VALIDATION REPORT

1.	Title of Programme(s): (incl. Award Type and Specify Embedded Exit Awards)	Certificate in Industrial Automation (SPA, Level 7, 30 ECTS)
2.	NFQ Level(s)/ No. ECTS:	Level 7 30 ECTS
3.	Duration:	1 Year
4.	ISCED Code:	0714 - Electronics and automation
5.	School / Centre:	School of Engineering
6.	Department:	Department of Electronic and Electrical Engineering
7.	Type of Review:	New Programme
8.	Date of Review:	Friday April 1st, 2022
9.	Delivery Mode:	Blended
10.	Panel Members:	Prof. Dewar Finlay, School of Engineering, Ulster University (Chair) Mr. Tony Mahon, Head of Department, Electrical & Electronic Engineering, TUS Midwest. Mr. Ciaran O'Driscoll, Electrical & Electronic Engineering, TU Dublin. Ms. Patricia Cahill, Software Engineer, Intel. Ms Carmel Brennan, Assistant Registrar (Quality), GMIT (Secretary)
11.	Proposing Staff:	Mr. Des O'Reilly Dr. David Gorman Mr. Keith Raftery Dr. Jack Saad Mr. Michael Keaney Mr. Vlad Teleanca Mr. Joseph Herron Mr. Alan Connors
12.	Programme Rationale:	An earlier version of this programme has been very successful since 2014. The demand is well established. It has been funded under Springboard+ since 2020 and is

		expected to get continued Springboard+ funding in the future. This version of the programme modernises the programme that was designed in 2012. The new programme better supports the requirements of modern manufacturing industries in the West of Ireland.
13.	Proposed Student Intake:	40
14.	Stakeholder Engagement:	The ongoing need for people with technical skills in automation, robotics and advanced manufacturing has been identified in several government and industry reports and in consultations with regional manufacturing companies e.g., ThermoKing, Valeo, Hollister, Boston Scientific, Medtronic, and Merit Medical. 'Ireland's Industry 4.0 Strategy 2020-2025' sets out the vision and goals for Industry 4.0 in Ireland and the strategic actions that will help to achieve those goals. It states that there are 227,000 manufacturing jobs in Ireland, of which 85% are outside Dublin. The strategy says that digital technologies have already begun to transform global manufacturing value chains, supply chains and business models, redefining sources of competitive advantage for both firms and national economies. 'Ireland's National Skills Strategy 2025'
15.	Graduate Demand/Employment:	There is predicted to be 'above average employment growth in science, engineering, and IT (STEM) occupations'. Sector-specific skills needs are identified: Manufacturing: scientists with experience and engineers Medical Devices: mechanical, automation and validation engineers; polymer technicians, software engineers, quality engineers and regulatory compliance experts. The Irish Medtech Association is the business association within Ibec representing the medical devices and diagnostics sector. They have collated several relevant reports at 'Manufacturing 4.0 and additive manufacturing reports' which all point to the importance of Industry 4.0 as the future for the Medtech sector. 'The Future Skills Needs of the Biopharma Industry in Ireland' concludes that Biopharma manufacturing is knowledge–intensive and requires a highly skilled workforce. Skills and talent availability are seen by companies as a key prerequisite in terms of their future competitiveness. 'Digital Factories 2020 – Shaping the future of manufacturing 'is a research publication by PwC which surveyed 200 German companies and looks at how

