

# Validation Report



**Bachelor of Science**  
in  
**Process Instrumentation & Automation**  
**(BN046)**

**Department of Engineering  
School of Informatics & Engineering**

**Institute of Technology Blanchardstown**

**May 2017**

## Introduction

In 2006 the Institute was awarded delegated authority enabling the development, validation, implementation and continuous improvement of its existing taught higher education and training programmes up to and including level 9 of the National Framework of Qualifications.

The purpose of this document is to report on the findings of the peer review panel established to validate this proposed programme against the criteria for the validation of programmes as stipulated in the Institute policy document 2MP01<sup>1</sup>.

## Programme overview

Process Instrumentation and Automation Technicians/Technologists are employed in large chemical, pharmaceutical (including biopharma), food processing, oil and gas industry, waste-to-energy conversion facilities, and manufacturing plants. In the current setting in Ireland, a significant proportion are employed by outsourced, project-based SME contractors. Their principal roles cover installation, maintenance and calibration of measuring instruments, sensors, signal transmitting and controlling devices, and systems associated with the measurement, control and protection of physical quantities found in such industries (e.g., mechanical or electrical/electronic sensors and instruments to measure/monitor the temperature, pressure and flow, of electricity, water, steam, gas, air or oil, etc.). The measurement and control of these quantities enable completion of product manufacturing and processes to specification, while concurrently taking account the safety of personnel, plant and equipment, and protection of the environment. The Bachelor of Science in Process Instrumentation and Automation programme (Learn + Work curriculum model) is designed to produce Technicians/Technologists capable of meeting the requirement of the roles outlined above. Graduate competencies are founded on accepted industry benchmarks, including; the Certified Control Systems Technician Body of Knowledge, and the Automation Competency Model framework.

This Learn + Work curriculum model is structured over three academic years (180 ECTS credits, 60 per academic year). Within the first semester of each year learners will undertake the institute block where they will attend taught modules on campus. Within the second semester of each year learners will undertake the industry block made up of four days per week work-based learning with the remaining one day per week on campus.

This model considers that after two years of the Learn + Work programmes, learners can take more substantive roles in the work place, therefore delivery is

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<sup>1</sup> 2MP01 Design, validation and accreditation of new academic programmes

facilitated by both on-campus contact and online delivery in blended delivery format. With this consideration, learners may undertake the third year as follows:

- *Option A* – one year duration, with four taught modules in Semester 5 (institute block), and one taught module and Work-based Learning/Project in Semester 6 (industry block).
- *BSc Option B* - two year duration, with three semesters per year in the combined industry and institute block delivery mode.

This programme:

- Conforms with IT Blanchardstown's strategic objectives towards continued expansion of the capacity and reach of the Institute by (among other actions and outcomes) - Increasing student numbers while fostering student diversity through developing innovative programme models.
- Provides a natural progression route for the graduates of the ITB Special Purpose Award programme (BN742), who may wish to pursue a major award qualification required by industry and which will also recognise any relevant prior qualification under Accreditation of Prior Learning.
- Provides a flexible upskilling route for NFQ Level 6 graduates with Higher Certificate in Electrical Technology and other cognate disciplines.
- Fosters visible and effective engagement with Industry as one of our stakeholders, which is a primary strategic intent of the institute<sup>1</sup>.

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<sup>1</sup> ITB. 2016. Strategic Plan 2016-2019, Transforming into a Technological University, 26 pp.

## Panel composition

<b>Chair</b>	Mr. David Denieffe Vice President of Academic Affairs & Registrar Carlow Institute of Technology
<b>Academic experts</b>	Ms. Úna Parsons Head of School of Engineering & Design Institute of Technology Sligo  Dr. Joe Connell Head of Department of Electrical & Electronic Engineering Cork Institute of Technology  Dr. Frances Hardiman Head of Department of Electrical & Electronic Engineering Limerick Institute of Technology  Mr. Des O'Reilly Head of Department of Electronic & Electrical Engineering Galway-Mayo Institute of Technology
<b>Industry experts</b>	Mr. Keith McElkearney Lotus Works  Mr. Gavin Delaney Alexion Pharma International Operations UC
<b>In attendance</b>	Dr. Larry McNutt Registrar IT Blanchardstown  Mr. Michael Keane Quality Assurance Officer IT Blanchardstown
<b>Date of Panel Meeting</b>	Tuesday 16 <sup>th</sup> May 2017

## Institute personnel in attendance:

Dr. Diarmuid O'Callaghan	President
Dr. Anthony Keane	Head of School of Informatics & Engineering
Mr. Richard Gallery	Head of Department of Engineering
Dr. Philip Owende	TU4D Academic Quality Manager

Mr. David Peyton	Mr. Damian Cox
Mr. Gerard Duke	Mr. Fergus Maughan
Mr. Jerry Bradley	Ms. Michelle Looby
Mr. Paul Stacey	Ms. Mary Cowan
Mr. David Powell	Mr. Mark Keyes
Mr. Michael Egan	Dr. James Duffy
Mr. Niall Campbell	Mr. Niall Bell

Also in attendance:           Natasha Kinsella  
  Regional Skills Forum Manager (Dublin)

## Findings of the panel

In evaluating the appropriateness, quality and proposed operation of this programme the following criteria has been considered and is hereby reported upon:

### Strategic planning

The panel was satisfied that the programme is in keeping with the Institute's mission, that it does not constitute redundant provision and that it makes efficient use of resources.

### Evidence of consultation

Within the submission document and through discussion with Institute staff, the panel found that a comprehensive research/consultation effort was undertaken with stakeholders to validate the need for, and the preferred structure, delivery modes and characteristics of the proposed programme.

