

Validation Report



Master of Engineering (MEng)
in
**Internet of Things
Technologies
(BN535)**

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

Institute of Technology Blanchardstown

April 2016

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 2MP01¹.

Programme overview

The Internet of Things (IoT) is about the new connected world, that is fast expanding, based on synergistic integration of Computer Science, Sensor Technology, and Engineering Science and Technology. It concerns the new generation of systems of networked devices that are becoming capable of sensing, transmitting and acting on data, e.g.: wearables, smart homes, smart cities, smart industries, etc.

A number of key industry sector reports have recently noted the skills shortages in areas directly related to the IoT sector and allied industries. The Forfas/EGFSN study (Forfas/EGFSN, 2013)¹¹ identified seven key/thematic areas in demand for new ICT skills up to the year 2018 to include areas such included (among others), IT Security, Cloud Computing, Big Data Analytics and IoT. The Master of Engineering in Internet of Things Technologies programme directly addresses the expertise requirements of a significant proportion of these themes.

Learners on this programme will have the opportunity to take one of two pathways illustrated in figure 1 on the following page:

¹ 2MP01 Design, validation and accreditation of new academic programmes

¹¹ Forfás/EGFSN Study: Addressing Future Demand for High-Level ICT Skills. November 2013
(http://www.skillsireland.ie/media/04112013-Addressing_ICT_Skills-Publication.pdf)

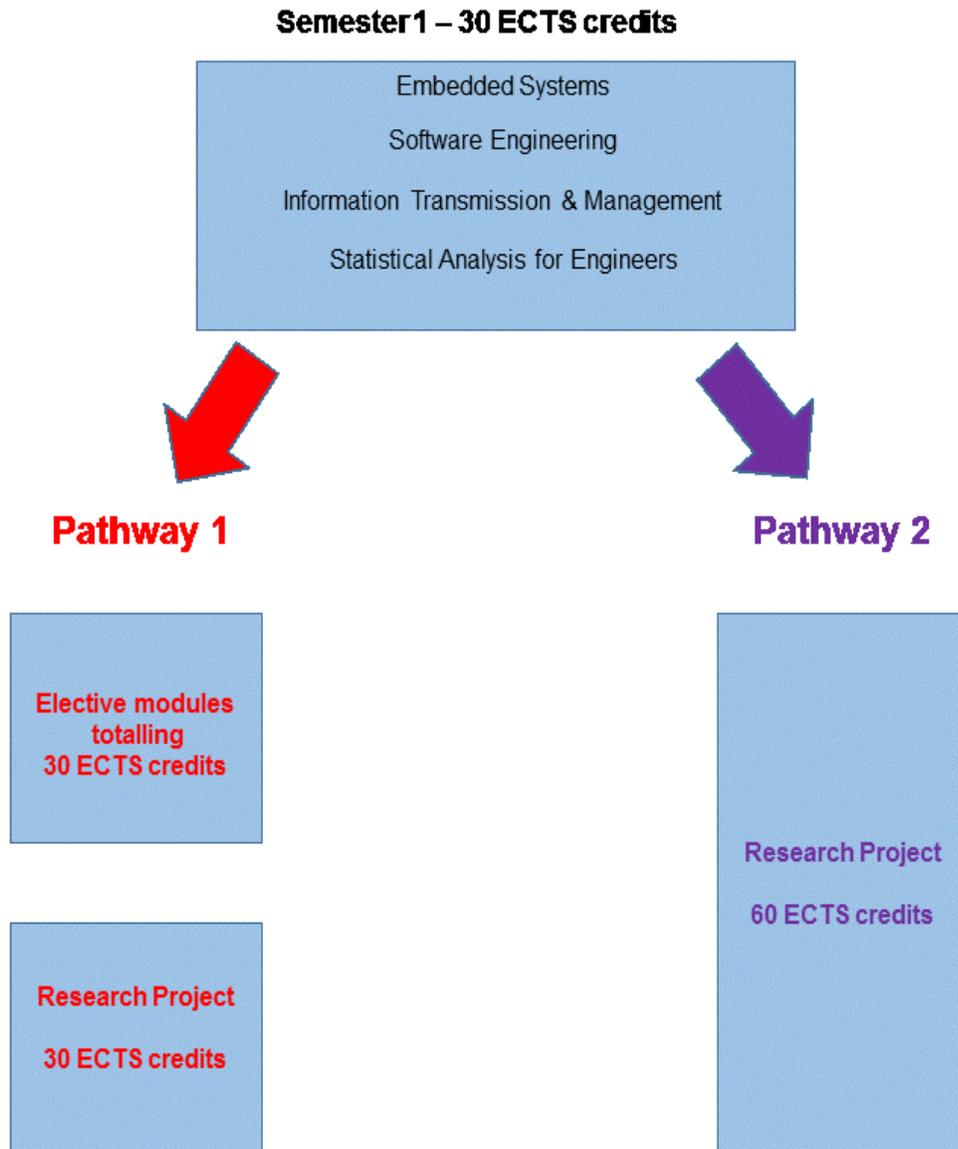


Figure 1 – Programme pathways

Pathway 1: 60 ECTS credits of taught modules semesters in semesters 1 & 2 with a 30 ECTS credit Research Project in semester 3

Pathway 2: 30 ECTS credits of taught modules in semester 1 with a 60 ECTS credit Research Project in semesters 2 & 3

