

Validation Report



BN523

Master of Science in Technology Entrepreneurship

(90 ECTS credits leading to NFQ Level 9 Award)

BN524

Postgraduate Diploma in Science in Technology Entrepreneurship

(60 ECTS credits leading to NFQ Level 9 Award)

Introduction

The Institute of Technology Blanchardstown was established in 1999. The mission of the Institute is to serve its students and the community by meeting the skills needs in the economy and increasing the level of participation in third-level education and training, particularly in Dublin North-West and its environs.

The Institute in 2006 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.

In keeping with the Institute's mission statement, course and programme development is on-going. This programme supports the mission of the Institute and facilitates much wider access to the Institute by a cohort of potential students whose needs are currently not being met.

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^I.

This submission by the School of Informatics and Engineering, School of Business and Humanities and LINC^{II} evolved through:

- examining the competence, expertise and experience of its staff in addition to the strategy of the department/school/Institute and Government educational policy
- responding to research results derived from the Accelerating Campus Entrepreneurship (ACE)^{III} initiative
- responding to the shortage of technology entrepreneurship programmes offered at NFQ^{IV} level 9 in Ireland

^I 2MP01 Design, validation and accreditation of new academic programmes

^{II} Learning & Innovation Centre, IT Blanchardstown

^{III} Joint collaboration of Blanchardstown, Cork, Sligo and Dundalk Institutes of Technology with NUI Galway aimed at 'Creating the Entrepreneurial Graduate'

^{IV} National Framework of Qualifications

Programme overview

The Master of Science in Technology Entrepreneurship programme is aimed at helping science, engineering and technology graduates to acquire entrepreneurial skills, behaviours and values as well as enhancing their discipline-specific technical skills in the context of developing new products and commercialising technology. The programme is underpinned by a technology enterprise development project which is aimed at enhancing the learner's technical skills and commercial acumen. To replicate industry-standard product development processes, this project is structured as a sequence of phases, each akin to a module and each with its own phase-exit review at which point learning outcomes can be measured and deliverables will be assessed. Although there are some elements of business fundamentals applied to technology commercialisation, the programme seeks to develop an entrepreneurial mind-set in science, technology and engineering graduates, thereby providing them with an alternative career path as future employers or make them more employable to innovative companies seeking 'intrapreneurs'. Both time and opportunity to design and develop a commercial product are integral to the programme. Students will pioneer combining a theoretical scientific framework in product design and development with a practical outcome of commercialising technology. Students will enhance their "hard-science" skills as well as taking on subjects in creativity, innovation and market development.

The first two semesters are focussed on learning to identify and screen a number of realistic innovative opportunities and subsequently to produce technology. In the third semester students will focus on how best to commercialise their concepts, either through licensing or through starting a new technology venture.

Ultimately the aim of this programme is to provide students with the confidence and skills required to start new innovative businesses based on technological inventions.

Exit award

The Postgraduate Diploma in Science in Technology Entrepreneurship is an exit award for students of the Master of Science in Technology Entrepreneurship programme following the same course schedule with the exception of the commercialisation phase i.e. semester 3.

Programme detail

| | |
|---------------------------------|-----------------------------------------------------|
| Programme title | Master of Science in Technology Entrepreneurship |
| Award title | Master of Science |
| NFQ level | 9 |
| ECTS¹ credits | 90 |
| Programme code | BN523 |
| Banner code | BN_EMSTE_R |

Exit award

| Banner code | ITB code | Programme title | Award title | ECTS credits | Format |
|--------------------|-----------------|----------------------------------------------------------------------|---------------------------------------|------------------------------|---------------|
| BN_EMSTE_G | BN524 | Postgraduate Diploma in Science in Technology Entrepreneurship | Postgraduate Diploma in Science | Level 9 60 credits | Ab initio |

¹ European Credit Transfer and Accumulation System

Panel members

Chairperson Mr. Tony Quinlan
Registrar (retired)
Galway-Mayo Institute of Technology

