

New Programme (Major Award) External Validation Report

Section A

Report of the External Review Panel

Programme Reference Number:	
Faculty/School(s):	Engineering
Department(s):	Mechanical & Industrial Engineering

Details of Programme(s) Reviewed

Title:	Bachelor of Science (Hons) in Sustainable Engineering Technologies with named awards: <ul style="list-style-type: none"> • Bachelor of Science (Hons) in Sustainable Engineering Technologies for the Manufacturing Industry • Bachelor of Science (Hons) in Sustainable Engineering Technologies for Computing
Type of Award:	Major
NFQ (National Framework of Qualifications) Level:	Level 8
ECTS:	240
ISCED:	0712
Duration:	4
Proposed Student Intake:	20
Proposed Start Date:	September 2023
Delivery Mode(s):	Full-time Blended

Title:	Bachelor of Science in Sustainable Engineering Technologies with named awards: <ul style="list-style-type: none"> • Bachelor of Science in Sustainable Engineering Technologies for the Manufacturing Industry • Bachelor of Science in Sustainable Engineering Technologies for Computing
Type of Award:	Major
NFQ Level:	Level 7
ECTS:	180
ISCED:	0712
Duration:	3

Proposed Student Intake:	20
Proposed Start Date:	September 2023
Delivery Mode(s):	Full-time Blended

Title:	Higher Certificate in Science in Sustainable Engineering Technologies for the Manufacturing Industry with named awards: <ul style="list-style-type: none"> • Higher Certificate in Science in Sustainable Engineering Technologies for the Manufacturing Industry • Higher Certificate in Science in Sustainable Engineering Technologies for Computing
Type of Award:	Major
NFQ Level:	Level 6
ECTS:	120
ISCED:	0712
Duration:	2
Proposed Student Intake:	20
Proposed Start Date:	September 2023
Delivery Mode(s):	Full-time Blended

Title:	Certificate in Science in Sustainable Engineering Technologies
Type of Award:	Minor
NFQ Level:	Level 6
ECTS:	60
ISCED:	0712
Duration:	2
Proposed Student Intake:	20
Proposed Start Date:	September 2023
Delivery Mode(s):	Full-time Blended

Date of Review:	06 June 2023
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Review Panel

Panellist Role	Title	Name	Organisation	Job Title
Chair	Dr	Paul O'Leary	SETU	Head of Quality Promotion and Policy Development
External Academic Discipline Expert	Dr	David McDonnell	TU Dublin	Head of Manufacturing and Industrial Engineering
External Academic Discipline Expert	Ms	Gillian O'Carroll	MTU	Lecturer in Cybersecurity

				Governance, Risk & Compliance
Industry/ Community Representative	Ms	Laura Casey	Boston Scientific	Facilities Engineering Manager
Student Representative	Ms	Ruth Keogh	ATU	Postgraduate Student, ATU
Vice President for Academic Affairs and Registrar (VPAAR) Nominee (Academic Secretary)	Ms	Carmel Brennan	ATU	Assistant Registrar, ATU

All external members of the panel have declared that they are independent of ATU (Atlantic Technological University), and all have declared that they have no conflict of interest.

Programme Design Team

The panel met the staff listed below during the review process.

Prof Graham Heaslip, ATU Galway-Mayo	Dr Carine Gachon, ATU Galway-Mayo
Dr David Mulligan, ATU Sligo	Ms Jade Lyons, ATU Donegal
Sinead Morgan, GRETB	Gerard Bane, GRETB
Mary Brodie, MSL ETB	David McGuinness, MSL ETB
John Sloyan, MSL ETB	Deirdre McColgan, Donegal ETB

Introduction

This innovative programme is one of the first of its kind to give the opportunity to learners to start their degree programme in the Further Education sector. Students will spend the first year of their programme in their local ETB (Education and Training Board) and then will have the choice of three different locations (ATU Galway City, ATU Sligo or ATU Donegal) to continue their studies. In ATU Galway City and ATU Sligo, students will be offered the Sustainable Engineering Technologies for the Manufacturing Industry stream, whereas in Donegal they will be offered the Sustainable Engineering Technologies for Computing stream.

