of an Engineering Fair aimed at school children to give them an appreciation of the diversity of engineering and female representation on school visits. The team expressed a need to target primary school girls as many girls rule out engineering as a career early in secondary school. The panel and team reflected on whether achieving gender balance was realistic but agreed enhancing the current imbalance was required.

**Preparation for Programmatic validation process**

The panel explored with the team how the Faculty, Departments and programme boards prepared for the programmatic validation. The process was detailed for the team and how the work conducted via working groups for the Faculty review contributed to the current
programmatic validation. Widespread engagement of staff in the process was reported with the communication channels open throughout. All feedback was considered and exemplars of best practice shared across the Faculty as were templates for writing modules/assessment/learning outcomes. The process was productive and informed the Faculty of their strengths and weaknesses.

**Internationalisation**

The panel discussed with the team how they proposed to meet the HEA international student target of 15% from their current base of 9%. The panel were informed the Institutes personnel support for internationalisation works with the Heads of Department in relation to potential international links and screening of applications. The Faculty’s experience to date (e.g. Germany, China) was shared with the panel. The panel recognised that the development of robust international links took significant time but were pleased to hear of potential developments in the Asian market.

**Work placements**

The panel sought clarification on whether there was existing Faculty parameters in relation to duration of work placements, number of ECTS attached, developing work placements, managing the administration tasks associated with placements and scheduling of placements. Discussions revealed that there is a variance in practice with some departments having limited experience and others with significant experience of work placements. Challenges are encountered securing work placements for some programmes. An alternative assessment exists for students who are unable to secure a placement and/or cannot avail of the placement. In the absence of a central support resource for initiating and monitoring of work placements, the faculty is dependent on academics staff nurturing industrial links as a means of securing placements. It was acknowledged that the Strategic plans KPI of the inclusion of a work placement in all new level 8 programmes will be challenging but there was a concerted belief they are a very important component of any programme and an expectation of future employers. The panel asked the team to consider developing a Faculty work placement guide containing some agreed guiding principles.
**Student numbers & retention**

The panel discussed with the team the challenges of scaling up student numbers and programmes. The introduction of student advisors and instructional designers for online delivery has been a welcome institute initiative. The practice of sharing module across programmes and common semesters/ year 1 is proving an efficient and effective way of managing growing student and programme numbers and is resulting in a better teaching and learning environment for both academics and students. The need for additional space for project work was raised. This issue was considered particularly pertinent to the Department of Computing and Electronic Engineering. The manner in which the retention is tracked across the Faculty and is being dealt with was discussed. The supports alluded to earlier in the report such the Academic writing centre were raised by the team and considered vital to student retention. Other local modular initiatives are in place such as additional teaching hours for modules where there is a recognised issue.

**Research**

The Director of PEM gave an overview of the Institute’s three research centres and of PEM in relation to type of research activity, staffing and outputs. The manner in which post graduate students are recruited and funded was detailed for the panel. The challenges recruiting post graduate student in the buoyant employment market was shared as was the need to increase the numbers of academic staff with doctoral qualification to expand research supervision capacity. The recruitment of a VP for Research & Engagement is building new links with potential research partners in the community. The strategies being deployed at Faculty level to augment the research culture such as introducing staff to R & I in a manner that is perceived as enhancing and respectful of their level of research expertise and industrial knowledge. Changing the predominant teaching culture of the Faculty is recognised as a long term objective which needs to be finely tuned so teaching expertise is not diminished as a consequence of the enhancement of research. There was discussions about psychometrically robust tools to assess staffs technological readiness level (TRL). The Head of Faculty furnished the chair with more specific details on research outputs post discussion (Appendix 4).
The chairperson thanked the team for their level of engagement and concluded the session.

Appendix 5 details the staff members who met the panel.
Part 6    Departmental Meetings

Department of Computing & Electronic Engineering

Panel Team:

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<th>Title</th>
<th>Name</th>
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<th>Role</th>
<th>Institution/Company</th>
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</thead>
<tbody>
<tr>
<td>Mr</td>
<td>Terry</td>
<td>Twomey</td>
<td>VP Academic Affairs &amp; registrar (Chair)</td>
<td>Limerick Institute of Technology</td>
</tr>
<tr>
<td>Dr</td>
<td>Brendan</td>
<td>Ryan</td>
<td>Head of Department of Visual and Human Centred computing, School of Informatics and Creative Arts</td>
<td>Dundalk Institute of Technology</td>
</tr>
<tr>
<td>Mr</td>
<td>Keith</td>
<td>Moran</td>
<td>Managing Director, SL Controls</td>
<td>IDA Business park, Collooney, Sligo</td>
</tr>
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The panel chair welcomed the Head of Department and their team and explored a number of topics with them namely;

**Project management skill development**

The panel explored with the team the strategies they employ to develop the project management skills of their student body which they can subsequently use as employees. The team were able to furnish the panel with a number of exemplars which are deployed during the development of their project.

**The role of Programme Board in the programmatic revalidation process**

The panel ascertained from the programme team how they prepared for the current validation process. The team shared with the panel that the Programme validation process was a standing agenda on all programme board meetings, working groups with specific foci were established, stakeholder feedback was acquired and analyses and Share Point was utilised to share developments between working teams; Head of Department and Head of Faculty.

**Climate Action/ Sustainability**

The panel explored with the team if they consider Climate Action/ Sustainability in the development of their programmes and the team informed the panel about their current use of CITRIX as a virtual platform and is aiming to develop Virtualisation further. In addition, the content of some modules addresses issues such as sustainable energy etc. The panel were satisfied with the team’s responses. Some of the students’ projects provide evidence of their appreciation of issues such as sustainability and climate change.
Ethics/ Professionalization

The panel were informed how ethics is introduced to the student cohorts and how they are challenged to consider ethical issues in their discipline. Ethics is an embedded in all modules in various formats.

Assessment Guideline development (Faculty to Department)

The manner in which assessment guidelines are developed at Faculty and Department level was explored with the team. The panel were informed of the existence of a teaching and learning group in the Department and the proviso that no learning outcomes can be assessed twice. The panel were informed that there was a general move to course assessments over exams as they are more conducive to assessing the learning outcomes of the modules.

Work placements

The manner in which work placements were arranged, the duration of work placements, the scheduling of work placements and the Department/Faculty administrative support for work placements and alternatives for work placements when not available were explored with the team. The need for a work placement officer or something similar was discussed. The advantage of work placements to academic supervisors was addressed. The panel felt that there needs to be some standardisation across the department in relation to work placements.

Apprenticeships/ Online delivery

The Department endeavours to secure computing apprenticeships has to date not being fruitful but the Department will continue to try and secure same. The Department endeavours to keep software/hardware costs manageable for online students was shared with the panel. The development in online programme delivery over the past 5 years were detailed including the supports that are now available to both academics and students such as Instructional designers/online student support officers. The decision to drop the requirement for online students to come to the campus two days per semester was explored and the potential ramifications of same for students in terms of networking and practice experience opportunities. The strategies to counteract any negative fallout from the aforementioned strategy were discussed. The added value to the full time student cohort of the presence of online delivery was detailed. The panel questioned the team on the hours allocated for preparation and support the online student body.
**Student numbers**
The declining numbers of full time students and increase in online students was discussed. The reasons for the falling numbers online extrapolated and the profile of the online students discussed.

**Internationalisation**
The team shared with the panel their international links (Middle East; Germany, China) and plans to develop further.

**Quality Assurance**
The panel explored with the team the quality assurance structures within the Department with reference to the EAP7 and how the quality link was closed through the EAP 7.

**Technological University Metrics**
The panel teased out with the Department how staff are being supported to complete their doctoral studies. The initiatives offered by the Institute to support academic staff were explained to the panel as were the challenges undertaking doctoral studies with a high teaching load. The rationale behind the introduction of the structured Masters programmes in terms of increasing research student numbers was discussed with the team.

**Athena Swan Charter**
The panel teased out with the Department how Gender imbalance issues are being addressed if the online space having a positive impact on same. The strategies that the Department and faculty are implementing to increase non-male applicants were shared with the team.

**Retention Levels**
Strategies such as peer mentoring, maths and academic writing centres, increased support at programme level have all been introduced to assist with the retention of students. The initial weeks of year 1 are particularly problematic. The Department have recognised that years 2, 3 & 4 also need to be monitored and are introducing workshops and team events early in the new academic year to address any emergent retention issues in the aforementioned years.] The team recognise the important of developing a sense of community in the Institute that student’s feel they are part of.
Programme validation

The panel recognised that the majority of the programmes had been validated in the academic year 2017-18. The required recommendations have been responded to and no changes have occurred to these programmes in the interval. The rationale for their inclusion in this programmatic revalidation process was to have all programmes in the department would be on the same validation schedule. The only programmes that had some modifications and required revalidation according to the 5 year rule are as follows.

SG_KCMPT_L08 Higher Diploma in Computing (Software) Full Time & Part Time
SG_EAUTM_N06 Cert in Electronics and Automation
SG_EELCO_B07 BEng Electronics and Computer Engineering (including the following embedded programmes)
SG_EELCO_B06 Higher Certificate in Electronics and Computer Engineering
SG_ETRON_J07 BEng Electronic and Computer Engineering (Full Time and Part Time (aka online))
SG_ETRON_K08 BEng (Hons) Electronic and Computer Engineering (Add on)

The panel had an engaging discussion with the Department team in relation to the following programmes.

SG_EAUTM_N06 Certificate in Engineering in Automation & Electronics

Clarification was sought on the title. The panel explored the modules that were shared with other programmes and the how this programme serves as a qualifier for other level 7 programmes. An issue with how the programme students was recorded in module manager was addressed.

Bachelor of Engineering in Electronic and Computer Engineering (Ab-initio).

The programme team confirmed that this programme shares a common first year with all other engineering programmes. The panel queried the apparent drop in progression rates in the past academic year. The team explained that the dilution of the programmes and thus the smaller student numbers per programme magnifies any attrition.

Bachelor of Engineering (Honours) in Electronic & Computer Engineering

The Panel complimented the team on introducing AI to the programme and explored the content of same with team members. The panel queried with the programme team the use
of Microsoft technology such as One Drive and Share-point to prepare the students for working in a global work environment. The team explained the extent of it use in the programme.

**SG_KCMPT_L08 Higher Diploma in Computing (Software) Full Time & Part Time**

The panel noted significant changes to this programme notably the reduction in ECTS from 90-70. Clarification was sought from the Programme team the rationale for such a change are were satisfied with the response received. The issue of remote proctoring was explored and the perceived efficacy of same. The panel explored with the team their use of virtualisation.

**Bachelor of Arts (Honours) in Computing in Application Design and User Experience (Ab-initio)**

This programme is undergoing no changes. The team shared with the panel the success of year 1.

**Bachelor of Science (Honours) in Computing in Smart Technologies**

The programme team shared with the panel the low uptake of this programme and their plans not to deliver year 2 of the programme. The existing three students will transfer to another programme. The team believe that the programme maybe ahead of the curve and that believe that it will be an attractive offering in the future. The programme will therefore remain on the C.A.O.

**Bachelor of Science (Honours) in Computing in Computer Networks and Cloud Infrastructure (Ab-initio)**

This programme shares a common first year with other programmes and this is working well.

**Bachelor of Science (Honours) in Computing in Software Development**

The team shared with the panel that this is a long running programme that always attracts students.

**Bachelor of Science (Honours) in Computing**
This programme was introduced 4 years ago and affords students more time before they are required to specialise which is attractive to students.

**Bachelor of Science in Computing in Games Development**

The only modification since its inception is the addition of an exit award at year 2.

**Certificate in Secure IT in Deep Machine learning.**

The panel explored the origins of this programme and the varied student profile. The first year of the programme has been delivered successfully.

**Masters of Engineering in Connected and Autonomous Vehicles**

The German background to this programme was discussed with the Programme team. The significant staffing input this programme takes was also discussed

This concluded the panel discussions with the Department staff.
Department of Mechatronic Engineering

Panel team:

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<th>Title</th>
<th>Name</th>
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<tbody>
<tr>
<td>Dr</td>
<td>Mark</td>
<td>Clarke</td>
<td>Lecturer (Chair)</td>
<td>Dundalk Institute of Technology</td>
</tr>
<tr>
<td>Dr</td>
<td>Alan</td>
<td>Ryan</td>
<td>Lecturer in Sustainable Automation, Quality Management &amp; Supply Chain</td>
<td>University of Limerick</td>
</tr>
<tr>
<td>Mr</td>
<td>Laurent</td>
<td>Palasz</td>
<td>NPPI Manager</td>
<td>LINDAL Group, Finisklin Business Park, Sligo</td>
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Discussion with Head of Department & academic team

Online programme delivery

The panel commended the team for their programmes online presence and discussed with the team how they identify the particular topic niche and the potential market. The team shared with the panel exemplars of how certain industrial sectors (e.g. Google) had approached them for particular programmes and how their ongoing links with other industries assists in the identification of particular areas for development.

Developing & maintaining community of learners in the online space.

The programme team detailed to the panel how they develop and nurture a community of learners through the provision of an onsite programme inductions, on site workshops twice a semester, the deployment of online discussion groups, e-mail, tutorials and the allocation of a programme lead to coordinate the programmes. The team shared with the panel their experience of online students’ willingness to support fellow learners and that peer support is very evident among online student.