Panel member 1 Dr. Frank Devitt
NUI Maynooth

Panel member 2 Dr. Pádraig Ó Murchú
Intel Ireland

Panel member 3 Dr. Stephen Daniels
Dublin City University

Panel member 4 Mr. Eugene Crehan
Waterford Institute of Technology

In attendance Dr. Ruth Harris
IT Blanchardstown

Mr. Michael Keane
IT Blanchardstown

Date of Panel Meeting Wednesday 17th June 2009

Institute staff present

Session I Meeting with Head of School and Programme Leaders

Mr. Larry McNutt, Head of School of Informatics and Engineering

Mr. Richard Gallery, Head of Department of Engineering

Mr. Michael Tobin, Head of School of Business and Humanities

Mr. Pat O'Connor, Head of Department of Business

Mr. Cormac McMahon, Department of Engineering

Ms. Assumpta Harvey, LINC

Session II Meeting with lecturing staff

Mr. Larry McNutt, Head of School of Informatics and Engineering

Mr. Richard Gallery, Head of Department of Engineering

Mr. Pat O'Connor, Head of Department of Business

Mr. Cormac McMahon

Ms. Assumpta Harvey

Dr. Kevin Mellon

Mr. Niall Campbell

Mr. Daniel McSweeney

Mr. Hugh McCabe

Ms. Yurie Madea

Ms. Claire Quigley

Panel findings

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

Rationale

The panel was informed that a limited number of entrepreneurship programmes are currently on offer at NFQ level 9 in Ireland many of which are primarily targeted at business graduates with very few technology entrepreneurship programmes on offer. In response to this the Accelerating Campus Entrepreneurship (ACE) Initiative, sponsored under the Strategic Innovation Fund was established, aimed at 'Creating the Entrepreneurial Graduate'. This initiative is a joint collaboration of the Institute of Technology Blanchardstown, Cork Institute of Technology, Sligo Institute of Technology, NUI Galway and Dundalk Institute of Technology. From the submission document and through discussion with the design team the panel was informed of how the proposed programme, Master of Science in Technology Entrepreneurship, has been designed to address key issues identified through the ACE research across the university and institute of technology sectors.

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. The panel noted however the external resources required for this programme and that funding for same will be provided under the SIF¹ II project.

Evidence of consultation

The panel were informed both through the submission document and at the panel meeting of how a comprehensive survey across the ACE partner institutions sought to elicit the attitudes of non-business (primarily engineering) undergraduates towards entrepreneurship. Additionally, the panel heard how, from the enterprise education perspective, the survey asked undergraduates to state the characteristics and enterprise skills that they perceived as important for creating the entrepreneurial mindset. The underlying thinking in which this survey assessed the attitudes of undergraduates towards entrepreneurship is based on the Lisbon strategy for growth and employment which highlights Europe's need to stimulate

¹ Strategic innovation fund

the entrepreneurial mindsets of young people, encourage innovative business start ups and develop a culture which is conducive to the growth of small and medium sized enterprises.

Feedback from this consultation process concluded that the perception from students was that their respective higher education institutions do not currently invest sufficient resources to create awareness of entrepreneurship as a potential career option and should be addressed as part of an integrated programmatic strategy to promote the graduate entrepreneur. The panel also heard how a consultation process was conducted internally with students and academics of ITB and subsequently externally with key stakeholders including:

| | |
|---------------------------------------------------|---------------------------|
| Fingal County Enterprise Board | Enterprise-Ireland |
| Higher Education Training Awards Council | IBM Ireland |
| UK National Council for Graduate Entrepreneurship | Digiweb Limited |
| Northern Ireland Centre for Entrepreneurship | 3 rd I Limited |
| Faculty of Technology & Maritime Management | Iompar BBA Europe |
| Satakunta University of Applied Science, Finland | |

The panel noted the relevance of this process to the proposed programme.

Learner employment potential

The panel was informed of how this programme encompasses innovative approaches to entrepreneurship education to ensure students from technology programmes take enterprise related modules with the student gaining experience of what it is like to run and operate real businesses and in this way making them more attractive to small medium enterprises and promoting self-employment as a real, attractive and viable career option.

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 programme.

¹ Qualifications (Education and Training) Act, 1999

Programme titles and award titles

Following discussion, the panel was satisfied that the title of the proposed programme, including its exit award is clear, accurate and fit for the purpose of informing prospective learners and other stakeholders and consistent with HETAC award titles.

Ethics

The panel was satisfied that the Institute has internal policies and procedures in place to ensure that all teaching, learning and research activity across the spectrum of NQF 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 HETAC's¹ 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 programme as a whole.

Teaching and learning methods

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

Course management arrangements were discussed and deemed adequate, these included:

- survey of students by lecturer
- summary of survey of students by lecturer
- survey of students by department
- course boards
- product approval committee

¹ Higher Education and Training Awards Council

The panel heard how the product approval committee will reflect a broad-range of networked technical and commercial expertise from academia and industry comprising of:

- Principal investigator or technical supervisor from the School of Informatics and Engineering
- Entrepreneurship supervisor from the School of Business and Humanities or as appointed
- Industry expert or company sponsor if appropriate
- Member of the LINC team

The panel also heard how this committee will have the authority and responsibility to assess academically the technical and commercial achievements of student projects, to provide mentorship and direction for students, particularly, in respect of access to the business community and support networks outside academia, to approve the initiation of new product development projects, and, in some cases, to assign and prioritise development resources.

The panel was satisfied that the necessary resources, both internal and external to the Institute will be available but asked that the external resources required be both identified and quantified. See conditions of validation.

Learner assessment

Through discussion with the design team, and from the submission document itself, it was explained to the panel that assessments will be based on timely achievement of project deliverables, agreed objectives and work-plan, and structured oral and written reports at each of the phase exit reviews. The panel, however, requested that a matrix of assessments and deliverables per module be produced and that the assessment criteria and grading structure of same reflect current Institute grading policy. See conditions and recommendations of validation.