Panel composition

Chair	Dr. Joseph Ryan Registrar Athlone Institute of Technology
Academic experts	Dr. Austin Hanley Dean of Faculty of Engineering & Informatics Athlone Institute of Technology Dr. Gerard McKiernan Head of School of Informatics & Creative Arts Dundalk Institute of Technology Dr. Jim Harkin School of Computing & Intelligent Systems University of Ulster Dr. Martin Glavin Department of Electronic Engineering NUI Galway
Industry expert	Mr. Michael Hibbett Senior IoT Software Architect Intel R&D Ireland Limited
In attendance	Mr. Richard Gallery Registrar IT Blanchardstown Mr. Michael Keane Quality Assurance Officer IT Blanchardstown
Date of Panel Meeting	Thursday 27 th April 2016

Consultation

Management consulted during the panel meeting:

Dr. Philip Owende Head of Department of Engineering

Dr. Anthony Keane Head of Department of Informatics

Academic staff consulted during the panel meeting:

Dr. Barry Kirkpatrick

Dr. Catherine Deegan

Dr. Geraldine Gray

Dr. Simon McLoughlin

Mr. Mark Cummins

Mr. Ben Toland

Mr. Paul Stacey

Ms. Laura Keyes

Mr. Brian Watters

Mr. Mark Lane

Mr. David Powell

Mr. Damian Cox

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

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, pathways and characteristics of the proposed programme.

Learner employment potential

The panel was of the opinion that graduates would be of immediate value to industry and can look forward to an exciting range of career opportunities.

Protection of learners

Section 43 of the Act¹ 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 programmes.

¹ 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. The panel suggested that the word 'Applied' be inserted into the programme title in relation to the newly proposed pathway thereby differentiating it from the traditional taught pathway, see panel recommendations.

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 each of the individual programmes as a whole.

Teaching and learning

The panel discussed with staff of the Institute the various modes of interaction practised with learners. Course management arrangements were discussed and deemed adequate. Evidence of a clear dialogue was confirmed, enabling learners to develop and have available to them the support of academic staff.

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 programmes. 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 encouraged the use of integrative cross modular assessment events to reduce the volume of assessment across the taught modules, see recommendations.

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 of Master of Engineering.

Access, transfer and progression

The panel confirmed that the programme incorporates the established procedures for access, transfer and progression. However the panel was of the opinion that the programme design as proposed was a little too focussed as a progression tool for ITB engineering level 8 graduates and recommended that the programme be refocused on a broader basis to accommodate graduates of other Higher Educational Institutions and international applicants, see panel recommendations.

New pathway

The panel was supportive of what they found to be a very challenging but interesting model (30 credits taught with a 60 credit research project) and commended the programme design team on what they found to be a responsive initiative to address identified industry needs and this model's alignment with the HEA strategy on structured postgraduate study. However the panel was of the opinion that further clarification on issues raised by the panel was required before the 60 credit research project could be validated and asked that this information be provided through a further submission to be reviewed by the panel, see condition of validation. The panel also noted the opportunity this research project could provide in relation to the volume of published peer reviewed articles and encouraged same.

Decision of the panel

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

Programme title	Master of Engineering in Internet of Things Technologies
Programme code	BN535
Award title	Master of Engineering
NFQ level	9 (90 ECTS credits)
Exit awards	Postgraduate Diploma in Engineering in Internet of Things Technologies <i>(BN537 – NFQ level 9 - 60 ECTS credits)</i> Minor award: Level 9 Certificate in Engineering in Internet of Things Technologies <i>(BN538 – NFQ level 9 - 30 ECTS credits)</i>

Conditions of validation

This validation is subject to the following conditions:

1. New pathway incorporating the 60 credit research project

Resubmit to the panel for consideration in advance of programme commencement the revised module descriptor and associated documentation of the 60 credit research project to include further detail and clarification on issues raised during the panel meeting including:

- Learning outcomes that differentiate this model from the traditional 30 credit research project
- Project deliverables, technical achievement required and associated grading structures
- Project research examples clearly indicating the volume of work relevant for the proposed 60 ECTS credits
- Graduate attributes differentiating between the research ready and research capable graduate.

2. Exit awards

Articulate the learning outcomes and proposed acquired skill sets for each of the exit awards.

Panel recommendations

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

➤ Semester 1

Reconfigure the mandatory first semester to facilitate an increased weighting for 'Embedded Systems' and make research skills, ethical considerations and transferable skills more explicit within the module descriptors. In addition, the panel was of the view that the embedded systems module should be more biased towards Internet of Things relevant technologies.

➤ External applicants

Revise the proposed programme design to accommodate a broader spectrum of graduate applicants from other Higher Educational Institutions and international applicants.

➤ Programme title

Consider a different programme title for the 60 credit research project pathway namely 'Master of Engineering in Applied Internet of Things Technologies'.

➤ Assessment

Utilise integrative cross modular assessment events to reduce the volume of assessment across the taught modules.

Replicate the quality assurance and assessment process as exists and is applied to traditional research masters for the 60 credit research project.

Integrate the use of workshops and guest industry speakers into the fabric of assessment.

➤ Access to and transfer between pathways

Clearly articulate the process and requirements involved in determining access and transfer between the pathways.

➤ Professional accreditation

Reconsider the programme design in preparation for same.

➤ Semester 2

Reflect on the taught modules and the sustainability of the listed electives.

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

Panel signatures

Chair



Dr. Joseph Ryan

Date 17 May 2016

Secretary



Mr. Richard Gallery

Date 17 May 2016