Student experience

The programme outcomes are the same regardless of mode of delivery. The student profiles are different with online students attracting mature students who are in employment so as a result they have the opportunity to apply theory to practice or can appreciate its application more than the cohort of full time students who tend to be younger and without industry experience. Online students are more inquisitive and expect to attain a deeper
learning than the full time student cohort. Online students also tend to be more motivated as the choice to pursue an educational programme has usually being given more consideration. This usually results in better retention and success rates.

**Retention**

It was acknowledged that it was more challenging to maintain accurate retention records for the online student cohorts as a proportion of them seek deferrals at different stage of the programme and take longer to complete. Deferral are usually sought for competing family and work commitments. Retention issues usually emerge in year 1 in the full time student cohort. The team acknowledge that there is a responsibility on them to ensure that students opting to do a level 7/8 programme have the capacity to do so and therefore their previous academic qualifications needs to be considered carefully and/or if RPL is being deployed it needs to be done so forensically. The specifics of the RPL process were detailed for the panel.

**Project management skills**

The panel sought clarification from the team on the practical transferable skills that the students acquire as a result of the project focused modules. The panel were assured that the students gain many transferable project management skills as a result of the project requirements (e.g. inclusion of risk assessment, Gantt charts), work based projects focus and allocation of marks for components such as planning and communication. All projects have 3 elements, namely data acquisition, control element and visual interface. The academic staff gain assurance that the project work is the students own through a variety of means, students present and demonstrate projects and academics can also make visits to the student’s place of employment to evaluate the project. Students can utilise the appeal system if they feel this is warranted.

**Ethics as it relates to engineering practice**

The panel sought clarification that ethics was an integral part of their suite of programmes as there is no standalone module on ethics. The team were able to assure the panel that the practice of ethics was threaded through a number of modules and the students are made very familiar with engineers’ societal responsibilities. Modules have been introduced which
address sustainability, recycling and renewable energy sources. The panel advised the team to make the latter more visible in their curricula.

**Student profile & feedback**

Clarification was sought around the breakdown of student numbers per mode of delivery and the rationale for presenting them together in some cases was sought. The panel queried why the student numbers on Level 6 & 7 programmes are growing but those on level 8 are static. The panel were informed that the reason for same was due to insufficient facilities and staffing but that funding has been received to enhance laboratory facilities so it will be feasible to expand the numbers on the Level 8 programme. The higher success rate for online students is perceived to be as a result of their prior and current work experience. Student feedback is sought and feeds into Programme boards and is acted upon if required.

**Employer feedback & industrial research links**

A number of informal and formal strategies are used to seek employers’ feedback to enhance programme content and focus. For example, the Data centres have an annual steering group meeting and the ENG Expo includes a breakfast morning meeting with industry groups where the department present to them and then a series of discussions are held to garner feedback.

The panel explored with the team the availability of opportunities to engage with industry from a research perspective. The team shared with the panel examples of current engagement in the area of Control system design for polymers. The departments strive to increase students on Level 8 programmes will also create a potential pool of graduates who may engage with research at level 9 and 10.

**Programme development**

The panel teased out with the team the programme planning process and advised that it is prudent to put in place all of the necessary resources (physical/ personnel etc. ) prior to student recruitment. Examples of new programmes planned and the availability of resources was explored further. The Head of Department explained to the panel the planning process that is required before the executive agree a programme can be developed. The panel considered that as an Institute that capacity planning must be
proactive so that opportunities alluded to above which are preventing the growth of level 8 numbers do not occur.

**Title change**

The panel explored with the team if the title Mechatronics was fit for purpose and understood by applicants. The team shared with the panel the results of the surveys they have conducted on this issue which provided no evidence that the title should be revised at this juncture.

**Gender balance**

The team were asked to advise the panel of the strategies they had instigated to enhance the non-male cohort of students of on their programmes. The team furnished the panel with a number of examples such as school visits, general entry route and plans to develop a Biomedical Engineering stream with the Faculty of Science.

**Trades and apprenticeships**

The need for a person to manage/lead the Trades and Apprenticeships is becoming increasingly evident as they grow in number. These programmes have different funding, legal, academic processes and calendars than other academic programmes and therefore require a person to take the lead on same.

**Mechatronic suite of programmes**

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<tr>
<th>Code</th>
<th>Programme</th>
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<tbody>
<tr>
<td>SG_EGENE_X06</td>
<td>Higher Certificate in General Engineering</td>
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<tr>
<td>SG_EMTRN_C06</td>
<td>Higher Certificate in Mechatronic Engineering</td>
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<tr>
<td>SG_EMTRN_B07</td>
<td>Bachelor of Engineering in Mechatronics (Ab-initio)</td>
</tr>
<tr>
<td>SG_EAUTI_N06</td>
<td>Certificate in Engineering in Automation and Instrumentation</td>
</tr>
<tr>
<td>SG_EMTRN_J07</td>
<td>Bachelor of Engineering in Mechatronics (Add-on)</td>
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<tr>
<td>As above</td>
<td>Bachelor of Engineering (Honours) in Mechatronics (Add-on)</td>
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<tr>
<td>SG_EMTRN_K08</td>
<td>Bachelor of Engineering (Honours) in Mechatronics (Add-on)</td>
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The Head of Department provided the panel with an overview of the mechatronic programmes. The sharing of modules with other engineering programmes was detailed and the perceived benefits of same detailed. The 4 streams within the mechatronic programmes are

- Networking stream
- Auto Programming built around Semins PLCs
- Robotics Stream
- Control stream

The panel complimented the team on the introduction of a common first year but wished to know how they managed expectations in relation to year 2 preferences. The team explained how this was managed in a very objective manner which the students had prior knowledge of. The entry points of the students and the impact this had on retention and completion rates was discussed with the Head of Department sharing the findings of analysis that he had conducted which indicated that students with 250 points or less are unlikely to progress successfully through the programme. The team shared that a number of supports had been put in place to address topics like Maths that students struggle with and they have had a positive impact on progression rates in these subjects. Issues such as: laboratory attendance expectations, project selection, project expectations and support were all explored with the team. The panel sought clarification from the team on how analogue electronics and digital electronics were dealt with in the programme as it was not evident from the programme/module descriptors. The team provided the team with further information in relation to the control systems module, machine learning, rationale for the deployment of SEMINS PLCs and their usage. The panel were satisfied with the response received. The panel discussed how work placements were managed at the department level. The panel explored with the team what the employment focus of the graduate from the level 7 programmes was and were informed that it was maintenance and design of routine systems. It is hoped that the introduction to design would entice the level 7 graduates to return and study at level 8 which has more in-depth design focus.

**Data Centre programme**
The panel were informed about the origins of the programme, the content selection process, the delivery of the programme, the international linkages and the potential programme target/audience. The programme is perceived as demanding by students as they are all in employment and this has meant deferrals are often sought. To develop the programme further additional academic staff are required, laboratories and equipment.

### Polymer suite of programmes.

<table>
<thead>
<tr>
<th>SG_EPOLY_E06</th>
<th>Certificate in Polymer Technologies</th>
</tr>
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<tbody>
<tr>
<td>SG_EPLYP_J07</td>
<td>Bachelor of Engineering in Polymer Processing (Add-on)</td>
</tr>
<tr>
<td>SG_ENEWN_K08</td>
<td>Bachelor of Engineering (Honours) in Polymer Processing (Online)</td>
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</tbody>
</table>

The Head of Department provided the panel with an overview of the programme, the origins, the development process, the need/demand for this programme, the delivery route and student profile. The panel queried with the team the software applications (MINITAB) being deployed and the extent of their deployment in the various programmes. Project selection, preparation and support was detailed for the panel. The panel queried with the team why robotics was not an integral part of the programme content. A discussion ensued about the importance of the use of robotics within the polymer process and the need for students to understand this and the use of robotics as opposed to the design. There was agreement that the need for robotics is not required in terms of technical competence and programming, however an appreciation of the limitations of and the use of robotics in the polymer processing would be of benefit and can be achieved with company visits and a lecture topic in some of the modules. The team appreciated the discussion and would consider its inclusion, potentially in the Precision Engineering. The team were also asked to defend the inclusion of two control modules (Control 301 & 302). The use of *Euromapping* as an interface was also discussed as was 3D printing. The panel teased out with the team the differences in the quality modules between level 7 and level 8 programmes as on the face of it there appears to be duplication of content. The team detailed for the panel the
discernible differences between what is delivered on level 7 & 8 with the content on the level 8 programmes being Level 8 is based on best practice in industry and the content is more analytical with the application of quality process to the improvement of polymer processes an integral part of the students projects. Other content issues such as experimental design, project support and material regulation were explored with the team to the satisfaction of the panel.

This concluded the panel discussions with the Department staff.
Department of Mechanical & Manufacturing Engineering

Panel Team:

<table>
<thead>
<tr>
<th>Title</th>
<th>Name</th>
<th>Surname</th>
<th>Role</th>
<th>Institution/Company</th>
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</thead>
<tbody>
<tr>
<td>Dr</td>
<td>Olivia</td>
<td>Mc Dermott</td>
<td>Lecturer (Chair)</td>
<td>Management Development Unit, University of Limerick (Tuesday only)</td>
</tr>
<tr>
<td>Ms</td>
<td>Maria</td>
<td>Kyne</td>
<td>Dean of Faculty (Chair)</td>
<td>Faculty of applied Science, Engineering &amp; Technology LIT (Wednesday only)</td>
</tr>
<tr>
<td>Mr</td>
<td>Bernard</td>
<td>Murray</td>
<td>Panel Member</td>
<td>Engineering Operations Manager, Abbvie</td>
</tr>
<tr>
<td>Ms</td>
<td>Aoife</td>
<td>Deasy</td>
<td>Student Representative</td>
<td>USI</td>
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Meeting with Head of Department and Academic Staff on Tuesday May 7th.

Quality Suite of programmes

<table>
<thead>
<tr>
<th>Code</th>
<th>Programme</th>
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<tbody>
<tr>
<td>SG_EWORK_S06</td>
<td>Certificate Work Based Project (SPA)</td>
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<tr>
<td>SG_EQUAL_E06</td>
<td>Certificate in Quality Assurance</td>
</tr>
<tr>
<td>SG_EVALI_S06</td>
<td>SPA in Validation Technologies</td>
</tr>
<tr>
<td>SG_EMANM_J07</td>
<td>Bachelor of Science in Manufacturing Management (Add-on)</td>
</tr>
<tr>
<td>SG_SQUAL_J07</td>
<td>Bachelor of Science in Quality Engineering (Add-on)</td>
</tr>
<tr>
<td>SG_ESSYB_E07</td>
<td>Certificate in Six Sigma Yellow Belt</td>
</tr>
<tr>
<td>SG_ELSIG_S07</td>
<td>SPA Certificate in Engineering in Lean Sigma Quality</td>
</tr>
<tr>
<td>SG_EADVA_E08</td>
<td>Certificate in Advanced Lean Sigma Quality - Black Belt</td>
</tr>
<tr>
<td>SG_ELEAN_E08</td>
<td>Certificate in Advanced Lean Sigma Quality Project - Black Belt</td>
</tr>
<tr>
<td>SG_EQUAL_K08</td>
<td>Bachelor of Science (Honours) in Quality Management &amp; Technology (Add-on)</td>
</tr>
<tr>
<td>SG_EQLTY_M09</td>
<td>Master of Science in Quality</td>
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Dr John O’Donovan gave brief overview of all programmes, 9 in total from level 6 to level 9. Typically students are in the work place. JD listed all programmes. In preparation for
Programmatic Review, current students and graduates were surveyed, resulting in positive responses.

MSc in Quality Level 9-some concern around Project management module and assessment style, too much group work, springboard students tend to drop out, early drop outs which can create problems for groups

BSc in Quality Management & Technology, level 8-Noeleen Grant gave overview of survey responses -positive feedback from surveys, flexible learning and delivery of modules. Feedback that project warranted higher credits.

Inspection measurement and testing-thought to be duplication of level 7 module, also Case Studies which was created with full time students in mind.

BSc in Quality, Level 7 – Paul Curran summarised feedback from surveys, very positive responses.

Production Management to be introduced following feedback.

Level 7 BSc in Manufacturing Management-Caroline Mullan summarised feedback from surveys. Green belt project proving very popular

SPAs-yellow belt and green belt-industry recognised award

Feedback-many companies doing Lean now-Lean yellow belt now added , simulated six sigma added in

Following GDPR law-surveying students and graduates could be problematic in the future.

Report from IBEC used as checklist for programmes-are all quality areas covered? Yes

Chair queried introduction of online advisors? Positive move, assisting with non-academic queries from students etc. When programmes moved online, many academics took over admin roles.

Feedback-Chair agreed that feedback was most relevant as survey responses are from students/graduates currently working in industry.

Programmes/modules changed to reflect feedback from surveys
Master of Science in Quality (SQ_EQLTY_M09)
No new modules are proposed for the MSc in Quality. All modules have had their booklists updated to reflect more modern textbooks. There have also been some minor changes in the indicative syllabi to reflect more modern trends and techniques.

Bachelor of Science (Honours) in Quality Management and Technology (Add-on) (SG_EQLTY_K08)
Feedback that project warranted higher credits, increased it to 10 credits from 5. Students will be able to do a 10 credit Six Sigma industrial based project or a literature review with linked work based practical of 5 credits each.