Since the 2030 Agenda for Sustainable Development was signed by the United Nations, sustainability has become the focus of a number of initiatives in order to meet the expected targets. ISO standards guide organisations in integrating sustainability in their business and the Environmental Protection Agency implements legislation through licensing. Graduates from this programme will support their companies in monitoring and reporting compliance with standards and regulations and will lead the integration of sustainability issues at all levels and sectors of the organisation, from product / service and process design to infrastructure management. Achieving the Sustainable Development Goals requires engagement of all in the organisation, and graduates of this programme will have the knowledge, skills and competences to lead change and support data driven decision-making.

At the end of stage 1, students will be able to exit with a Certificate in Sustainable Engineering Technologies. At the end of stage 2, they will be able to exit with a Higher Certificate in Sustainable Engineering Technologies. At the end of stage 3, they will be able to exit with a B.Sc. in Sustainable Engineering Technologies. At the end of stage 4, they will qualify with a B.Sc.(H) in Sustainable Engineering Technologies for the Manufacturing Industry or B.Sc.(H) in Sustainable Engineering Technologies for Computing.

See Appendix for Entry Requirements, Programme Learning Outcomes and Approved Programme Schedule.

Rationale for Programme(s)

In 2015, the United Nations signed the 2030 Agenda for Sustainable Development which includes 17 Sustainable Development Goals (SDGs). In Ireland, the SDG National Implementation Plans set out the overarching national governance, coordination, and monitoring framework for the SDGs. At business levels the Irish government published "Towards Responsible Business" to guide organisations in their endeavour to support the attainment of the goals. Graduates of this programme will have the knowledge, skills, and competences to lead their organisation in their journey to support the SDGs.

Concurrently, the European Union is committed to an ambitious climate policy. Under the Green Deal it aims to become the first continent to remove as many CO₂ emissions as it produces by 2050. This goal became legally binding when the European Parliament and Council adopted the Climate Law in 2021. The EU's interim emission reduction target for 2030 was also updated from 40% to at least 55%. The EU is currently revising old legislation and setting new laws that will help deliver the 2030 goal of a 55% cut in emissions. The package of legislation is known as Fit for 55 and includes, among others, rules on emissions trading, national emissions reduction targets, carbon removal in the land use sector and transport emissions.

Since 1996, the ISO 14000 family of Environmental Management standards support organisations in designing and implementing effective environmental management systems. Graduates of this programme will be able to lead the implementation of the relevant elements of the ISO 14000 family standards.

The digital revolution has transformed how we live and work. It has helped us to create new, tailored products and services and we can do almost everything faster, more conveniently and affordably than ever before. Yet as technology has permeated society, the amount of energy it consumes has grown huge. New technologies provide many solutions to help society become more sustainable. Smart building systems, robotics and digital twins can help organisations to become more efficient and shrink their carbon footprint. Advances in technology and the increased reliance on data has increased the use of data centres which are rapidly becoming the main user of energy. Society must address an urgent twofold imperative: making technology itself more sustainable and using technology to become more sustainable. Both must be done in a responsible way, building in proper governance, respecting privacy, and building trust.

Sustainable technology is an umbrella term that describes innovation that considers natural resources and fosters economic and social development. The goal of these technologies is to drastically reduce environmental and ecological risks and to create a sustainable product.

Graduates of this programme will be able to lead the design and implementation of systems that will incorporate sustainable engineering technologies.

