ULSTER UNIVERSITY

REPORT OF A MEETING OF THE EVALUATION PANEL FOR MSC ARTIFICIAL INTELLIGENCE (FT/PT) AT JORDANSTOWN CAMPUS

8 April 2019

PRESENT:	Professor B Murphy, Director of Access Digital and Distributed Learning, Ulster University (Chair)
	Professor Q Shen, Pro-Vice-Chancellor (Faculty of Business & Physical Science), Aberystwyth University
	Professor T Hunter, Department of Computer Science, University College London
	Ms S McCall, Associate Head of School of Applied Social and Policy Sciences, Ulster University
IN ATTENDANCE:	Mrs K McCafferty, Academic Policy and Standards Officer, Academic Office, Ulster University

1 INTRODUCTION

The panel met to consider approval of the following new programme brought forward by the Faculty of Computing, Engineering and the Built Environment:

MSc Artificial Intelligence (FT/PT/Jordanstown)

The proposed MSc Artificial Intelligence will be delivered at the Jordanstown campus on a full-time and part-time basis. There will be two points of entry, September and January each year. A Postgraduate Diploma in Artificial Intelligence (exit award) will be available to students who do not wish to or are unable to complete the master's project.

There are 6 compulsory taught modules worth 20 credit points each plus a master's project worth 60 credits points.

The Panel were taken on a tour of the facilities to support the programme and were impressed with what would be available to students. The Panel also highlighted the excellent staff resources as evidenced in the CVs and how their research was being used to inform the curriculum.

The Panel initially met with the Senior Management Team to explore such areas as rationale and demand for the programme. The Panel then met with the Course Team to discuss the programme in more detail.

2 DOCUMENTATION

The Panel received the following documentation:

1. Course submission;
2. Guidelines for Evaluation and Revalidation Panels;
3. QAA subject benchmark statement for master's Degrees in Computing (2011)
4. Reports from central departments (Library and IT);
5. Preliminary comments from Panel members.

3   MEETING WITH SENIOR MANAGEMENT TEAM

3.1   Rationale and Demand

The Panel noted that the Faculty of Computing, Engineering and the Built Environment was keen for all their schools to increase their non-MaSN numbers in addition to increasing the numbers of international students. The Panel heard that the School of Computing had a strong undergraduate provision and until last year did not offer any master's programmes. The MSc Internet of Things (IOT) was introduced in September 2018 and the Senior Team felt the proposed MSc Artificial Intelligence would sit well with it.

The Panel heard that the MSc in Artificial Intelligence had been developed to meet a demand from industry for staff to have strong skills in artificial intelligence, eg, machine learning, knowledge engineering, data mining and computer vision. The Senior Team explained that master's programmes in Artificial/Computational Intelligence and Machine Learning are growing rapidly across the globe. The proposed new programme has been designed to meet the demands being experienced in the sector by training individuals in the computing profession so that they can apply leading edge artificial intelligence skills across the industry.

3.2   Stakeholder Engagement

The Panel asked if employer input and student expectations had been taken into consideration during the development of the programme.

The Senior Team explained that the programme was designed to meet the demands of the computing sector in Northern Ireland. Feedback from employers, consideration of benchmark statements and a review of artificial intelligence programmes being offered by other institutions had all contributed to the design of the MSc in Artificial Intelligence. The Panel noted the omission of some topics they would have expected to see in the programme but heard from the Senior Team that these subject areas would already have been covered in a student's undergraduate level 6 modules.

The Panel felt that a student's expectation on what they would be studying may be an issue and was concerned that thought had not been given to what the typical graduate positions might be or who would be seeking to recruit them.

The Senior Team explained that local companies had been involved in early discussions about the programme and helped highlight the skills in demand. The Panel heard that a group of employers met on a regular basis with staff to keep them informed of the direction the market was heading. This information helped course teams to develop programmes that would generate suitably qualified students with the skills to meet industry needs

The Panel also heard that the School placed significant emphasis on the pre-entry process to a programme. Staff met with prospective students to explain clearly the content of a programme and what would be involved. The Senior Team stated that this helped them to find out about student expectations and help ensure they were moving in the right direction.

The Panel was still unsure of the types of jobs students could progress into and felt that prospective students needed to be made aware of the types of jobs they could move in to. The Panel felt this would help give confidence that students were applying for the right programme. The Senior Team informed the Panel that they anticipated many of the students enrolling onto the programme would choose to study part-time and be already working in the industry.