Inspection measurement and testing has been removed from the Programme. Case studies will be replaced with Service Quality. Updated all other modules to reflect industry needs.

Certificate in Advanced Lean Sigma Quality - Black Belt (SG_EADVA_E08)
All modules have had their booklists updated to reflect more modern textbooks. There have also been some minor changes in the indicative syllabi to reflect more modern trends and techniques.

Certificate in Advanced Lean Sigma Quality - Black Belt (Project) (SG_ELEAN_E08)
There are no major changes to the programme.

Bachelor of Science in Quality (Add-on) (SG_SQUAL_J07)
All modules have been considered, reviewed and updated by the Course Board. This has resulted in minor modifications and updates to all modules. In addition, the module ‘Service Quality’ has been replaced with ‘Production Management’ as it was considered more directly relevant to the skillsets required by our students. Many of the modules have been using a computer based assessment methodology (WIRIS), which individualises questions, automatically corrects the questions and gives detailed feedback to the student that is directly related to the question given. This approach has been piloted in the modules: Mathematics and Statistics, Six Sigma 2, Project Management, Management Accounting and Applied Statistical Improvement. Although still a pilot, this assessment methodology has received overwhelmingly positive feedback from students.

The new module is ‘Production Management’ (MGMT07040).
Description: Production Management involves managing the resources required to produce goods and services. This module will focus on the decisions involved in the planning and control of a manufacturing operation.

Certificate in Six Sigma Green Belt (SG_ESSYB_E07)
The following are proposed changes to the programme. None of the changes affect the learning outcomes of the programme. A summary of the changes is as follows:

• Simulated Six Sigma Project Option: While we strongly encourage all students where possible to complete a live Lean Six Sigma project in a workplace environment, not all students are in a position to do this. If a student is not in a position to complete a Six Sigma project with an employer, then an alternative project is provided. This traditionally has been a research project with the student undertaking a literature review. Feedback from students is that it did not allow them to put the Lean Six Sigma tools into practice. To address this, a new simulated project option is being added to the Project module on the programme. This will replace the research project.

• Lean & Operational Excellence module (Yellow Belt)
There have been a number of award winners of the internationally recognised Shingo Operational Excellence (OpEx) prize in Ireland and this is increasing awareness of the Lean tools to drive operational excellence. The Shingo Prize is based on a complete assessment of an organisation’s culture and how well it drives world-class results. Several industry partners have recently asked IT Sligo to provide a Lean (Yellow Belt) module dedicated to the Lean tools as opposed to the Six Sigma tools. After undertaking the IT Sligo MOOC, Glanbia approached IT Sligo to deliver a Lean Yellow Belt module with a greater focus on Lean and OpEx. This module is currently being delivered to Glanbia as part of their national rollout of Lean/OpEx training across a number of their sites in Cavan, Monaghan and Kilkenny. To support this rollout, we have also delivered a number of Lean workshops onsite to Glanbia staff. The programme team now propose to add this module as an elective on the Certificate in Lean Sigma Quality. The team are also in discussion with other large employers who are interested in having their employees take this module.
Bachelor of Science in Manufacturing Management (Add-on) SG_EMANM_J07

Contemporary Management will be replaced with Occupational Safety & Health module

Level 6 Special Purpose Award in Quality Assurance SG_EQUAL_E06
The Supervisory Management module will be renamed as “Fundamentals of Management” as it is believed that this is more reflective of module content. This will not impact on the learning outcomes of the module or programme. There are no other changes suggested for the programme as it is running well. There is an option to complete a further 30 credits in one year by completing the L6 work based project and this is indicated on the course description page which has been updated to clarify progression requirements to L7.

Level 6 Special Purpose Award in Validation Technologies SG_EVALI_S06
The only proposed change to this programme is to slightly reduce the content of the Regulatory Affairs module and to make it more Pharmaceutical based, rather than medical device based. The number of continuous assessments will be reduced by one. The changes will not affect the module learning outcomes or the programme learning outcomes. There is an option to complete a further 30 credits in one year by completing the L6 work based project and this is indicated on the course description page which has been updated to clarify progression requirements to L7.

Level 6 Certificate in Work Based Project SG_EWORK_S06
The programme is relatively new and therefore there are no changes.

Operational issues related to above programme changes:
The chair explored with the team if there was sufficient resources in place to address operational changes. The Head of Department HOD informed the panel that many HPALS are currently employed and staff overtime is used to address current resource requirements. However, new academic staff are being recruited.
The panel queried the PhD percentage for Department to meet TU status. The Head of Department informed the panel of the current status of persons with a doctoral qualification within the department. Chair advised Department not to lose student and teaching focus in drive to reach PhD numbers.
Programme board recent changes

1. WIRIS-simulation package introduced-helps students in statistical analysis, can be used for self-assessment by students. This can be used as part of CA by lecturers also. This has proven beneficial for students.
2. ALEKS-maths application currently used for yr1 engineering maths to help students improve maths ability.
3. Online advisor for Quality programmes recently recruited.
4. West/NW Lean Network group set up with many companies, about 130 members. Site visits for students proving very popular.
5. Internationalisation-online programmes-online proctoring - need for robust proctoring system. Has an impact on the international student recruitment and assessment of students. Issues around online proctoring needs to be addressed

Mechanical Engineering suite of programmes

Higher Certificate in Engineering in Mechanical Engineering (SG_EMECH_C06)
Bachelor of Engineering in Mechanical Engineering (Ab-initio) (SG_EMECH_B07)
Bachelor of Engineering (Honours) in Mechanical Engineering (Add-on) (SG_EMECH_K08)

Head of Department gave brief overview of the programmes. The following topics were discussed in relation to the Mechanical Engineering Suite of Programmes:

1. Common first year to be offered across a number of engineering programmes in the Faculty. This common yr1 caused reorganisation of modules across all years of the mechanical & precision engineering and design programmes
2. CAO entry – The Chair noted the increase in CAO points in recent years.
3. Transfer and progression from Level 6 on to level 7 programmes needs to be included/identified on Module manager.
4. Contact Hours-The Chair queried the high contact hours. The Department staff have followed the guidelines from IT Sligo.
5. Failed elements identified on the approved programme schedules on module manager. The Chair queried the appropriateness of the use of failed elements on
these programmes. Breakdown between CA and Theory-students can be stronger in CA but less focused in theory section.

6. Failed element in yr1-Industrial Automation? Shouldn’t be failed element

7. CIM & Auto-shouldn’t be failed element- mistake on Module Manager

8. Design & Project- mistake on Module Manager -overall combined mark should carry

9. Any feedback from students on common yr1? Students appear to welcome common yr1, not always sure of choices in CAO. School visits feedback-not sure of which Engineering stream to apply to-common year 1 would address this.

10. Pass rate appears low, particularly in yr4. The level 7 students are not prepared for level 8. This will be addressed in the new level 8 ab initio programme which will include a work placement period. Some modules have been decoupled to help student pass rate, this should improve the pass rate.

11. Very few 10 credit modules. Typically ‘Project’ is the only 10 credit module

12. Repeat assessment strategy - Wording used on Module Manager. This should be clarified as there are some good examples, but some others are very loose and open to various interpretations. The mechanism that the student should use to repeat the module should be included here (exam, coursework, etc.).

13. Twenty three contact hours on yr4 seems high. HOD replied that this has been the tradition in this Department.

14. Integrated project 9 hours per week was queried. This should be 7 hours on Module Manager. Mechanical programme strength is in the ‘Project’ area.

15. CAO points have been increased and could lead to a reduction in student numbers. HOD- plans to offer Ab Initio level 8 in the future.

16. Year 4-Fluids graded pass/fail. Should this be numeric? Typo-needs to be corrected in Module Manager

17. The manner in which work placements are managed for Precision programmes currently. For Mechanical programmes, it is envisaged that the work placement will run from January to September of year 3 in the ab initio programme. Response from industry indicates that longer work placement is preferred (at least 6 months). The assessment process for Work Placement was detailed. The Head of Department informed the panel that there will be a need for additional resources/support for the roll out of work placement.
Proposed changes to programmes

Bachelor of Engineering in Mechanical Engineering (Ab-initio) (SG_EMECH_B07)

The Mechanical Engineering Level 7 programme has seen many changes over the last 5 years. These include common first semester, decoupling of mixed modules, acceptance of the CDIO approach, and addition of important modules such as control systems. The common first semester was suggested based on feedback from those visiting secondary schools. Students know they want to do some kind of engineering, but do not know which. Other third level colleges offer un-denominated or common entry engineering courses, which after a period of time the student chooses which branch of engineering to follow. This option was not in IT Sligo until this programmatic review. In light of there being only six semesters for a Level 7 degree, it was decided to offer a common first semester, along with a General Engineering entry. Other modules such as 2nd year mechanics had been recognised as being difficult, and it was felt that this should remain running all year long, but this could only be achieved by allocating 5 credits in both semesters. In this review, it was decided to semesterise 2nd year mechanics, which freed up 5 credits, which allowed for Thermodynamics & Fluid Mechanics to be run in year 2. New modules have been added to the programme, for example Thermodynamics & Fluid Mechanics have been added to year 2, Control Systems has been added to year 3. One of our lecturers is trained in CDIO for engineering students and organised a training session for the engineering faculty. It was seen to be an attractive option and has been added to semesters 2, 3, and 4.

Bachelor of Engineering (Honours) in Mechanical Engineering (Add-on) (SG_EMECH_K08)

In the last programmatic review, all courses were obliged to semesterise, many felt this was the wrong way to go. Some modules were coupled together, e.g. Mechanics and Dynamics 401 / 402, in the last programmatic review so that students still got the long thin immersion into a module. For various reasons this did not work. Students were being over-assessed, students would fail one section and pass the other, students recognised that it was effectively two modules when there was the same allocation for one module, students had two different lecturers for the module. It was decided to decouple many of these in the
current programmatic review following a trial running mechanics in one semester and dynamics in the other semester.

**Precision Engineering and Design Suite of Programmes**

**Bachelor of Engineering in Precision Engineering & Design (Add-on) (Online)** (SG_EPREC_J07)

**Bachelor of Engineering in Precision Engineering & Design (Ab-initio) (SG_EPREC_B07)**

**Bachelor of Engineering (Honours) in Precision Engineering & Design (Add-on)** (SG_EPREC_K08)

**Higher Certificate in Engineering in Precision Engineering & Design (SG_EPREC_C06)**

M Moffatt gave brief overview of these programmes. The following topics were discussed in relation to the Precision Engineering and Design suite of programmes:

1. Not intended to offer the Higher Certificate in the future as the Higher Certificate in Mechanical Engineering is suitable.
2. Low student numbers-commonality with Mechanical makes the programme viable.
3. Online precision-level 7-entry requirement of level 6 (or holders of craft qualifications/RPL)
4. Failed elements-needs to be corrected on Module manager as per the commentary under the Mechanical heading
5. Contact hours-may need to be reconsidered in year 3
6. Pass rates were not mentioned in documentation. The pass rates varied from excellent with all students passing to some classes where 60% passed.
7. The Work placement module has many learning outcomes. Is it possible to measure all the learning outcomes? MMoffatt replied-each student writes report to cover all areas, if LO can be measured/offered by individual company. There is an alternative in place if the achievement of a learning outcomes is problematic for a student on work placement.
8. Failed elements are given on approved programme schedules for all stages of the programmes. For stage 3, Work placement 1&2-needs to be corrected on Module manager and on Valuations and Six Sigma 2
9. Entry transfer and progression needs to be visible on Module manager
10. Did extra tutorials for students improve the pass rates? Students take tutorials voluntarily so this is uncertain.

11. Maths e-learning software ALEKS has been piloted and is proving positive. Yr2 mechanics and maths tutorials replaced labs which appears to have helped pass rates.

12. Level 7 online programme, Semester 6. 12 hours given to project with 10 of those to design project work. This needs to be reconsidered and updated on module manager.

The proposed modules for the online programme were not given to the panel prior to the visit but they were added to the documentation during the site visit.

**Bachelor of Engineering in Precision Engineering & Design (Ab-initio) (SG_EPREC_B07)**

The Higher Certificate in Precision Engineering & Design will be discontinued due to the implementation of the common first two years with both the BEng in Mechanical and Precision. Before the end of their second year, students will be allowed to stay on their programme of choice, or swap programmes if they choose to. Students will also be allowed to exit with a Higher Certificate in Mechanical Engineering.

**Bachelor of Engineering in Precision Engineering & Design (Ab-initio) (SG_EPREC_B07)**

Change Work Placement 1 & Six Sigma 2 (25 credits) + Validation (5 credits) to Work Placement 1 (20 credits) + Validation & Six Sigma 2 (10 credits)

Change Work Placement 2 & Six Sigma 3 (25 credits) + Metrology (5 credits) to Work Placement 2 (20 credits) + Metrology & Six Sigma 3 Project (10 credits)

**Bachelor of Engineering in Precision Engineering & Design (Add-on) (Online) (SG_EPREC_J07)**

All changes to the programme reflect changes in the equivalent fulltime B.Eng. in Precision Engineering & Design. In some cases, these changes are to make the module name more closely match the content. It is proposed that some of the current modules will be shared with other full-time programmes, such as Metrology and Materials Testing. There is no significant modification to the content and learning outcomes in this case.