		digital factories and Industry 4.0 are transforming manufacturing as companies implement innovative technology. Some of the findings include: '91% of industrial companies are investing in creating digital factories in the heart of Europe '98% expect to increase efficiency with digital technologies like integrated MES, predictive maintenance or augmented reality solutions' '90% believe that digitisation offers their companies more opportunities than risks'.
16.	Entry Requirements, Access, Transfer & Progression:	The minimum entry requirements are those stated by the Institution in its Access, Transfer and Progression Policy at any given time. At present they are a Grade O6/H7 or better in five Leaving Certificate subjects including English or Irish and Mathematics with a minimum of 160 points. OR Equivalent qualifications and scores from other countries which will be assessed and scored by the Institute. OR A Pass in any QQI FET Major Award at level 5 or 6. OR A Pass in a QQI FET Foundation Certificate, the NUIG/GMIT Foundation Certificate or any Foundation Certificate delivered by the regional cluster (GMIT, NUIG, IT Sligo or IT Letterkenny). Mature Applicants Applications from mature applicants (aged 23 on or before 1st January of the course commencement year) are welcomed by GMIT. A quota of places is reserved for mature applicants. These applicants do not have to meet the Leaving Certificate entry requirements and are considered on an individual basis (previous education, work experience, and demonstration of ability and competence to undertake the programme). They may be invited for interview. This will be used to rank applicants where demand exceeds the available places on a programme. English Language Requirements English Language Requirements will be as determined by GMIT and as published in the Access, Transfer and Progression code. The current requirements are as follows: Non-EU applicants who are not English speakers must have a minimum score of 5.5 (with a minimum of 5.0 in each component) in the International English Language Testing System (IELTS) or equivalent. All results must have been achieved within 2 years of application to GMIT.

		EU applicants who are not English speakers are recommended to have a minimum score of 5.5 (with a minimum of 5.0 in each component) in the International English Language Testing System (IELTS) or equivalent. Recognition of Prior Learning GMIT is committed to the principles of transparency, equity and fairness in recognition of prior learning (RPL) and to the principle of valuing all learning regardless of the mode or place of its acquisition. In accordance with GMIT's policy, RPL can be used to gain admission to this programme. There are several routes for progression from this Certificate. The most cognate route is that this Certificate allows exemptions on up to 30 credits on the BEng in Automation & Robotics.
17.	Programme Structure:	This programme consists of four 10 ECTS modules, of which students must complete three. Students must take Industrial Automation and Networking Technology, and thereafter must choose between Applied Project or Work Placement modules. Industrial Automation: This module provides the student with knowledge of electromechanical schematics symbols and drawings. The student can read/create schematic diagrams for circuits such as pneumatic, electrical, electro-pneumatics, and PLCs/PACs. Using simulation software, the student is able to analyse and optimise their circuit design. This module will also provide the student with a practical knowledge of PLCs/PACs. Using software and hardware the students analyse gate logic, boolean algebra and truth tables. They learn to use subroutines and manipulation of data using advanced features of PACs. Networking Technology: This Networking Technology module introduces the fundamentals of networking technology, with emphasis on Ethernet and wireless network systems for industrial and business applications. The module balances theory with practice, applying networking principles and techniques in practical laboratories. Then students may do either an 8-week placement or else a Project.

18.	Learning, Teaching & Assessment Strategies:	The ethos of the programme is practical, hands-on, and real-world learning supported by the relevant theoretical content. Teaching & learning is strongly biased towards developing students' skills and confidence in working with PLCs and industrial networks, and applying them to real situations. Half of the contact time is in a practical/lab setting. Teaching & learning methods include lectures, labs, problem-based assignments, team and group work, independent pursuit of knowledge and learning from on-line resources. Engineering is very suitable for using authentic assessment which is the application of skills to real-world scenarios. Assessment is divided into continuous assessment (CA) and final exams.
19.	Resource Implications:	This programme will be delivered on a self-financing basis. No additional resources required to deliver this programme.
20.	Synergies with Existing Programmes:	None.
21.	Findings and Recommendations:	**Commendations:** None.
		Conditions: 1. Clearly specify the minimum academic entry requirements for the programme and any specific work experience requirements, plus the criteria used to evaluate mature applications not meeting the minimum requirements. 2. Review the Programme Learning Outcomes with a view to refining them to be more appropriate to a 30 ECTS programme in Industrial Automation.
		Recommendations: 1. Ensure that the blended nature of the programme is adequately reflected in the teaching and learning strategy. 2. Specify the elective rule in the programme's special regulations. 3. Ensure module reading lists are up to date. 4. Stipulate a repeat mechanism for Networking Technology in the module descriptor.

22.	FAO: Academic Council:	Approved:	
		Approved subject to recommended changes:	X
		Not approved at this time:	

	Signed:		
		Chair	Secretary