### Learner employment potential

The panel was of the opinion that graduates would be of immediate value to industry.

### Protection of learners

Section 43 of the Act<sup>1</sup> does not apply.

### Quality assurance

The panel was informed of how the submission had been developed and approved internally whilst complying with the Institute's quality assurance policies and procedures. The panel concurred that said policies and procedures had been applied to the development of the proposed programme.

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<sup>1</sup> Qualifications (Education and Training) Act, 1999

## **Programme title and award title**

Following discussion, the panel was satisfied that the title of the proposed programme is clear, accurate and fit for the purpose of informing prospective learners and other stakeholders and consistent with QQI award titles. However, in relation to the title of the embedded level 6 exit award the panel recommended the title 'Higher Certificate in Science in Process Instrumentation', see conditions of validation.

## **Ethics**

The panel was satisfied that the Institute has internal policies and procedures in place to ensure that all teaching, learning or research activity across the spectrum of NFQ levels is conducted / delivered in a manner that is both morally and professionally ethical.

## **Unity**

The panel found that the programme design is consistent with QQI policy on accumulation of credits and certification of subjects, that it has an underlying unifying theme with modules bonded by linkages being either implicit or explicit. It was also clear to the panel how the standards of knowledge, skill and competence evolve throughout the programmes as a whole. However, the panel recommended that the third year project be a capstone work-based project for all programme delivery modes, see conditions of validation.

## **Teaching and learning**

The panel discussed with staff of the Institute the various modes of interaction practised with learners. In relation to course management the panel recommended the establishment of a formal industry advisory board to provide further assistance in the implementation and ongoing management of the programme, see conditions of validation.

## **Learner assessment**

Through discussion with the design team, it was explained in detail to the panel the multiple modes of assessment, both formal and informal that will be employed throughout the programme. The panel was informed of how the Institute's policy on continuous assessment is based on the objective of developing/enhancing the learners' application of knowledge, aptitude for critical analysis and problem solving within specific timeframes. The panel requested further clarification be provided to employers on their role to ensure the

completion of competency based skills in the workplace and attainment of the work based modules' learning outcomes, see conditions of validation.

## **Standards of knowledge, skill and competence**

Having reviewed the syllabi and assessment methods as proposed the panel was of the opinion that learners would be capable of attaining the standards of knowledge, skill or competence relevant for the award. However, the panel was of the opinion that the contact hours as proposed were excessive and recommended that they be realigned with engineering programme norms having a maximum of 28 contact hours per week.

## **Access, transfer and progression**

The panel confirmed that the programme incorporates the established procedures for access, transfer and progression. However, the panel encouraged the identification of further commonality with existing modules within the Department of Engineering and recommended that graduate progression pathways be more clearly articulated, see panel recommendations.

## **Learn and Work**

The panel was supportive of what they found to be a challenging but interesting model, the second offering in ITB's suite of Learn and Work programmes and commended the programme design team on the quality of the documentation, the extent of the industry consultation/collaboration and what they found to be a responsive initiative to address identified industry needs through combining in-company placements with the required skills and competencies for today's high-tech companies..

## Decision of the panel

The panel recommended the validation of the proposed programme and associated exit awards namely:

<b>Programme title</b>	Bachelor of Science in Process Instrumentation & Automation
<b>Programme code</b>	BN046
<b>Award title</b>	Bachelor of Science
<b>NFQ level</b>	7 (180 ECTS credits)
<b>Exit award</b>	Higher Certificate in Science in Process Instrumentation ( <i>NFQ level 6 - 120 ECTS credits</i> )
<b>Embedded award</b>	Bachelor of Science in Process Instrumentation & Automation ( <i>NFQ level 7 - 60 ECTS credits</i> )

## Conditions of validation

This validation is subject to the following conditions:

1. Industry advisory board  
Establish a formal industry advisory board to assist in the implementation and ongoing management of the programme.
2. Work-based modules  
Revise the module syllabi to clarify the progressive development of the learner, identifying the work-based competencies to be assessed for each of the work-based learning modules.
3. Generate an employer work-based learning handbook to provide further clarity on the:
  - Employer role in relation to student selection and enrolment.
  - Employer role in the assessment of the work based competencies to ensure learner attainment of the work based modules learning outcomes.

#### 4. Exit award

Re-title the NFQ level 6 exit award as 'Higher Certificate in Science in Process Instrumentation'.

#### 5. Year 3 Project

Redefine the third year project as a capstone work-based project for all programme delivery modes.

## Panel recommendations

In the light of continuous improvement, the panel offered the following recommendations:

- Explore existing funding models to further support the roll out and delivery of this innovative and non-traditional programme.
- Explore the opportunity to incorporate more blended and online learning options within the programme.
- Module titles

Reconsider the titles of the following modules:

- Electronic & Electrical Technology 1 & 2
- Science for Instrumentation

Align the titles of the 10 credit part-time mode modules to more accurately reflect their 5 credit counterparts in full-time mode.

- Module contents

Revise the content of the 'Science for Instrumentation' module and redesign as an introduction to instrumentation and automation.

Make Health and safety, continuous improvement and problem solving skills more explicit within the module descriptors:

➤ Work-based learning modules

Clearly articulate repeat opportunities in relation to failed work-based learning modules.

➤ Assessment

Include a matrix of the assessment schedule within the student and employer handbooks.

➤ Bibliography

Update the recommended reading lists to include more modern and up to date editions.

➤ Make other technical and minor amendments as discussed at the panel meeting.

## Panel signatures

### Chair

David Denieffe \_\_\_\_\_ Date \_\_\_\_\_

### Secretary

Larry McNutt \_\_\_\_\_ Date \_\_\_\_\_