Machine Tool and Product Design is being replaced with Computer Aided Design 301.
Mechanics and Mathematics 301 and 302 will be presented as two separate modules of Mathematics and Mechanics. The Mathematics portion will run year long, and the Mechanics portion will be replaced by a single 5-credit module called Mechanics & Dynamics 301.

Two related modules; Automation and Integrated Manufacturing 301, and Robotics and Integrated Manufacturing 302, are being replaced by a single module called CIM 301 (Mechanical). A new module called Machine Design is to be added. This is being added to the full-time programme, as it is material that is particularly important for the integrated project module. Quality Tools & Validation is being replaced by Lean Six Sigma & Validation.

Certificate in Engineering in Mechanical Analysis & Automation (Online) (SG_EMECH_S06)

C Doran gave a brief overview of the programme. A typical student has a craft qualification or industry experience.

The following topics were discussed in relation to this special purpose award:

1. Survey responses suggested that the 5 credits awarded to Maths did not reflect the student effort/workload
2. This programme acts as a bridging course for level 7 applicants with industry experience/craft qualification
3. Contact hours were queried as the documentation had many inconsistencies. Needs correction particularly on the Approved Programme Schedule

The first year of operation of the programme has identified some weak points as seen the staff and student feedback. This means that some changes to the programme are appropriate. These changes will align the work effort and credits received in mathematics and the need for CAD skills. They will also align the programme with special purpose awards also offered within the Faculty in Mechatronics. As a result of our experience with students and that they differ from the traditional cohort, the module CIM and Automation Technology Mechatronics 201 and CIM and Automation Technology Mechatronics 202 modules are being updated. These modules are being redesigned for online delivery only and are delivered to a number of online Special Purpose Award programmes.

The programme has a single 5-credit mathematics module in the first semester. Following staff and student feedback, and to remain aligned with other similar special purpose awards
in the Faculty, this will be changed to include an additional 5-credit mathematics module in the second semester. This will not involve increasing the work effort required, but rather increase the number of credits to reflect the work effort. Given the importance of CAD skills to the Level 7 degree in Precision Engineering and Design, it has been decided to add a 5-credit module to the programme, for the reasons outlined earlier.

**General discussion issues.**

Concerns around Work placement being offered Faculty wide were noted. A consistent approach should be implemented for all programmes.

Offering Level 7 programmes on CAO shouldn’t be underestimated, despite current interest in level 8 CAO offerings. However, Chair proposed that level 8 Ab Initio offering at CAO could assist with the viability of the level 7 programmes.

High contact hours for projects are reflected in the quality of student projects and their success in National competitions.

This concluded the panel discussions with the Department staff.
Department of Arts, Design and Architecture

Panel team:

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<tr>
<th>Title</th>
<th>Name</th>
<th>Surname</th>
<th>Role</th>
<th>Institution/Company</th>
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</thead>
<tbody>
<tr>
<td>Dr</td>
<td>Adam</td>
<td>DeEyto</td>
<td>Head of School of Design</td>
<td>University of Limerick</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td>(Chair)</td>
<td></td>
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<tr>
<td>Ms</td>
<td>Nollaig</td>
<td>Crombie</td>
<td>Head of Department for Design &amp; Creative Media</td>
<td>Letterkenny Institute of Technology</td>
</tr>
<tr>
<td>Mr</td>
<td>Jim</td>
<td>Culleton</td>
<td>Artistic Director.</td>
<td>Fishamble Theatre Company, Dublin 1</td>
</tr>
<tr>
<td>Mr</td>
<td>James</td>
<td>Hamilton</td>
<td>Architect</td>
<td>James Hamilton Architect, Belfast</td>
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Panel and staff team discussion on YAADA

**Student issues/numbers**

**Q:** Low numbers in YAADA courses are a concern. What is being done to address this?

**A:** The new facilities will be marketed under the guidance of the new head of marketing on campus.

**Q:** Is gap year common to all programmes?

**A:** No, but this is something that is currently being looked at along with increasing course flexibility for students.

**Q:** If the intention is to double student numbers how is this going to be dealt with in Staff numbers?

**A:** The levels of uncertainty in student numbers mean that HPAL difficult to manage staff numbers.

**Q:** How do staff deal with students with specific needs: Mental health etc. as this can be a concern, particularly in arts and design courses?

**A:** It is a concern and staff do their best to deal with it but ultimately are not qualified to deal with such things and must refer student to the Student Counselling service.

**Dissertations**

Note: Department commended on proposal for Masters Programmes.
Q: Are the students able to deal with Critique (as opposed to criticism). Is there a policy or a way of approaching critique? How are they brought through the process?

Q: Do you have dissertations on all programmes?

A: Yes. The standard of the dissertations was unclear, they ranged from 6,000 to 12,000 in word count and in some cases include a practical or design element. This is somewhat consistent with YAADA’s desire for research to be defined with broader parameters in order to recognise the approaches other than the written word.

- Some students struggle with dissertation.
- The academic writing workshops are a very welcome addition to the Institute

**Student skills & integration**

**Note:** All students need commonality of soft transferable skills. There is a great resource pool of these within the department that can be drawn upon.

Q: How is cross pollination of courses within YAADA currently addressed?

A: Through common first year entry courses.

Q: How linked is the department with community projects?

A: The department has close links with various creative enterprises around the region and regularly holds exhibitions, showcases and performances. There is also much work done in engaging with Primary and Second level education in the area. The department also undertakes awareness and fund raising campaigns

**Research & innovation:**

Q: How is research and innovation progressing?

A: R & I policy doesn’t stretch to Arts’ Design and Architecture in less traditionally academic ways in comparison with The Research Excellence Framework (REF) in the UK.

- Look towards practice based PhDs
- Practice and design based work should be included in research definitions
- Writing and Literature needs writers not “academics”

**Note:** There is a desire to establish a YAADA Journal.
- Balance between research and practice is essential
- Technical support for research projects is essential

**Operational Plans & Proposals for the Future:**

- Further internal collaboration between programmes
  - Furthering staff and student collaboration between programmes
  - Harmonization
  - Connectivity
  - Community
  - Shared space
- Continue to work on improving the Creative Showcase (We surprised ourselves last year with the quality of work)
- Internal Exhibition space (with an awareness of students potentially feeling vulnerable about presenting work within the institute)
- YAADA must work to foreground itself as a cultural force of the region
- Discussion needs to happen over whether or not exhibitions need to be curated

**Stakeholder feedback**

**Q:** What kind of feedback informs the progression of the Department?

- External examiner feedback
- Student Surveys
- Processes already in place provide internal feedback i.e. focus groups, standardised meetings
- Societal feedback on exhibitions and performances
- Industry surveys and discursive feedback about industry movements
  - It was noted that industry feedback should ought not to lead educational direction
  - The conversation re. direction of education should explore many different complexities

**Note:** External feedback and student feedback are very aligned
Programme review

Bachelor of Arts in Interior Architecture & Design (Ab-initio) SG_VINTE_B07

Bachelor of Architecture (Honours) (Ab-initio) SG_VARCH_H08

Note: Bachelor in Architectural Design being phased out. Bachelor in Architecture coming in.

Note: IT Sligo has the only Architecture programme serving the North West.

- Only 2% come back to Sligo after having left.
- IT Sligo Architecture courses pioneered different entry methods into architectural courses

Q: How many external examiners do architecture programmes have?

A: 2: 1 academic and 1 practitioner

Q: How do the external examiners engage with the process?

A: In Architecture, 2 Externs engage 3 times per year to assess the quality of work produced on an ongoing basis.

Q: Is professional accreditation on the agenda?

A: Yes, constantly. RIBA accreditation has gone through 2 validations. There is a policy of best practice and setting of benchmarks and standards across all programmes in order to encourage the gaining and maintenance of Professional Accreditation with organisations such as RIAI.

Bachelor of Arts (Honours) in Interior Architecture SG_JINTE_H08

Note: Only Interior Architecture & Design Course in Ireland

Q: Does title represent 50/50 split between Interior architecture, and design elements of the course?

Q: Does the course have membership of the IDI?

A: Yes

Bachelor of Arts in Performing Arts (Theatre Design) (Ab-initio) SG_APERT_B07

Bachelor of Arts (Honours) in Performing Arts (Ab-initio) SG_APERF_H08

Bachelor of Arts (Honours) in Performing Arts (Acting) (Ab-initio) SG_APERA_B07
Performing arts staff presented an overview of the Programmes

**Q:** How does work placement function in performing arts

**A:** There is a Memorandum of Understanding with the Abbey theatre and the Hawkswell theatre. The connection with the Abbey Theatre is unique amongst third level in Ireland.

- Students present a portfolio of experience after work placement

**Note:** Performing arts also brings students to Hungary for 2 weeks every year to engage in a masterclass performing arts programme. This will hopefully be funded by Erasmus if made an integral part of the curriculum.

**Note:** Acting for camera must become part of the course.

- Professional practice module must have more emphasis
- Documenting activities and progression is crucial to all courses

**Q:** Are people concerned about the lack of project space?

**A:** This is being addressed the K and L block plans

**Note:** A discussion about how students engage with current workspace ensued. The key issue raised was that creative specs are not 9 – 5 like conventional jobs and this must be reflected in the access to project space.

**Bachelor of Arts (Honours) Writing and Literature (Ab-initio) SG_HWRIT_H08**

**Q:** Is there a potential for online learning in Writing and Literature?

**A:** There is the issue of trust and probity in online writing where there is less interaction

- Ideas generation and sharing is different in online community.
- Academic modules might work well online

**Q:** How much is Yeats sold in marketing the Department?

**A:** The department is only beginning to engage with the force of association with the name Yeats and all of its implications across literature, design and theatre.
Note: The Joseph Downs building should also be included in the marketing campaign promoting the department.

Creative Design

Bachelor of Arts in Creative Design (Ab-initio) SG_DCRDS_B07

Bachelor of Arts in Creative Design (Ab-initio) SG_DCRDS_H08

Bachelor of Arts (Honours) in Creative Design (Add-on) SG_AARTT_K08

Note: Changed from Industrial design. Design principles and understanding of context and culture are key parts of the Programme

Note: Course is very broad. However, it is going down a very interdisciplinary route as is congruent with current trends in the area.

Q: Is there a need for a unique selling point? If so what is it?

Q: How much change in the course is informed by external stakeholder feedback versus internal idea generation?

A: There is substantial change which is informed by external SH feedback however there is significant disagreement about what it is that a product designer does. Creative Design needs to be able to provide a good grounding across the board.

Q: What changes are occurring in response to students experience in the workplace/industry?

A: More focus on soft skills which prepare students for entry into work

Fine Art

Bachelor of Arts in Fine Art (Ab-initio) SG_AARTT_B07

Bachelor of Arts (Honours) in Fine Art (Ab-initio) SG_AARTT_H08

Overview given:

- 2016 Ab-initio developed
- 50/50 school leavers to mature students
- Large diversity of student types and backgrounds
- System is very general compared to other courses
- Strong emphasis on professional practice
- Drawing is a central pillar of course (enhances people’s ability to perceive and think in lateral ways)
- International trip each year

**Note:** It is critical to contextualise Fine Art in an international Context

**Q:** Where do students primarily arrive from?

**A:** PLC portfolio courses play a large part in sustaining FA programmes.

**Q:** What changes are going to occur as FA progresses?

**A:** Interdisciplinary is emerging as a key factor in creative courses and YAADA is engaging with this zeitgeist based upon industry and student feedback.

- The courses are focusing more and more on collaborative practice and professional practice. This is done with the understanding that many Art students work as sole traders on leaving formal education
- The definition of research is as much an issue for FA as it is for other YAADA programmes and the progression of this definition will inform change

**Q:** Do students have the same experience of Art and Design theory as they do in IT Sligo?

**A:** The Fine Art faculty are constantly in communication with the portfolio courses so that there is as seamless as possible a transition.

**Q:** What is being done about Masters level education in Fine Art?

**A:** New Programmes of learning for Masters are currently being validated and 90% of students say they would prefer to stay in the region to undertake their masters.
Dr. Ken Thomas welcomed all of the attendees and introduced the panel followed by each of the Programme Chairs introducing themselves. Trevor McSharry (HOD) gave a brief overview of his department and the development of the full-time and part-time and online courses. The HOD spoke about the challenges that the department faced during the economic recession which started in 2008 and the strategic plans for the department in line with Faculty plans and the overall Strategic Plan for the Institute. The HOD also spoke about some of the department highlights since the last Programmatic Review 5 years ago, which include strategic collaborations with professional bodies such as EI and SSCI, development of the MEng in Civil Engineering and the development of Advanced Wood and Sustainable Building Technology at a time when Carpentry and Joinery apprenticeships were non-existent. The HOD listed the new programmes that have been developed since the last Programmatic Review and spoke about ones that are in the next developmental phase. The three Masters programmes and PhD by research were also discussed. The panel recommended building expertise in the area of off-shore Energy and off-shore geotechnical areas.

Q. What is the department doing to focus on the Low Carbon Economy by 2050 strategy, building ‘sustainability’ into the courses?

A. The department have made changes to courses and modules to increase sustainability and environmental content.

Q. How is the work-placement being built in to the courses?
A. The work-placement runs from April to June, with the possibility of students continuing to work for the company over the summer months. The work-placement is credited and the students either pass or fail their work-placement.

