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Midlands Midwest
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Dámh an Ghnó agus Fáilteachais
Faculty of Engineering and Informatics

Report of Peer Review Panel

Programmatic Review

of the

Faculty of Engineering and Informatics
Department of Polymer, Mechanical and Design

External Validation Visit, 23rd May 2023

Contents

1.0 INTRODUCTION

This report outlines, in summary form, the proceedings of the Programmatic Review Panel for the Faculty of Engineering and Informatics, and the findings and conclusions of the External Validation Panel conducted on 23rd May 2023. The external validation visit was undertaken in accordance with TUS Academic Regulations. A Programmatic Review Panel external validation panel makes an independent impartial judgement on a programme proposal.

2.1 GENERAL INFORMATION

2.2 Higher Education Provider

Provider	Technological University of the Shannon: Midlands Midwest
Faculty	Engineering and Informatics
Department	Polymer, Mechanical and Design
Date of Visit	23rd May 2023

2.3 External Re-Validation Panel of Expert Assessors

Name	Affiliation
John Vickery	Former Registrar Institute of Technology Tallaght
Colman Ledwith	Former Head of Department - Electronic and Mechanical Engineering DKIT
Xavier Velay	Head of Department of Mechanical and Manufacturing Engineering ATU Sligo
Diarmuid Rush	Head of Department of Mechanical Engineering TU Dublin (Tallaght campus)
Dr Garrett McGuinness	Associate Professor in Biomedical Engineering School of Mechanical and Manufacturing Eng DCU
Johnny Niland	Senior Engineer, Chanelle Pharmaceuticals
Joanne Fayne	Director R&D, Teleflex, Global Urology Care

Secretary to Panel: Dr Michael F. Ryan.

2.4 TUS Staff

Name	Role
Dr Sean Lyons	Dean of Faculty of Engineering and Informatics
Ms Breda Lynch	Head of Department of Polymer, Mechanical and Design
Department Staff: Keith Vaugh, Colette Breheny, Niall Burke, Cian Bregazzi Nevin, Alan Mannion, Anthony Commins, Barry O'Reilly, Brian Hanrahan, Christoffer Hannevig, Cian Bregazzi-Nevin, Clem Higginbotham, Edel Chadwick, Eoin McIntyre, Evert Fuenmayor, Fergus Higgins, Frank Doheny, Guilherme Gomes, Imelda Fallon, James Mooney, Joseph Farrell, Joseph Geever, Martina Cunningham, Martina Nolan, Michael Nugent, Nigel Flynn, Padraig Cooke, Patrick Buckley, Patrick Doran, Patrick Rogers, Theresa Costello, Tom Bennett, Tomas Hyland, Ian Major, Marina Bandeira, Romina Pezzoli, Ken Corless, Ronan Dunbar, Fergus Higgins, Brian Hanrahan, Colin Meade	

2.5 Employers/Industry & Alumni Representatives

Representative	Affiliation
Alan Hanniffy	Program Manager - RD Services (Robotics)
Gary Kelly	Head of HR - Grant Engineering (Energy)
Mike Greene	Trane Technologies
Trish Breen	Apprenticeships Project Manager – IBEC
Trevor Love	Johnson & Johnson - Mould Engineer
David Lawlor	Alumni graduate
Benjamin Medina	Alumni graduate
Ciarán Rogan	Alumni graduate
Rebecca Beales	Alumni graduate
Brendan Carberry	Alumni graduate
Kieran Donlon	Alumni graduate

2.6 Current Student Representatives

Jordan Whelan	Alan O'Connor
Aoife Swords	Thomas Daly
Maeve Smith	Damien Bednarczyk
Luke Balsiger	

3.1 FINDINGS AND RECOMMENDATIONS OF EXTERNAL VALIDATION PANEL

3.2 Main Findings

The External Validation Panel of Assessors recommends reapproval of the following programmes in the Department of *Polymer, Mechanical and Design* subject to the conditions recommendations as specified in Sections 3.2 and 3.3.

List of programmes presented for review:

- Bachelor of Engineering (Hons) in Mechanical Engineering, Level 8 ab-initio
- Bachelor of Engineering (Hons) in Mechanical Engineering, Level 8 add-on
- Bachelor of Engineering in Mechanical Engineering, Level 7 ab-initio
- Bachelor of Engineering in Mechanical Engineering, Level 7 add-on
- Bachelor of Engineering in Mechanical Engineering (Common Entry Year 1), Level 7
- Higher Certificate in Engineering in Mechanical Engineering, Level 6
- Bachelor of Engineering (Hons) in Mechanical Engineering with Energy Level 8 ab-initio
- Bachelor of Engineering (Hons) in Mechanical Engineering with Energy, Level 8 add-on
- Bachelor of Engineering in Mechanical Engineering with Energy Level 7 ab-initio
- Higher Certificate in Engineering in Mechanical Engineering with Energy, Level 6, Exit Award
- Bachelor of Engineering (Hons) in Automation and Robotics, Level 8 ab-initio
- Bachelor of Engineering (Hons) in Automation and Robotics, Level add-on
- Bachelor of Engineering in Automation and Robotics, Level 7 ab initio
- Higher Certificate in Engineering in Automation and Robotics Level 6, Exit Award

- Bachelor of Engineering (Hons) in Polymer and Mechanical Engineering, Level 8 ab-initio (new title).
- Bachelor of Engineering (Hons) in Polymer and Mechanical Engineering, Level 8 add-on
- Bachelor of Engineering in Polymer and Mechanical Engineering, Level 7 ab-initio (NEW CAO 2023)
- Higher Certificate in Engineering in Polymer and Mechanical Engineering, Level 6, Exit Award
- Master of Science in Advanced Polymer Materials, Level 9
- Postgraduate Diploma in Advanced Polymer Materials, Level 9
- Bachelor of Science in Polymer Processing Technology (Apprenticeship), Level 7
- SPA Certificate in Robotics and Automation, Level 6 (Springboard 40 ECTS)

3.3 Conditions

No conditions apply.