Standards of knowledge, skill and competence

The panel was informed as to how this programme aims to develop critical awareness of the theories and paradigms underpinned by research that define technology entrepreneurship in students who will be future innovators. ITB believes that every good science, technology and engineering graduate needs to be “entrepreneurial” and the acquisition of entrepreneurial skills is a critical success factor in bringing products arising for scientific research into industrial application. On successful completion of the programme, it is envisaged that the students will have attained:

- a fundamental understanding of the depth and range of complex problems necessary to specify, plan and execute technology projects and an awareness of the latest/newest design methodologies and tools and their advantages and limitations;
- the ability to integrate discipline-specific knowledge, e.g. engineering design, with key business “how-to’s” for more effective product development and / or technology commercialisation;
- a critical awareness of regulatory, ethical and environmental requirements for technology projects;
- an experiential understanding of the role of business expertise in technology projects and of the professional relationship between their own discipline, e.g. science, technology or engineering, and other disciplines.

The panel also heard how the programme aims to initiate students into methods in the specific fields of technological innovation and entrepreneurship and provide them with the appropriate tools of enquiry to allow them to undertake research effectively. Students will learn to become adept at applying a wide range of research techniques required at the interface between business and science. It is envisaged that students having successfully completed this programme will have demonstrated their ability to:

- engage in the creative and innovative development of technology using both scientific principles to “invent” new technologies or “design” new products, requiring extensive trouble-shooting, testing and validation skills and entrepreneurial competencies to win support for technology initiatives;
- create intellectual property (IP) by carrying-out independent technical research by, sourcing and critically interpreting, analysing and synthesising the appropriate scientific information and translating research findings in a non-technical manner clearly articulating the business opportunity;
- manage complex technology enterprise development projects in their discipline and the appropriate cross-disciplinary inputs needed, ensuring that detailed records of research and development activities are kept for the creation and protection of intellectual property.

The panel were of the opinion that learners would be capable of attaining the standards of knowledge, skill or competence relevant for this award.

Access, transfer and progression

The programme incorporates the established procedures for access, transfer and progression, allowing students to choose from various entry and exit points that support clear transfer and progression routes within the National Framework of Qualifications. The panel, however, requested that the entry requirements and regulations concerning the exit award be more clearly articulated. See recommendations.

Panel observations

The panel commended the responsive nature of this programme within the current economic climate, the invaluable external industry links ITB has developed over the years, the experience and enthusiasm of ITB staff in the use of alternate pedagogies, online delivery using Moodle^I and Breeze^{II}, cross school cooperation and the relevance of the proposed workshops to be delivered as part of this programme.

^I Web application used to create effective online learning sites.

^{II} Software used to create online training materials.

Decision of the panel

The panel recommends the validation of the proposed programme including its exit award namely:

| Banner code | ITB code | Programme title | Award title | ECTS credits | Format |
|-------------|----------|----------------------------------------------------------------|---------------------------------|-----------------------|-----------|
| BN_EMSTE_R | BN523 | Master of Science in Technology Entrepreneurship | Master of Science | Level 9 90 credits | Ab initio |
| BN_EMSTE_G | BN524 | Postgraduate Diploma in Science in Technology Entrepreneurship | Postgraduate Diploma in Science | Level 9 60 credits | Ab initio |

Panel Conditions

The panel recommends validation of the programme subject to the Institute meeting the following conditions:

1. The external resource requirements needed to deliver this programme must be identified and quantified.
2. A detailed matrix of the assessment schedule per module together with the associated grading structure must be generated.
3. A detailed matrix of deliverables per module with associated grading structure per module must be generated.
4. The grading criteria as proposed within the submission document for each of the PACE modules must be revisited to align with established grading scales using similar methodology across all grades.
5. The progression rules for each module, in the event of a student not achieving an overall pass must be clearly articulated

Panel recommendations

1. Review the proposed approved course schedule with particular attention to the following:
 - Total hours and student effort; needs to more accurately reflect actual student workload.
 - The use of acronyms within module titles should be minimised.
2. Clearly articulate entry routes to this programme, and in particular the classes of engineering degree that would be deemed appropriate. In addition, define the interview criteria to be used for student selection and more clearly articulate the entry requirements making reference to the level of technical computer aided design (CAD) ability required to engage successfully on this programme.
3. Review the proposed timetable to more clearly articulate student contact hours, self learning, market research, customer surveys etc.
4. Consider including workshops on the following:
 - Business strategy
 - Domains such as services and social entrepreneurship
5. Explicitly state regulations with regard to the Postgraduate Diploma in Science exit award.
6. Clearly articulate the composition of the overall award classification.

Panel signatures

Chairperson

Mr. Tony Quinlan _____ Date _____

Secretary

Dr. Ruth Harris _____ Date _____