Q. How do the Inter-disciplinary projects work in reality?

A. The projects are based on real-life client briefs. Students across the department work on different elements, for example, the Architects work out the design, Civil Engineers work out the site, quantity surveyors cost out the project and the Project Managers schedule the execution and feasibility plan.

Q. What is the breakdown between continuous assessment and exam assessment for online courses versus full-time courses?

A. The breakdown between the two cohorts is the same.

Q. What is the balance between continuous assessment and exam assessment?

A. The balance is 60/40 and this is consistent across the programmes within the department.

Q. How is topic ‘Ethics’ dealt with within the course programmes, especially in preparing itself for Internationalisation (of workers/ employer/ students etc.)?

A. This was a recommendation from the previous Programmatic Review and Ethics is now embedded into modules such as Professional Practice across the department.

Q. Global Working – how does the department link with graduates of the courses?

A. The department uses LinkedIn to stay in touch with graduates. The Institute launched an Alumni platform called Konnectagain a few times over the last couple of years but this hasn’t really gained traction. The plan is for the Institute to expand its presence with LinkedIn and increase its connections with past students, who may also be possible funders to the Institute and possible employers to our current students. Some programmes use Facebook pages to connect with students while they are a current student and remain in contact post-graduation.

Q. How is the department managing to meet the TU metrics?
A. The department is motivated by the TU metrics to recruit new staff that have a PhD qualification. While Civil Engineers may have a PhD it is not common for Quantity Surveyors to have a level 10 qualification as it is not required by Industry. It may be possible that TU metrics could be met using equivalent professional Chartered qualifications. The Institute is aiming to submit for the TU process by April 2020. Another important metric is students studying or qualifying with a level 9/10 research qualification and in order to achieve this metric, bursaries and stipends have been introduced.

**Individual programme or suite of programmes revalidation process**

**L8 Bachelor of Engineering (Hons) in Civil Engineering (Ab Initio)**
**L8 Bachelor of Engineering (Hons) in Civil Engineering (Add-on)**
**L7 Bachelor of Engineering in Civil Engineering (Ab Initio)**

Changes have been made to these courses in response to feedback from stakeholders, from Industry and from the HEA report that students need to be better informed which discipline of Engineering they are best suited to.

**L8 BEng (Hons) in Civil Engineering (Ab Initio)**

There have been no major changes to the programme since 2013 although there may have been minor changes in relation to module titles, sequencing and assessment details.

**Proposed changes:**

In order to facilitate the common first year, a number of new modules have been introduced:

- Introduction to Programming
- Engineering Graphics and Computer-Aided Engineering
- Electrical Principles Engineering
- Introduction to Professional Engineering
- Multidisciplinary Design Project.
- Surveying: The first year surveying modules are to be moved to second year to accommodate the common engineering first year.
• Human Resources and Personal Development: In semester 2 year 2 HRPD will be replaced by Introduction to Professional Engineering in semester 2 year 1.

• Engineering Mechanics 101 & 102: The titles of Structures 101 and 102 have been changed to Engineering Mechanics 101 and 102 to better facilitate commonality. Engineering Science 101 and 102 have been renamed Engineering Physics and Engineering Chemistry.

• Work Placement: The introduction of Work Placement will necessitate shortening semester 2 year 3 to allow students to commence placement around April 1st. The number of modules in semester 2 has been reduced from 6 to 5 and the hours allocated to the remaining modules have been increased to compensate.

• Hydraulics 302H has been discontinued. The Environmental Eng 302H module will be replaced by Work Placement and content transferred to Environmental Eng 301H module with an increase of theory hours from 2 to 3 per week. Some material is also covered sufficiently in Environmental Eng 201H.

• Final Year Project: Work on the Final Year Project begins in Year 4 Semester 1 and with a view to balancing out the work load over the year Civil Engineering Law 402H has been moved to semester 2. This results in semester 1 having 25 ECTS credits while semester 2 has 35 ECTS credits.

L8 BEng (Hons) in Civil Engineering (Add-on)

There have been no major changes to the programme since 2013 although there may have been minor changes in relation to module titles, sequencing and assessment details.

Proposed changes:

• A 12-week work placement has been introduced towards the end of Year 3, semester 2.

• Environmental Eng 302H module will be replaced by Work Placement and content transferred to Environmental Eng 301H module with increase of theory hours from 2 to 3 per week in the Level 8 programme. Some material will also be covered sufficiently in Environmental Eng 201H.

L7 BEng in Civil Engineering (Ab Initio)
There have been no major changes to the programme since 2013 although there may have been minor changes in relation to module titles, sequencing and assessment details.

**Proposed changes:**

- **Surveying:** First year surveying modules in all Civil Engineering programmes are to be moved to second year to accommodate a common engineering first year.
- **Building Information Modelling (BIM):** A new module Building Information Modelling is being introduced in Semester 2 of the level 6 & 7 programmes.
- **Engineering Graphics and Computer-aided Engineering:** This is a new module which is being introduced in Semester 1.
- **Engineering Mechanics 101 & 102:** The titles of Structures 101 and 102 have been changed to Engineering Mechanics 101 and 102 to better facilitate commonality. Engineering Science 101 and 102 have been renamed Engineering Physics and Engineering Chemistry.
- **Environmental Engineering:**
  - The modules Wastewater Treatment 202 and Water Supply 302 modules are proposed to be replaced with Environmental Engineering 202 and Environmental Engineering 302.
  - The Wastewater Treatment 301 module has been moved to Semester 2 (Wastewater Treatment 302).
  - **Final Year Project:** Work on the Final Year Project begins in Year 3 Semester 1 and with a view to evening out the work load over the year Wastewater Treatment 301 and Contract Administration have been moved to semester 2 while Highway Engineering has been moved to Semester 1. This results in semester 1 having 25 ECTS credits while semester 2 has 35 ECTS credits

**L6 Higher Certificate in Water and Waste Water Treatment Operations**
**L6 Certificate in Introduction to water and Waste Water Treatment Operations**
**L6 Certificate in Drinking Water Treatment Operations**
**L6 Certificate in Waste Water Treatment Operations**

There have been no major changes since the programme was approved last year in 2018.
Proposed changes:
None.

L9 Masters of Engineering in Road and Transport Engineering
L9 Post Graduate Diploma in Road and Transport Engineering
L9 Certificate in Engineering Road Network Management
L9 Certificate in Road Maintenance Engineering and Network Management

Proposed changes:
The proposed changes to the major, minor and SPA awards being reviewed largely relate to minor changes and updates to individual module learning outcomes, resulting in some updating of module titles, learning outcomes, and assessment strategies.

• Decoupling of Geotechnical Engineering and Drainage Systems from the two current joint modules Geotechnical Engineering & Drainage Systems in Semester 1 and Geotechnical Engineering & Drainage Systems Design in Semester 3 of the programme to form two new modules, Geotechnical Engineering I and Drainage Systems Design & Flood Management.
• Research Methods: a revised module for Research Methods.
• Drainage Systems module: the proposed new Drainage Systems module encompasses Flood Management in the title along with to reflect the teaching and learning emphasis more accurately.

L8 Bachelor of Science (Hons) in Construction Project Management (Add-on)
L7 Bachelor of Science in Construction Management (Add-on)

L8 Bachelor of Science (Hons) in Construction Project Management (Add-on)
The content of all modules was considered in detail and refined to remove subject duplication and to ensure better overall alignment.
Proposed changes:

- **Projects & ICT**: the title of the module is changed to ‘Digital Construction Technology’ and new software packages have been introduced such as: Navisworks, Synchro Pro, ReCap and BIM 360.

- **Dissertation in Construction Project Management**: ‘Literature review’ section (35%) is to be handed up and marked at the end of semester 1. This along with half of the continuous assessment marks (5%) amounts to 40% for semester 1. This is instead of having 100% of the marks solely at the end of the academic year.

- **Construction Corporate Management**: reduction in the content on ‘strategy’ and incorporation of additional content pertaining to ‘leadership’, ‘motivation’, and ‘managing people (personnel management)’.

- **International Construction**: conjoining content on ‘mergers & acquisitions’ has been removed from other modules, and have aligned it into this module exclusively. ‘International project failures: lessons learnt’ has also been incorporated.

- **Development Appraisal & Economics and Construction Financial Management**: both modules have been combined to create a new module called ‘Project Appraisal, Procurement & Finance’.

- **Construction Law, Liabilities and Obligations**: amended by the inclusion of more construction contact/administration content. The introductory to law element has been reduced and will be delivered as a pre-recorded lecture.

- **Construction Planning and Programming**: amended to include additional estimating content as the expense of the introduction to planning within organisations. More emphasis is being placed on importance of both site layout planning and method statements in the planning process.

- **Project Management and Control**: existing subject content relating to lean, quality and supply chain management has been transferred to the new module Lean Principles & Quality Management. Content relating to leadership, motivation and teams have been transferred to Corporate Construction Management. In the void left the following has been included; Building Control Amendment Regulation, expanded content on Health and Safety Management, Project Lessons Learned, Earned Value Management, Design Management and Subcontractor Management.
• Construction Contracts & Dispute Resolution: contract administration has been added in the learning outcomes and will focus on administration of the Public Works Contract.

• Lean Principles & Quality Management: a new module Lean Principles & Quality Management has been introduced. The inclusion of this new module was facilitated by the amalgamation of Development Appraisal & Economics and Construction Financial Management to form a new module Project Appraisal, Procurement and Finance.

L7 Bachelor of Science in Construction Management (Add-on)
The module titles of a number of modules in the programme are to change to better reflect the content of these modules and make the course content clearer and more attractive from a marketing point of view.

Proposed changes:
• Re-naming the existing Communications & CAD module to BIM Fundamentals & Revit in semester 3
• Creation of new module BIM & Collaboration in semester 4.
• To accommodate the new BIM & Collaboration module above, the two Measurement and Costing 1 & 2 modules worth 10 credits in total will be condensed into one 5 credit module in QS Skills and Cost Control.
• Inclusion of content on Lifecycle cost and lean construction to the modules Project Feasibility & Appraisal and Project Programming and Control.
• Increased or updated content on Health & Safety, professional development and codes of practice in the Site Management module.
• Inclusion of NZEB building regulations in the Building Surveying module
• Increased content on defects emerging in modern construction such as fire regulation non-compliance and preventative maintenance.

L9 Masters of Engineering in Road & Transport
Proposed changes:
The proposed changes to the major, minor and SPA awards being reviewed largely relate to minor changes and updates to individual module learning outcomes, resulting in some
updating of module titles, learning outcomes, and assessment strategies. Programme outcomes are largely unaffected by any changes in modules with minor updating of module learning outcomes and teaching & learning and assessment strategies to reflect stakeholder feedback and updates to technologies, standards and practices.

- Decoupling of Geotechnical Engineering and Drainage Systems from the two current joint modules Geotechnical Engineering & Drainage Systems in Semester 1 and Geotechnical Engineering & Drainage Systems Design in Semester 3 of the programme to form two new modules, Geotechnical Engineering I and Drainage Systems Design & Flood Management is the major change in the programme.
- Other changes to modules include a revised module for Research Methods, to be more compatible with requirements of research projects/dissertations for Master in Engineering programmes, and the emphasis of certain modules towards bridges, i.e. Renaming of Structural Assessment and Inspection module to Structural Inspection & Assessment of Bridges, and on design aspects, i.e. Bridge Structures module renamed as Design of Bridge Structures.
- The proposed new Drainage Systems module encompasses Flood Management in the title along with to reflect the teaching and learning emphasis more accurately.

L8 Bachelor of Science (Hons) in Quantity Surveying Ab Initio
L8 Bachelor of Science (Hons) in Quantity Surveying (Add on)
L7 Bachelor of Science in Quantity Surveying Ab initio

Focus groups / meetings were carried out with the following stakeholders: Quantity Surveying Employers, Students, Graduates, External examiners, Professional Body (Society of Chartered Surveyors Ireland) to inform changes.

Proposed changes:
Module titles have been updated to reflect the content of the modules and to remove the numbering in the titles of certain modules.
• The introduction of a Learning Theory Module.
• Quantity surveying software is introduced in Semester 2 as opposed to an existing Year 3.
• The introduction of a Report Writing and Academic Writing Module.
• Level 7 and Level 8 Full-time students will get the benefit of work place engagement for a minimum period of three months carried out in Semester 6. Online students will carry out a project in place of the work placement.
• There will no longer be a Quantity Surveying Module Surveying, where students were learning the use of dumpy levels and staffs to establish ground levels and contours. This manual surveying function is replaced with earthwork quantities calculation software using 3D models for cut/fill exercises as part of a civil engineering measurement module.
• The students will still be introduced to Computer Aided Design (CAD), but they will no longer be producing CAD drawings using software but will be examining measurement, scheduling and quantity take off functions of BIM models.
• Two 5 credit modules in year 4 (Capstone Project 1 and Capstone Project 2) are being amalgamated into 1 year-long 10 credit Capstone Project module. This longer module approach follows best practice in ensuring that students at year 4 of a Level 8 programme have sufficient duration to develop educational learning objectives at higher levels of complexity and specificity.

L7 Bachelor of Science in Advanced Wood and Sustainable Building Technology

HOD explained that the 6 construction modules still have to be finalised between 2 programme boards; Quantity Surveying and Advanced Wood & Sustainable Building Technology.