3.4 Recommendations

General:

I. That all programmes review the module resources regarding essential reading lists and standardise the number of core texts required (2-3 core texts).
II. Ensure that appropriate active verbs are used in module learning outcomes to reflect the relevant level for each stage (as guided by Bloom's Taxonomy).
III. Further develop strategies to ensure academic integrity in assessment (including innovative assessment design).
IV. Review the overall programme approach to assessment and consider standardising (where possible) the weighting of the CA component across modules.
V. Review assessment scheduling so that there are no avoidable bottlenecks with intense assessment periods towards the end of a module.
VI. Clearly outline the procedure for repeat assessments in each module.

VII. That learning outcomes, assessment themes and content associated with sustainable development (including SDGs, climate change, ethics, circular economy) be made more explicit across all programmes.

VIII. That appropriate arrangements for alternative work-placement (stage 3) are clearly outlined in the documentation (regarding students who do not secure their own placement), so that relevant learning outcomes are achieved including the development of relevant soft skills and exposure to professional practice.

IX. That criteria for securing relevant placement locations be clearly outlined in the programme documentation.

X. That efforts to address gender balance and improve the ratio of female students on the programmes be continued.

XI. Further develop the marketing of the suite of programmes particularly to address the long-term viability of the programmes.

XII. Develop additional marketing initiatives to address gender perceptions regarding engineering programmes.

XIII. That students who enter at level 6 - (sitting common modules with level 7 and 8 students in subjects like Maths) are further encouraged to seek additional supports to improve completion and progression, when required.

XIV. That further opportunities for international students to improve their English language proficiency (entering at 5.5 IELTS) are provided and deliberately integrated into teaching and learning strategies.

XV. That opportunities for collaboration be further considered in the Graduate Project (Year 4).

XVI. Audit current programme inclusion of ‘up to date’ software applications and ensure that students are incrementally familiarised with these and other digital tools, so that graduates are capable and adaptable in the use of new digital technologies.

XVII. That the Quality Assurance Enhancement System (QAES - 8 principles) for the programmes be clearly outlined in the programme documentation, ensuring a standardised feedback system for student CA work.

XVIII. That attendance requirements for modules with a distinct health and safety or practical laboratory theme, be reconsidered towards specifying a minimum requirement (e.g.75%) in the module documentation.

XIX. That learning outcomes linked to academic writing and referencing be made more explicit in the programme documentation.

Group 1 Programmes:

I. That a year 2 project be embedded across programmes - where students are exposed to collaborative group and teamwork processes (soft skills) and relevant project management skills (feedback from employer and alumni).
II. That the themes of ‘brittle fracture’ and ‘corrosion’ are made more explicit in the documentation.
III. That feedback on continuous assessment work be communicated to students in a timely fashion so that they can learn from the assessment process (feedback from student meeting).
IV. That more integration of practical/lab work be considered across programmes - particularly into Polymer (employer and alumni feedback).
V. That a greater focus be placed on renewable energy in the Mechanical Engineering with Renewable Energy Programme (student feedback).
VI. That a greater focus be placed on CAD in Mechanical Engineering and in energy auditing in Mechanical Engineering with Renewable Energy (employer and alumni feedback).
VII. Include agile terminology for Projects in an Agile environment (include sprint as well as scrum).

Group 2 Programmes:

I. That the themes of recycling, circular economy and sustainability are made more explicit in the documentation.
II. That processes for managing and accessing the group project component are clearly outlined in the documentation.
III. That the process of assessment is clearly outlined for each of the modules.
IV. That the programme team consider opportunities for access to practical laboratory work to enhance the online delivery mode and the student experience. Consider reintroducing on-site practical’s (two days per semester?).
V. That the writing of learning outcomes (both programme and modular) are reviewed to address level 9 standards i.e. critical thinking, analysis and evaluation.
VI. That the replication of the learning outcome “communicate effectively” (currently featuring in 5 modules) be reconsidered.
VII. That well defined and detailed rubrics are used to delineate grading for project work to ensure consistency between assessors.

VIII. Develop a benchmarking process to ensure that the final classifications of grades are appropriately awarded at level 9.

Bachelor of Science in Polymer Processing Technology (Apprenticeship), Level 7

That potential progression pathways to a level 8 qualification be communicated to graduates from this programme (in collaboration with ATU).

Certificate in Robotics and Automation (Special Purpose Award)

Ensure there is mapping to the Graduate Attributes for this programme.

3.5 Commendations and Observations

I. The extensive documentation and well-designed programmes.
II. The engagement by faculty members with the review process.
III. The engagement with industry regarding relevance of programme themes to enhance potential employability of graduates.
IV. The integrated role of work placement in the programmes and the integration of a placement preparation module for students.
V. The international engagement (China and India).
VI. The flexibility afforded to students to transfer internally after a common first year if desired.
VII. The positive feedback from the student and industry stakeholders, regarding their experience of the programme and its graduates.

John Vickery
Signature of Chairperson

Date: 14/6/2023