Validation Criteria

ATU's Developing and Validating New Taught Programmes Policy specifies that new programmes must comply with the following criteria for validation:

1. The programme aims and learning outcomes are clear and aligned with the proposed award title.
2. The rationale for the programme is well informed and justified.
3. The design of the programme is suitably structured and fit for purpose.
4. The design of the programme ensures that students can successfully achieve the Programme Learning Outcomes.
5. The teaching, learning and assessment strategy is well planned and appropriate for the discipline area and type of award.
6. Assessment techniques are fair, valid, reliable, consistent and a credible measure of the academic standard attained by students.
7. The planned resources, including staff, physical, online, library and student supports, sufficiently support the teaching, learning and assessment strategy for the programme.
8. The programme facilitates lifelong learning for a diverse student population by setting out appropriate entry requirements and opportunities for access, transfer, and progression.
9. There is demand for potential graduates from the programme.
10. The learning environment and mode of delivery are consistent with the needs of the intended students of the programme and accessible and appropriate support services for students have been provided for.
11. Students will be well informed on the requirements of the programme, guided to relevant resources and supported in their studies in a caring environment.

Findings

Overall Finding

Validated without changes	
Validated subject to condition(s) and/or recommendation(s)	X
Rejected	

Reason for Overall Finding

Having reviewed the documentation provided and met with the Programme Development Team, the panel concludes that the programmes listed are fit for purpose and comply with the validation criteria stipulated.

Commendations

The Validation Panel advises Academic Council of the following commendations.

1. The development of an innovative and complex programme within a short period of time.
2. The use of relevant and applied modules in the programme, and the provision of choice for students through streams.
3. The collaboration between three ETBs and ATU on the development of the programme.

4. The removal of barriers to higher education through the entry requirements and selection process outlined, which should be attractive to the target cohort.
5. The forward thinking shown by the Programme Development Team in focussing on sustainability by linking green IT and data centre management.

Conditions

The Validation Panel advises Academic Council that subject to satisfying any condition(s) detailed below, the panel is satisfied that the proposed programme(s) meets the validation criteria as set out in Atlantic Technological University's Developing and Validating New Programmes Policy.

1. Review the structure of stage 3 to ensure that there is a balanced workload for students. The imbalance is particularly challenging for students taking the computing stream given the structure of semester 5 as presented. To assist in determining the feasibility of student workload, a detailed assessment schedule for the current structure must be developed. Submit evidence that the workload for stage 3 is balanced, making revisions as necessary to the Approved Programme Schedule.
2. Review the internal panel feedback and address any matters outstanding.
3. The programme should have a common external examiner for year one. The examinations for this stage should be the same across all sites.
4. Ensure that the equipment and software required to deliver stage one of the programme are available across each of the Education and Training Board sites.
5. Elaborate on the syllabus for the Sustainability in Industry module to aid consistent delivery across multiple sites. Include the circular economy and water conservation in the Sustainability in Industry module.
6. Review module descriptors to ensure that information standards and risk frameworks such as NIST and ISO 27000 are explicitly covered within modules.
7. Review the Approved Programme Schedule for stage 2 to ensure that all modules are listed in the correct semester.

Recommendations

The panel advises Academic Council that the Programme Development Team and/or the Department should take cognisance of any recommendations outlined below.

1. Examine how relationships can be built across the first-year student cohorts, so the students can support and learn from each other, particularly if the cohorts are small.
2. Explore opportunities for all stage one students to visit ATU sites to undertake some workshops providing similarity of experience to students based in different ETB sites.
3. Following the first delivery of the Maths module, consider the level of student engagement with each maths topic and whether the assessment strategy needs to be revised.
4. Ensure that energy mapping is covered in Energy Engineering Management in stage 4.
5. Include artificial intelligence explicitly in one of the module descriptors.
6. Develop an employability statement for the programme. This can be used to assist in marketing the programme.
7. Update the assessment strategy for Electrical Science given its delivery within one semester.

8. Consider whether there is scope to include asset management and operational resilience techniques within the programme content.
9. Develop an assessment schedule for each semester ensuring appropriate and varied forms of assessment to develop students' transferable and disciplinary skills. It should also make sure there is a balanced spread of student workload.
10. Develop a student handbook providing relevant student information including guidance on accessing relevant student services.

Report Approval

This report has been agreed by the review panel and is signed on their behalf by the chairperson.

Signed: Name: Dr Paul O'Leary Validation Panel Chair	Date
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