Proposed changes:
Some new modules have been added to the programme as outlined below. Generally most of the remaining modules have been updated to incorporate the latest technology and
innovations in the construction industry some minor changes have been made to the titles, learning outcomes and indicative syllabus.

- Two standalone 5 credit Surveying modules have been created in semester 1 and 2. The subject matter of these two modules was previously contained in the 10 credit Sustainable Construction Technology modules now a 5 credit modules.
- Computer Aided Design has moved from year 2, it has been incorporated into the Graphical Communication and Design hand drawing module. Hand drawing has been removed from year 2 and year 3 year making way for extra modules in Building Information Modelling and ICT.
- Advanced Manufacturing has been removed from year 3 and combined with Applied Construction Technology.
- Building Information Modelling (BIM) modules has been moved from year 3 to year 2 to replace the Computer Aided Design modules.
- A new 5 credit Project Design and management module in semester 1 and a new 5 credit ICT for Construction module in semester 2 have been created to replace the 10 credit Graphical Communication and Design modules.
- Sustainable Construction Technology 5 and 6 changes to Industrial and Commercial Construction 1 and 2.
- A new 5 credit module Building Analysis and Adaptation and two new 5 credit Building Information Modelling modules have been created.
- Work Placement is now embedded in the programme as a 10 credit module in semester 2 in line with the Institute strategic plan.
Part 7  Meeting with Student Representatives and External Stakeholders

Meeting with External Stakeholders
List of external stakeholders in Appendix 6

The panel sought the views of the employers present in relation to their perception of the graduates of IT Sligo in terms of having the required knowledge, skills and competencies for their industries. Graduates are perceived as well prepared for the workforce. This they believe is a result of the close working relationship they have with IT Sligo who modifies programme content to address identified needs. The presence of IT Sligo was one of the reasons some had chosen to locate their companies in Sligo. IT Sligo can provide R & D support and a range of online CPD opportunities for employees. Employers are invited to serve of committees, guest lecture, contribute to programme design and serve on programme validation panels. IT Sligo was perceived as having a very forward way of working with local and regional industry.

Meeting with Student Representatives
List of students is provided in Appendix 6

The Chairperson gave an overview of the purpose of the programmatic Review for the Faculty of Engineering & Design. He stated the panel would like to find out about students involvement in the programmatic review process, their experience of work placements, perception of assessments, feedback, awareness of the strategic plan and what influenced their decision to come to IT Sligo.

Students informed the panel that they chose to come to IT Sligo for a number of reasons—programme choice, accessibility and for financial reasons. The students present did not convey to the panel that they would be exiting the college with significant debt and this was due in part to the grants/ schemes they were accessing such as the Back to Education Scheme for a mature student.
Work placements
A small number of the student cohort and completed a work placement in semester 6, year 3 and found it an enjoyable experience which served to bridge the theory practice gap and facilitated the development of some of the competencies in their particular specialism. The students conveyed having problems sourcing placements with limited guidance from their Department and a general lack of information about the work placement.

Student supports/ feedback
The student were very positively inclined towards the new supports that have been instigated in recent times such as the Maths support Centre. Students reported that they were invited to provide feedback after the completion of each module.

Programme information
Students reported mixed experiences in relation to receiving specific programme information with some receiving detailed information on modules/ assessments etc. at the beginning of each semesters to others reporting receiving limited information which indicated to the panel a lack of consistency with respect to programme specific information across the Faculty.

Awareness of strategic plan/ involvement in programmatic review process.
A small number of the student were aware of the Institutes strategic plan 2017-2022. Students reported that they had been involved in the review process. They had being informed of it by the Head of Faculty and their views were fed through their student union/ programme representatives. They found their participation a positive experience where they learnt about issues such as proposed infrastructural developments.

Gender behaviour and awareness
One student chose to meet the panel on her own (who informed the panel she was representing her female peers) to express her deep concern about the behaviour of male students in her programme and how it was perceived as disrespectful. The student seemed unaware of the Student Charter and of other avenues she could deploy to assist her address this issue.
Part 8 Findings and Recommendations

The Panel recommends the revalidation of the Programmes (Appendix 7) that were presented to it for 5 years subject to the conditions and recommendations listed below.

Faculty of Engineering & Design

Commendations:
1. The panel commends the rigorous review process undertaken by the Faculty and Department teams based on close links with industry.

Recommendations:
1. The management model of work placement both centralised and within Departments, needs to be reviewed and developed for robust QA and coherent relationships with stakeholders.

2. There is scope for greater marketing of online programmes in order to facilitate growth. The management of online programme provision needs to develop a robust QA model for assessment and student support.

3. The Alumni relationship needs to be developed further for the benefit of students and the wider Faculty.

4. The resourcing and distribution of staff, administration, management and space resources across Departments requires on-going capacity review as the new Department structure evolves.

5. The Gender balance make up across the Faculty to be considered in the context of ambitious growth targets. Actions could include the level of marketing, configuration and design of work spaces, nature of projects undertaken and general awareness of gendered conditioning of the engineering space.

Condition:
1. Inconsistencies between volume 2 and volume 3 in relation to hours and credits to be resolved in the documentation.
Department of Computing & Electronic Engineering

Commendations:

1. The panel commend the introduction of work placements on all NQF level 8 programmes.
2. The panel commend the Institute on the development of C.E.L.T. and the introduction of the Maths Support and Academic Writing centres.
3. The panel commend the Faculty on restructuring of Departments to support new developments.
4. The panel commend the development and introduction of new modules to reflect the changing needs of Industry.

Recommendations:

1. All students should have an awareness of online collaborative working processes and practices.
2. Approved programme schedules should clearly reflect the programme delivery hours.
3. The requirement for an ICT project room needs to be substantiated.
4. There is a need to quantify the numbers of students with a disability and/or mental health issue and/or literacy and/or social issues.
5. The Department’s feedback to Faculty on their Quality Assurances processes requires clarification (EAP 7).
Department of Mechatronic Engineering

Mechatronics & data centres

Commendations:

1. The panel commended the structure and delivery of programmes and engagement of the programme team in the review.
2. The increase in student numbers indicates a high level relevance of the programmes.
3. On line retention rates are excellent.
4. Use of WIRIS software successfully enhances students learning.

Recommendations:

1. The resourcing, staffing and capacity planning of the Department for growth, needs to be more proactive.
2. The management of trades at Faculty and Institute level needs to be kept under review as this area grows.
3. The provision of a CDIO facility would be beneficial.
4. Course Assessment schedules are made available to students.
5. Marking systems reflect individual and team based contribution to projects. These rubrics to be given to students as part of their project brief.

Polymers

Commendations:

1. The currently unique provision of programmes at NQF level 6, 7 & 8 provides a service to a growing market
2. It is evident that programmes are coming to maturity in terms of content provision.

Recommendations

1. Reference to Minitab software and solid works software is visible within NQF level 7 & 8 modules, namely Polymer tooling design, experimental design and statistics.
2. Modifications to control 301 module are made (or a new module is developed) on the NQF level 7 programme to incorporate robotic and control equipment, Euromap interface equipment.
3. Recycling polymers is included on programmes at NQF level 6 and 7. Update module descriptors to include recycled polymers and the implication on post-consumer, post-industrial and additives.
4. The unique aspects of programmes to be marketed more robustly internationally.
5. The provision of polymer lab facility to enhance the capability of polymer programmes to deliver in- house practical exercises.
Department of Mechanical & Manufacturing Engineering

Department Specific Commendations

- The Panel acknowledges that the Programmes board have put considerable time and effort into creating appropriate modules and putting them on Module Manager in time for the review
- The Panel were impressed with the quality and presentation of the documentation
- The panel were impressed with the staff engagement and open discussion during the site visit
- The Panel commends the quality of the final year projects and their success in National competitions
- The Panel acknowledges the effective work placement structure and effective assessment practices in place on the Precision Engineering and Design programmes.

Quality suite of programmes:

Commendations:

1. The panel commends the positive engagement of the programme teams.
2. The panel commends the excellent survey and actions taken based on responses, with relevant changes made to programmes.

Recommendations made captured at Faculty level

Mechanical Suite of Programmes and Precision Engineering and Design suite of Programmes

Condition:

1. The Approved Programme Schedules have a number of modules listed with Failed Elements. The appropriateness of these failed elements need to be reviewed by the relevant Programme Boards.

Recommendations

Mechanical Suite of Programmes

1. Work placement should follow a similar model to the current Precision Engineering and Design programme in terms of operational logistics and assessment methodology. The programme team need to ensure that there is an alternative programme for students who are unable to find work placement.
2. The development of a level 8 Ab Initio in Mechanical Engineering is recommended by Panel
3. Review the repeat assessment strategy for all modules
4. Include transfer and progression information on Module Manager documentation
5. Review pass/fail grade in Year 4 Fluids module
6. The contact hours for the ‘Integrated Project’ module in semester 5 should revert to Faculty norm

Precision Engineering and Design Suite of Programmes
1. The contact hours for the ‘Integrated Project’ module in semester 5 should revert to Faculty norm. The online programme ‘Project’ contact hours also need to be reviewed.

2. The development of a level 8 Ab initio in Precision Engineering and Design is recommended by the Panel.

3. The programme team need to ensure that there is an alternative programme for students who are unable to find work placement.

Certificate in Mechanical analysis & Automation Level 6

Recommendation

1. Contact hours need to be consistent between approved programme schedule and module information provided on module manager.
Department of Arts, Design and Architecture

Commendations:

1. The panel welcomes the inclusion of enterprise and business skills within creative programmes.
2. The panel commend the commitment and passion of the Department staff.
3. The panel commend the formation of YAADA as a discrete Department and the benefits this could yield for the programmes therein.
4. The panel commended the Programme team for making programme titles more reflective of course content.

Recommendations:
The panel recommend:

1. The Institute policy on external examiners needs to be reviewed to encompass the requirements of YAADA.
2. The development of a USP across the suite of creative courses, such as interdisciplinary practice would strengthen the identity of YAADA.
3. Research is defined in the context of the discipline.
4. The inclusion of field trips in modules is encouraged.
5. That alternative access routes to YAADA programmes are explored.
6. That RIAI approval is maintained to ensure the future success of the programmes and students eligibility to practice architecture.
7. That the Department need to consider what parameters apply to Dissertation output in their discipline so equity across programmes exist.
8. The Department consider a common first year across Preforming Arts, Set Design and Writing & Literature.
9. The Department considers how they can maintain the integrity of the programmes whilst meeting the strategic plan action 1.1 (4) for online / blended learning to be incorporated into full time programme delivery.
Department of Civil Engineering and Construction

Civil Engineering suite of programmes:

Commendations:

1. The panel recognises the huge volume of work the programme team have put into the document and the enthusiasm shown.
2. The panel commends the introduction of the common first semester in the Ab-initio level 7 and the common first year in the Ab-initio level 8 programmes.
3. The panel also commends the team on the championing of BIM technologies in the sector.

Recommendations:

1. The Department considers developing a strategic approach to Internationalisation. This includes incoming students as well as Irish students travelling abroad during their studies.
2. The Department considers further developing and marketing its expertise in the sustainability agenda and promotion of the UN Sustainable Development Goals.
3. The Department build expertise in the area of off-shore geotechnical areas.

Water Treatment Operations programmes:

Commendations:

1. The panel recognises the huge volume of work the programme team have put into the document and the enthusiasm shown.

Recommendations:

1. The Department to consider the potential to offer these programmes to other jurisdictions and countries.

Road and Transport Engineering suite of programmes

Commendation:

1. The panel recognises the huge volume of work the programme team have put into the document and the enthusiasm shown.

Recommendation:

1. The Department to consider marketing the MEng more extensively to L8 Civil Engineers as a means to become eligible for chartered membership with Engineers Ireland.

Construction Project Management suite of programmes

Commendation:

1. The panel recognises the huge volume of work the programme team have put into the document and the enthusiasm shown.
2. The panel commends the team on the championing of BIM technologies in the sector.
Recommendation:
1. The panel recommends that the Department considers reviewing and enhancing the proctoring system to ensure exam assessment integrity.

MSc in Project Management

Commendation:
1. The panel recognises the huge volume of work the programme team have put into the document and the enthusiasm shown.

Recommendation:
1. The panel recommends that the department should consider getting professional accreditation for the whole award or the streams within the programme.

Quantity Surveying

Commendations:
1. The panel recognises the huge volume of work the programme team have put into the document and the enthusiasm shown.
2. The panel commend the inclusion of Safe Pass certification and the introduction of report writing skills.
3. The panel commend the option of a project as an alternative to a work placement for online students in employment.
4. The panel commends the team on the championing of BIM technologies in the sector.

Note: Recommendations dealt with a Faculty level

Advanced Wood & sustainable technology

Commendation:
1. The panel commend the maintenance of the major project in the programme through their incorporation in Advanced Construction 1 and 2.

Condition:
1. All modules to be completed and subjected to internal review before the programme commences in September.