The Panel acknowledged the Senior Team's responses but felt that the revised document needed to articulate clearly the input from employers and the industry during the design of the programme and that potential career options should identified so that students were clear on their future employment opportunities.

The Senior Team appreciated the Panel's comments but reassured them that they were in daily contact with the industry regarding many aspects of course provision but agreed that these links should be more clearly presented in the document.

The Panel also noted that an undergraduate degree in Artificial Intelligence was currently being delivered at the University's Magee campus and asked why the proposed MSc in Artificial Intelligence would be delivered on a different campus.

The Senior Team confirmed that staff research had been aligned to the master's programme. The Senior Team also explained that some students who complete their undergraduate degree at Magee tend to move elsewhere to study for a masters.

Chair's note: the question as to different campuses and departments for AI depending on level of award remains open and for the Faculty to note.

4   MEETING WITH COURSE TEAM

4.1   Assessment

The Panel asked the Course Team how they had approached the design of the programme and if the choice of assessment methods had been influenced by potential employers.

The Course Team explained that they had decided to use 100% coursework. The Course Team had looked at the student learning and then decided on the most appropriate form of assessments that would measure the knowledge (skills and aptitudes) the student would need to complete them.

The Panel noted that there were class tests but asked why there were no formal examinations. The Course Team explained that some of the assessments were completed within time constraints, eg 2 hours. The Course Team felt that this approach gave students the opportunity to demonstrate practical skills and an understanding of theory. The Panel also noted that some assessments used problem solving tasks with a mixture of multiple-choice and written questions.

The Course Team informed the Panel that their decision to go with these assessment methods had not been influenced by what other universities were currently doing. The Course Team explained that they had used 100% coursework in others programme and that students had very been positive about the experience.

Class tests aside, the Panel raised the matter of assurance on authenticity of coursework within a course with high proportion coursework – a matter of much topical concern in the sector. The Course Team were convinced that the range of assessments methods and technology tracking used were sufficient to quality assure this aspect. (See also section 4.3)

4.2   MSc Project

The Course Team explained their rationale for a MSc Project and that it would satisfy professional body requirements. The Course Team also felt that students would benefit greatly from the experience of completing a project which could potentially lead to being

presented as a paper for a journal. However, the Course Team agreed with the Panel that the project rationale needed further development.

The Panel noted that students would develop their research skills and be taught how to critique and communicate to readers. Academic writing would be covered through set workshops with further academic skills development filtering through the modules as the students progressed through the programme.

The Panel enquired if BCS consultation should have been part of planning of the new programme given the risk that University approved provision could potentially be overturned in the event that a condition was applied by the professional body. The Course Team were confident that post accreditation was custom and practice in the field.

4.3   Plagiarism

The Course Team explained that students would be given the opportunity to choose their own project theme meaning no two students would choose the same topic. The Panel noted that students would be required to answer questions on their research during a viva. Students would also be asked to demonstrate their research and talk through their work. The university's 'Turnitin' software would also be used to identify any plagiarised work.

4.4   Accreditation

The Course Team explained that the British Computer Society (BCS) requirements had been taken into consideration as part of the design and development of the programme. The Panel heard that the Course Team had looked at how the programme would map onto the BCS requirements including the master's project. The Panel noted that the BCS had recently visited the university to accredit the MSc Internet of Things and the Course Team was satisfied that they would meet the BCS requirements for the MSc Artificial Intelligence in due course.

4.5   Programme Content

The Panel asked why 'evolutionary computation', which was one of the three cornerstones of computational intelligence, was not included in the content of the programme and if the School had staff expertise in this area. The Course Team explained that they would have liked to have included the subject area but currently the School did not have a member of staff with specific knowledge in 'evolutionary computation'. The Course Team informed the Panel that the topic could be covered generally within 'machine learning' and touched on in some of the other modules but did not explain how the subject expertise would be sourced. The Course Team also stated that some of the case studies used with students referenced the subject area. The Course Team appreciated that the topic was not highlighted specifically in the programme content but that students would definitely have some exposure to the subject area during their studies.

The Panel also enquired about 'neural networks' which they felt should be more apparent in the programme content. The Course Team explained that this topic was covered in the undergraduate degree in Artificial Intelligence and that they wanted to minimise overlap.