Signed on behalf of Programmatic review panel

[Signature]

Michele Glacken

Mr Terry Twomey
Chairperson
Date: 28.6.2019

Dr Michele Glacken
Assistant Registrar
### Appendix 1  Agenda

#### Evening Before  May 6th

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Item</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>19.00</td>
<td><strong>Private meeting of the Panel:</strong> Discussion of documentation and identification of points for special consideration. Confirmation of the agenda. Chapter 5 of IT Sligo QA Manual Outlines scope. Assistant registrar in attendance</td>
<td>Clayton Hotel</td>
</tr>
<tr>
<td>20:00</td>
<td>Panel dinner With Faculty Head, HoDs and Assistant Registrar</td>
<td>Clayton Hotel</td>
</tr>
</tbody>
</table>

#### Day 1 May 7th

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Item</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>08:30-09:30</td>
<td><strong>Private meeting of Panel</strong></td>
<td>Institute Boardroom, IT Sligo</td>
</tr>
<tr>
<td>09:30-09:45</td>
<td>Meeting with VP AA &amp; Registrar and Head of Faculty - Strategic Plan, HEA Compact and TU.</td>
<td>Institute Boardroom, IT Sligo</td>
</tr>
</tbody>
</table>
| 09.45 – 10.45 | Meeting with Head of School, Heads of Departments, Director of PEM on Faculty Plan  *(INCLUDING COFFEE/TEA),*  
- Presentation by the Head of Faculty on a Faculty overview including student numbers; progression; International; Surveys; Staff profile; Faculty targets etc.  
- Discussion on:  
  - Faculty/Department Structure, and management & administrative structures  
  - Academic Plan and Performance of the Faculty  
  - Student throughput and student retention.  
  - Student support services  
  - Pedagogical strategies  
  - Staff compliment (academic, technical & administrative), deployment and development  
  - Physical facilities  
  - Current Faculty Research activity (incl. level 9 & 10)  
  - Research growth plans | Institute Boardroom, IT Sligo |

#### Day 1 Continued 10.45-12:30

<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Item</th>
<th>Room</th>
</tr>
</thead>
</table>
| 10.45-12:30 | Five separate meetings with each Head of Department and their Programme Chairs. *(Department/programmes in General)*  
- Brief overview of the department function and structure in the context of the Institute and historical developments and interaction with industry.  
- External influences in the context of how they guide and drive changes in programmes  
- Discussion on overall programme performance since the last validation.  
- Identifying new programme markets/ niches | 1. Inst. Board Room (Note taker. Assistant registrar)  
2. E1006 Note taker. Nick Doran)  
3. E1007 (Note taker. Dara McGoldrick)  
4. E1008 (Note taker. Aoife Currid)  
5. F0010 (Note taker. Maeve ... |
<table>
<thead>
<tr>
<th>Time</th>
<th>Event</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>12:30-13.45</td>
<td>Lunch</td>
<td>Institute Boardroom, IT Sligo</td>
</tr>
</tbody>
</table>
| 13.45-16.30 | Programme Revalidation (5.7.1 Quality Manual Chapter 5): (Programme Board Chair & Lecturing/ technical staff as applicable for relevant programme/ suite of programmes) | 1. Inst. Board Room (Note taker. Assistant registrar)  
2. E1006 (Note taker. Nick Doran)  
3. E1007 (Note taker. Dara Mc Goldrick)  
4. E1008 (Note taker. Aoife Currid)  
5. F0010 (Note taker. Maeve Kelly) |
<p>| 16.30-17.15 | Chair of break out groups and note taker to compile key decisions   | In Breakout rooms, IT Sligo             |
| 17.00-18.00 | Tour of facilities                                                   | Institute Boardroom, IT Sligo          |
| 20:00     | Panel dinner                                                         | Clayton Hotel                           |</p>
<table>
<thead>
<tr>
<th>Date/Time</th>
<th>Item</th>
<th>Room</th>
</tr>
</thead>
<tbody>
<tr>
<td>08.30 - 09.00</td>
<td>Private meeting of Panel</td>
<td>Institute Boardroom, IT Sligo</td>
</tr>
<tr>
<td>09.00 - 09.45</td>
<td>Feedback to Department of Computing &amp; Electronic Engineering Hof Faculty &amp; HoD.</td>
<td>Panel members group 1 Inst. Board Room (Note taker. Assistant registrar)</td>
</tr>
<tr>
<td>11.15 - 11.45</td>
<td>Chair of break out groups and note taker to compile key decisions</td>
<td>Breakout rooms, IT Sligo</td>
</tr>
<tr>
<td>11.45 - 12.30</td>
<td>Private meeting of Panel (<strong>Tea/Coffee</strong>)</td>
<td>Institute Boardroom, IT Sligo</td>
</tr>
<tr>
<td>12.30 - 13.00</td>
<td>Meet with Student Representatives and with external Stakeholders</td>
<td>Institute Boardroom, IT Sligo</td>
</tr>
<tr>
<td>13.30 - 14.00</td>
<td>Private meeting of Panel to agree Findings including top line conditions and recommendations</td>
<td>Institute Boardroom, IT Sligo</td>
</tr>
<tr>
<td>14.00</td>
<td>Feedback to Faculty and VP AA &amp; Registrar and finish.</td>
<td>Institute Boardroom, IT Sligo</td>
</tr>
<tr>
<td>14.30</td>
<td>Lunch</td>
<td>Institute Boardroom, IT Sligo</td>
</tr>
</tbody>
</table>
Appendix 2: Membership of Review Panel

Mr. Terry Twomey VP Academic Affairs & Registrar, Limerick Institute of Technology (Chairperson)
Dr. Brendan Ryan Head of Department of Visual and Human Centred Computing, School of Informatics and Creative Arts Dundalk Institute of Technology
Mr. Keith Moran Managing Director, SL Controls, IDA Business Park, Collooney, Sligo
Dr. Mark Clarke Lecturer, Dundalk Institute of Technology
Dr. Alan Ryan Lecturer in Sustainable Automation, Quality Management & Supply Chain University of Limerick
Mr. Laurent Palasz NPPI Manager, LINDAL Group, Finisklin Business Park, Sligo
Dr. Olivia Mc Dermott Lecturer, Management Development Unit, University of Limerick
Ms. Maria Kyne Dean of Faculty of Applied Science, Engineering & Technology, Limerick Institute of Technology
Mr. Bernard Murray Panel Member Engineering Operations Manager, Abbvie
Ms. Aoife Deasy Student Representative, USI.
Dr. Adam DeEyto Head of School of Design, University of Limerick
Ms. Nollaig Crombie Head of Department for Design & Creative Media, Letterkenny Institute of Technology
Mr. Jim Culleton Artistic Director, Fishamble Theatre Company, Dublin 1
Mr. James Hamilton Architect, James Hamilton Architect, Belfast
Dr. Ken Thomas Head of School –Engineering Waterford Institute of Technology
Mr. Brendan Henry Managing Director, Kilcawley Construction, Sligo
Mr. David Kiely Director, Jennings O Donovan, Sligo
Dr. Roisin Murphy Senior Lecturer, Technological University of Dublin
Appendix 3: List of documentation circulated to the Panel

1. Agenda
2. Terms of Reference of Programmatic review
4. Vol 1: Faculty of Engineering & Design self-evaluation report
5. Vol 2: Department specific self-evaluation report
6. Link to module manager containing all programmes and their module descriptors
7. Faculty planning panel validation report
Programmatic Review

May 2019

IT Sligo

Refreshed

1. Founded in 1994, governed by the NUI (National University of Ireland)
2. Programmes from Level 5 (apprenticeships) to Level 10 (PhD)
3. Enrolment: 7,000, expected to grow to 10,000 by 2022
4. Quality: Institutional review successfully completed
5. MRI: leader in Ireland for delivery of online blended programmes
   - 3,000 online/distance learners (+1,000 since 2016)
6. Ambition: become Technological University by 2023
7. Biggest challenge achieving EU research metric - number of postgraduate research students as a percentage of our EA, IR and HE intake.

International Collaborations

- BSc in Data Centre Facilities Management (online)
  - with Google, Microsoft, Amazon, IBM (Belgium)
- Master of Engineering in Connected and Autonomous Vehicles
  - with Siemens, Germany
- BSc (Hons) Degree in Environmental Science, BHEIS accredited (online)
  - with Ulster University, UK
- MSc in Medical Technology Regulatory Affairs (online)
  - with National University Ireland, Galway
- 10 examiners; 126 link outputs; international involvement

Achievements - Online Global Reach

75 international students across 30 countries

Growth in Online Numbers

1000
1500
2000
2500
3000
3500
4000
United States
United Kingdom
Canada
Australia
China
India
Germany
France
Italy
Spain

1

6/6/2019
Welcome:
- Mr. Stephen Mooney - Chair, ex-DIT
- Mr. James Burke - Lecturer, DIT
- Dr. Eilidh Corcoran - CORUS
- Ms. Nellie Cronin - CIT
- Dr. Cathal Nolan - IT Carlow
- Mr. Brian McQuaid - ex IT Carlow
- Dr. Gerard Hene - Avenue Mould
- Ms. Elaine Murphy - JIUT
- Mr. Damien Owens - Engineers Ireland

Panel Names

Agenda for the Day

Faculty Facilities

IT Sligo
Faculty of Engineering & Design: Key Facts

- Breadth and scope of degree programmes - 35 years experience
- Industry collaboration
- Professional Accredited Programmes
- Industry Engagement & Sector Links

Faculty SWOT: Top Three

<table>
<thead>
<tr>
<th>Strengths</th>
<th>Weaknesses</th>
<th>Opportunities</th>
<th>Threats</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strengths:</td>
<td>Weaknesses:</td>
<td>Opportunities:</td>
<td>Threats:</td>
</tr>
<tr>
<td>Developed Research</td>
<td>No Industry Engagement</td>
<td>Enhanced Industry Links</td>
<td>High Drop Out Rates - Recruiting Issue</td>
</tr>
<tr>
<td>Research &amp; Development</td>
<td>Limited Industry Links</td>
<td>New Technology</td>
<td>High Drop Out Rates - Recruiting Issue</td>
</tr>
<tr>
<td>Industry Engagement</td>
<td>Limited Industry Links</td>
<td>New Technology</td>
<td>High Drop Out Rates - Recruiting Issue</td>
</tr>
</tbody>
</table>

Stakeholder Feedback: Students

- 631 responses from students
  - 20% of 3,133 students [IT Sligo SSE = 15%]

- Average of 83% of students surveyed gave positive feedback across all questions

- Main reasons for choosing course in IT Sligo:
  - IT Sligo website, Open Days and online
  - Use of Moodle platform highly supported

Stakeholder Feedback: Industry

- 70% Positive feedback
- Importance of work placement: ideally more than 6 months
- Soft skills crucial

- Suggestions for new programmes:
  - Software: Cyber security, MIE, Telecommunications
  - Online: AI, Robotics, Master Wakes, Validation, IT Engineering

Programmatic Review: Working Groups

Key changes since 2013

- New Degree in Cybersecurity
- New Masters in AI
- New Degree in MIE
- New Degree in Biomedical Engineering
Addendum to Faculty of Engineering submission: research focus

Summary (2013-2018)
<table>
<thead>
<tr>
<th>PEM Activities</th>
<th>Targets Achieved</th>
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</thead>
<tbody>
<tr>
<td>Peer reviewed publications submitted/accepted</td>
<td>127</td>
</tr>
<tr>
<td>Company/Research Centre visits</td>
<td>140</td>
</tr>
<tr>
<td>Research proposals submitted</td>
<td>62</td>
</tr>
<tr>
<td>Innovation Vouchers</td>
<td>140</td>
</tr>
<tr>
<td>Networking/Dissemination events</td>
<td>52</td>
</tr>
<tr>
<td>No of Master/PhD completions to graduation</td>
<td>3</td>
</tr>
<tr>
<td>No. Master/PhD recruitments</td>
<td>9</td>
</tr>
<tr>
<td>Number of postdoc and technical staff recruited</td>
<td>10</td>
</tr>
<tr>
<td>Research Income (see next table)</td>
<td>€5,714,583</td>
</tr>
<tr>
<td>Citation Index</td>
<td>16</td>
</tr>
</tbody>
</table>

Citation Index from Web of Science from 2013
Previous Funded Projects from 2013
<table>
<thead>
<tr>
<th>Grant Scheme</th>
<th>Project Title</th>
<th>PEM Principal Investigators</th>
<th>Start Date</th>
<th>Finish Date</th>
<th>Grant Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Horizon 2020 Submitted 2018</td>
<td>EU-PANI-WATER</td>
<td>Prof Suresh Pillai</td>
<td>02/2019</td>
<td>01/2023</td>
<td>€3.7m</td>
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<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>IT Sligo Budget: €269k</td>
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<tr>
<td>SFI Centre’s Programme</td>
<td>I-Form – Advanced Manufacturing Research Centre Spoke Project with Industrial Partner Abbvie</td>
<td>Dr. David Tormey Dr. Marion McAcfee Dr. Gerard McGranaghan</td>
<td>01/2018</td>
<td>3112/24</td>
<td>€18.6m</td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>(€700k IT Sligo budget)</td>
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<tr>
<td>Enterprise Ireland – Technology Gateway Programme</td>
<td>Precision Engineering and Materials Technology Gateway. TG-2017-1015</td>
<td>All PEM PIs</td>
<td>01/01/18</td>
<td>31/12/22</td>
<td>€1,404,777</td>
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<tr>
<td>Interreg V – Objective Priority Axis 1.1</td>
<td>Northwest Centre for Advanced Manufacturing INT-VA/047 Industrial Partners: Abbott GSK.</td>
<td>Dr. David Tormey Dr. John Donovan Dr. Richard Sherlock</td>
<td>04/2017</td>
<td>31/12/2021</td>
<td>€8.5m</td>
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<tr>
<td></td>
<td></td>
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<td></td>
<td></td>
<td>(IT Sligo Budget €946,492)</td>
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<tr>
<td><strong>Total Active Funding</strong></td>
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<td></td>
<td></td>
<td><strong>€3.32m</strong></td>
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</table>
Current Funded Projects
<table>
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<tr>
<th>Grant Scheme</th>
<th>Project Title</th>
<th>PEM Principal Investigators</th>
<th>Project Partners</th>
<th>Status</th>
<th>Grant Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Presidents Bursary</td>
<td>Additive Manufacture of “Enhanced Heat Transfer Surfaces” (ADMEHTS)</td>
<td>Dr. Gerard McGranaghan</td>
<td>TCD, University of Manchester</td>
<td>Successful</td>
<td>€66k</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Dr. David Tormey</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>2 Polish Academy of Science</td>
<td>Biological study and mathematical modelling to describe and predict new processes controlling the development, function and atresia of ovarian follicles in cows</td>
<td>Dr. Leo Creedon</td>
<td>Polish National Science Centre (OPUS)</td>
<td>Successful</td>
<td>€458k</td>
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<tr>
<td></td>
<td></td>
<td>Dr. Marion McAfee</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>3 Various Institute Capacity fund awards</td>
<td>Supporting various PEM Research Projects</td>
<td>Dr. Leo Creedon</td>
<td>GSK, Abbott.</td>
<td>Successful</td>
<td>€20,475</td>
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<td></td>
<td></td>
<td>Dr. David Tormey</td>
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<tr>
<td></td>
<td></td>
<td>Dr. John Donovan</td>
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<tr>
<td></td>
<td></td>
<td>Dr. Richard Sherlock</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 SFI</td>
<td>SFI Discover Application for ‘Sligo Engineering Fair’</td>
<td>Dr. Marion McAfee</td>
<td>I-Form Smart Labs, UCD, Engineers Ireland, Syndic8</td>
<td>Successful</td>
<td>€34k</td>
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<tr>
<td>5 Enterprise Ireland Innovation Partnership Feasibility</td>
<td>Scoping of the Development of the Diagnostic Hub</td>
<td>Dr. David Tormey</td>
<td>Company: Union Health Technologies</td>
<td>Successful</td>
<td>€11,700</td>
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<td>IP-2017-0555-Y</td>
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<tr>
<td>No.</td>
<td>Scheme Description</td>
<td>Project Title</td>
<td>PI/Co-PI</td>
<td>Company/Institution</td>
<td>Status</td>
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<td>-------------------------------------------------------------------------------</td>
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<td>------------------------------</td>
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</tr>
<tr>
<td>6</td>
<td>Enterprise Ireland Innovation Partnership Feasibility</td>
<td>Develop Thermal Bridge Free Composite Aluminium Solutions for Low Energy and Sustainable Building Market.</td>
<td>Dr. David Tormey</td>
<td>Company: Glenfarne Wood Products</td>
<td>Successful</td>
</tr>
<tr>
<td>7</td>
<td>Enterprise Ireland Innovation Partnership Feasibility</td>
<td>Pilot Study into a viscosity soft sensor with application to pharmaceutical mixing processes</td>
<td>Dr. David Tormey, Sean Mullery</td>
<td>GSK</td>
<td>Successful</td>
</tr>
<tr>
<td>8</td>
<td>Enterprise Ireland – Technology Gateway</td>
<td>Precision Engineering and Manufacturing Technology Gateway</td>
<td>Dr. David Tormey, Dr. Marion McAfee, Prof Suresh Pillai, Dr. John Donovan, Dr. Richard Sherlock</td>
<td>Various Industry</td>
<td>Successful</td>
</tr>
<tr>
<td>9</td>
<td>H2020: SFERA Travel grant</td>
<td>Graphene-Semiconductor nano-composites for water disinfection applications</td>
<td>Prof. Suresh Pillai</td>
<td>PSA- Almeria</td>
<td>Funded</td>
</tr>
<tr>
<td>10</td>
<td>Direct industry funding</td>
<td>Anti-bacterial studies</td>
<td>Prof. Suresh Pillai</td>
<td>KASTUS Ltd, Ireland</td>
<td>Funded</td>
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<tr>
<td>11</td>
<td>IT Sligo President’s Bursary 2015</td>
<td>Development of a Design Platform for the Manufacture of Nano-fibrous Chitosan and Graphene Composites for Bio-Medical Applications</td>
<td>Dr Ailish Breen, Dr Marion McAfee, Dr Suresh Pillai</td>
<td>N/A</td>
<td>Funded</td>
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<td>12</td>
<td>FP7- Benefit of SMEs</td>
<td>Enhanced Process Monitoring and Control Technology</td>
<td>Dr. Marion McAfee, Dr. Darren Whitker</td>
<td>QUB (RTD) – Belfast</td>
<td>Funded</td>
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<tr>
<td>13.</td>
<td>SFI-EI-TIDA</td>
<td>Development of low cost, near infrared (NIR) reflective and very low thermal conductivity advanced materials for energy efficient thermal insulations</td>
<td>Professor Suresh Pillai</td>
<td>FSW Coatings – Cavan, Dublin Institute of Technology</td>
<td>Funded</td>
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<tr>
<td>14.</td>
<td>DSA – Design of Services for Alzheimer’s</td>
<td>Supporting Public Service Innovation using Design in European Regions (SPIDER)</td>
<td>Dr. Linzi Ryan, Dr. John Bartlett, Dr. David Tormey</td>
<td>Geel City Council - Flanders, Cardiff Metropolitan University / PDR- Wales, Cardiff Council - Wales, Seine-Maritime County Council - France, Design Flanders - Flanders, Maaslands Huis - Belgium, VVSG – Flanders, BMW Assembly – Ireland, Partas - Ireland</td>
<td>Funded</td>
</tr>
<tr>
<td></td>
<td>Interreg IV</td>
<td>Granted 2013</td>
<td>01/01/2013</td>
<td>36 Months</td>
<td>(IT Sligo budget: €117k)</td>
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<tr>
<td>15.</td>
<td>IT Sligo</td>
<td>Manufacturing Control and Optimisation using Simulation and Statistical Modelling</td>
<td>Dr. John Donovan, Dr. David Tormey</td>
<td>Masonite - Stiefel- GSK</td>
<td>Funded</td>
</tr>
<tr>
<td></td>
<td>President Bursary</td>
<td>Granted 2013</td>
<td></td>
<td></td>
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<tr>
<td>16.</td>
<td>IT Sligo</td>
<td>Understanding the mechanism of Anatase to Rutile transition in</td>
<td>Professor Suresh Pillai</td>
<td>N/A</td>
<td>Successful</td>
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<tr>
<td>Granted</td>
<td>nanostructured titanium dioxide.</td>
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<td></td>
<td></td>
<td>€2,394,583</td>
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</tbody>
</table>

**Peer Reviewed Publications 2017-2018**


6. Advances in catalytic/photocatalytic bacterial inactivation by nano Ag and Cu coated surfaces and medical devices." ), Rtimi, Sami, Dionysios D. Dionysiou, Suresh C. Pillai, and John Kiwi. *Applied Catalysis B: Environmental* (2018), In Press


24. Konrad Mulrennan, Fraser Buchanan, Mark Billham, John Donovan, Leo Creedon and Marion McAfee. Developing a soft sensor Random Forest model for the inline product characterization of Polylactide (PLA) in a twin screw melt extrusion process. Presented at the ANTEC conference in Anaheim, USA from 8 – 10th May, 2017.


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2) New Insights into Visible Light Active Photocatalysts, Suresh C. Pillai, Abstract for the keynote address at the E-MRS TCM conference on metal oxide materials to held in Crete, 13-19 October, 2018.


7) K Mulrennan, **J Donovan**, R. Macpherson, **D. Tormey**, Developing a Plant Electrical Energy Model from Historic Batch Scheduling Data, *35th International Manufacturing Conference (IMC35)*, Dublin Institute of Technology, Ireland, 2018


**Peer Reviewed Publications 2015-2016.**


5. Darren A. Whitaker, Konrad Mulrennan, Elina Talvitie, Inari Lyyra, Minna Kellomaki, Marion McAfee. **IN-SITU MONITORING OF THERMAL DEGRADATION DURING PRODUCTION OF PLA FIBRES FOR ORTHOPAEDIC IMPLANTS.** Presented at *15th Annual Research Conference, Sligo University Hospital*, Ireland, 2015


POLYLACTIDE (PLA) IN A MELT EXTRUSION PROCESS' Bioengineering in Ireland 22, 22nd – 23rd January 2016, Galway, Ireland,

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22. Self-Cleaning Applications of TiO$_2$ by Photo-Induced Hydrophilicity and Photocatalysis, Swagata Banerjee, Dionysios D. Dionysiou, and Suresh C. Pillai,* Applied Catalysis B: Environmental 2015, 176, 396–428 Impact Factor = 7.43

23. Photocatalysis for Treating Contaminants and Microorganisms of Emerging Concern (Editorial), Suresh C. Pillai,* Urška Lavrenčič Štangar, John A. Byrne, Alejandro Pérez Larios, and Dionysios D. Dionysiou, Chemical Engineering Journal, 2015,261, 1-2; Impact Factor = 4.05


6. Photocatalysis for Treating Contaminants and Microorganisms of Emerging Concern (Editorial), Suresh C. Pillai,* Urška Lavrenčič Štangar, John A. Byrne, Alejandro Pérez Larios, and Dionysios D. Dionysiou, Chemical Engineering Journal, 2015,261, 1-2; Impact Factor = 4.05

7. Self-Cleaning Applications of TiO$_2$ by Photo-Induced Hydrophilicity and Photocatalysis, Swagata Banerjee, Dionysios D. Dionysiou, and Suresh C. Pillai,* Applied Catalysis B: Environmental 2015, 176, 396–428 Impact Factor = 7.43


Listed as the Editor’s Choice Article: Also, listed as the most read article for the whole year 2014. http://pubs.acs.org/action/showMostReadArticles?topArticlesType=recent&journalCode=jpclcd (Last accessed on 28/03/15)


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APPENDIX 5: Staff who met panel

Ms Una Parsons
Dr David Mulligan
Dr Xavier Velay
Ms Diane O Brien
Mr Emmet Doherty
Dr David Tormey
Mr. Trevor McSharry
Dr Brian McCann
Dr Said Huq
Mel Casserly
Kieran Gallagher
Gary McGinty
Dr David Collery
Jerome McElchar
Kathryn Ryan
Owen Feeney
Colin Birney
Daniel Clarke Hagan
Barrie Cox
Kathryn Ryan
Jerome McElchar
Paul Hamilton
Dr Pat Naughton
Dr Tomas O’ Flathery
Bill O’Kelly Lynch
Fergal Gallagher
John Casserly
Caroline Mullan
Dr Molua Donohoe
Gerard McGranaghan
Sean Dalton
Robert Craig
Michael Moffatt
Mary Nolan
Declan Sheridan
Donal Lyons
Paul Ferry
Conall Doran
Brian Hanrahan
Eamonn Pric
Declan Sheridan
Dr John Donovan
Brian Coll
Caroline Mullan
Donal Cannon
Paul Curran
Noeleen Grant
Fiona Donovan
Mary Nolan
Mairead McCann
Rudie Coppieters
Meliosa O Brien
Rowan Watson
Claire Larusso
Elaine Regan
Peter Scanlon
Tom Weir
Dr Niall Rea
Dr Una Mannion
Dr Rhona Trench
Dr Agnes Pallai
Mary Byrne
Elizabeth Caffrey
Bernadette Donohoe
Denis Farrell
Hiliary Gilligan
Jacinta Feeney
John Graham
Seamus Grogan
Deirdre Greaney
Ronnie Hughes
Elizabeth Kinsella
Angela Mehegan
Louis Mc Manus
Mark Pepper
David Roberts
Michael Boulston
Fergal Henry
Louise O Gorman
Shane Gilroy
Adrian Durcan
Sean Mullery
Una L’Estrange
Neil Gannon
Colm Davey
Shaun Mc Brearty
Fiona Mitchell
Paul Connelly
Eva Murphy
Francis O Regan
Fabian Connolly
Ian Craig
Shane Banks
John Weir
Anna Mitchel
Keith Mc Manus
Drew Lang
Nevil Walsh
Diarmuid Timmons
Dr Paul Tansey
Paul Powell
Aine Mitchell
Padraig Harte
Marketa Formanova
Paul Donlon
Dr Marion McAfee
Kevin Collins
Dr John Hession
Appendix 6: List of Student Representatives and External Stakeholders who met the Panel

Elaine Murphy
Laura Hennigan
Ena Nic Dhonnach
Kate Morris
Sean Mc Inerney
Judith Toner
Niamh Mc Cabe
Tracey Powell
Mairin Dolan
Michael Duffy
Pauric Duffy
Nora Costello
Darren Rooney
Ronan O Callaghan
Eddie O Connor
### Appendix 7  Academic Programmes recommended to the Academic Council by the Panel for revalidation

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<th>Discipline</th>
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