The Panel felt that 'deep learning' and 'neural networks' would merit being a separate module. The Panel also felt that students may look for these topics to be covered in more depth. Although the Course Team stated that these topics would have been covered in the undergraduate Artificial Intelligence degree the Panel queried what would happen if a student from another degree discipline enrolled onto the programme. The Panel felt that the

topics needed to be listed in the content of the programme to highlight to the students what they would be studying.

The Course Team explained that 'neural networks' would fit with the 'Computer Vision and Natural Language Processing' module and recognised that they needed to look at the content of the module in more depth. However, the Course Team informed the Panel that they could not cover everything but would aim to cover the key areas for students.

The Panel noted that the programme included four new modules and two current modules currently delivered in the MSc Internet of Things but was still concerned that 'neural networks' and 'evolutionary computation' was not specifically identified. The Panel felt that the Course Team needed to look carefully at what they wanted to deliver to students and what they should be teaching and perhaps decide if they could make room for other subject areas. The Panel felt that looking at what other universities currently teaching artificial intelligence were doing may not be the most appropriate route for the Course Team to take as many of these institutions may be offering artificial intelligence programmes which are not current. The Panel encouraged the Course Team to seize the opportunity to design a cutting edge and current programme and to be satisfied it reflects student expectations and will meet industry needs both locally and internationally.

4.6 Student Experience

The Panel enquired about the consistency of the student experience for part-time and full-time students and how the Course Team would manage this. The Course Team explained that there would be September and January intakes each year for both the part-time and full-time modes. The induction at the start of the programme would bring together both cohorts and the Course Team confirmed that part-time and full-time students would be taught together. The only difference between the two groups would be the pace in which they would study. The Course Team assured the Panel that strong student support processes were in place and available to all students. The Course Team also confirmed that staff were experienced in teaching through the afternoon and into the evening.

4.7 Employability

The Panel asked how employability had been embedded into the assessments and if the practical tasks and skills were linked to industry needs.

The Course Team explained that they had looked at the depth of staff research and the feedback from discussions with industry to design the programme and module learning outcomes. The Panel heard that the Course Team then decided on the best assessment methods and what they wanted them to measure. Being able to demonstrate and reflect were key areas the Course Team wanted to develop to ensure students would leave with advanced artificial intelligence skills they could use in their jobs.

The Course Team informed the Panel that CHERP were not involved specifically in the development of the MSc Artificial Intelligence, but that communication had taken place between the two parties in the development of undergraduate provision.

4.8 Reading Lists

The Course Team informed the Panel that students had access to all the texts and could request a book or journal from another campus to be received the next day. Many of the books were also available online. The Panel noted that staff worked closely with the library to ensure the appropriate texts were made available for students.

4.9   Student Support

The Panel heard that there was an extensive student support system in place. Students could communicate with staff via email, skype, etc and there were various forums to raise issues they might have. The School had two disability advisors in place to work and help resolve any issues students might have.

Guest speakers would also contribute to the student experience. The Course Team emphasised that there were strong systems in place for supporting students during their studies.

5   CONCLUSIONS AND RECOMMENDATIONS

The Panel commended the Course Team on the following:

- The impressive expertise of staff and strong research-led curriculum
- The excellent facilities/resources to support the provision
- The positive potential for a strong international market
- The clear contribution graduates will make to the Northern Ireland economy
- The flexibility in delivery of the programme with both part-time and full-time modes
- The solid and natural connections with the industry

The Panel agreed to recommend to the Academic Standards and Quality Enhancement Committee that the provision be approved for five years (intakes 2019/20 to 2023/24 inclusive) subject to the conditions and recommendations of the Panel being addressed and a satisfactory response and a revised submission being forwarded to the Academic Office by **20 May 2019** for approval by the Chair of the Panel.

Conditions

(i)   That the Course Team develop a coherent academic narrative on the high-level programme design; one which articulates what students and employers might reasonably expect to find explicitly as academic content; and through this, consideration be given to reflect the narrative themes and the panel discussion on content (3.1, 3.2, 4.1, 4.5);

(ii)   That the regulatory and standards matters identified by the Academic Office be addressed (appendix).

Recommendations

(i)   That the Course Team consider engagement with CHERP on the integrated curriculum design framework (4.7);

(ii)   That the Course Team undertake a mapping of the programme to British Computer Society (BCS) requirements for accreditation purposes (4.4).

APPRECIATION

The Chair thanked the Panel, in particular, the external members and the Course Team for their valuable contribution to the revalidation process.