UNIVERSITY OF ULSTER

REPORT OF A MEETING OF THE REVALIDATION PANEL FOR UNIT 10B2: ENGINEERING AT NORTHERN REGIONAL COLLEGE

3 December 2018

PANEL:	Professor D Hasson, Associate Dean (Global Engagement), Faculty of Life and Health Sciences, Ulster University [Chair] Dr A McIlhagger, Reader, School of Engineering, Ulster University Dr L Moore, Senior Lecturer, School of Applied Social and Policy Sciences, Ulster University Miss A McMullan, Student Representative, FdSc Applied and Medical Science, Northern Regional College Mr M Jones, Senior Lecturer in Mechanical Engineering, Wrexham Glyndwr University Mr G Howe, Head of School of Engineering, Manufacturing and Logistics, University of Wales
IN ATTENDANCE:	Mrs M Paris, Faculty Partnership Manager, Faculty of Computing, Engineering and the Built Environment, Ulster University Mrs A Garland, Academic Policy and Standards Officer, Academic Office, Ulster University

1 INTRODUCTION

The Panel met to consider the revalidation of the following provision within Unit 10B2:

FdEng Electrical and Electronic Engineering (with CertHE exit award) (Full-time / Part-time);
FdEng Mechanical and Manufacturing Engineering (with CertHE exit award) (Full-time / Part-time).

On the morning of the meeting, the Panel undertook a tour of the facilities available to support the provision. The Panel members were very impressed with the facilities and the way in which teaching and learning were embedded in the workshops.

The Panel initially met with the Revalidation Unit Co-ordinator (Mr G Kane), the Vice-Principal for Teaching and Learning (Mr V Taggart), the Head of Department responsible for Engineering (Mr M Murray) and the Higher Education Co-ordinator (Ms T Millar). The provision was then discussed in more detail with the Subject Team.

2 DOCUMENTATION

The Panel received the following documentation in advance of the meeting:

(i) course submission;
(ii) the University's Guidelines for Revalidation Panels;
(iii) the QAA Statement for Foundation Degree Characteristics (2015);
(iv) the QAA Benchmark Statement for Engineering (2015);
(v) external examiner reports for 2016/17 and 2017/18;
(vi) a statement from the Faculty Partnership Manager (CA4);

(vii) preliminary comments from Panel members (CA7);
(viii) Academic Office notes on regulatory and standards matters.

MEETING WITH SENIOR STAFF

3 MARKETING / EVIDENCE OF STUDENT DEMAND

The Panel began by asking the Senior Staff to outline what market research had been undertaken to support the proposed minimum intake of 15 full-time and 15 part-time students to each programme. The Panel was informed that this was the minimum cohort size recommended by the University and that the College hoped that such intakes could be achieved. It was anticipated that the number of Higher Level Apprenticeship (HLA) students would contribute significantly to the part-time intake. The College had strong links with industry and had entered into a training relationship with local company, Wrightbus. In addition, the College hosted CNC and welding academies and it was hoped that such activities would translate into HLAs and applicants for the Foundation Degrees. The Foundation Degrees also provided a progression route for students undertaking Level 3 qualifications in Engineering delivered by the College. Furthermore, College staff engaged with a wide range of employers who had confirmed their support for the provision and had provided input into the modules. Relationships with employers were strengthened by the participation of Level 3 BTEC students in the Career Academy and through the Career Ready programme. The Senior Staff advised that general marketing was also undertaken at College level.

4 STAFFING RESOURCES

The Panel enquired if the Senior Staff were satisfied that staffing for the two Foundation Degrees was adequate and was informed that the Course Teams comprised a balance of new staff coming from industry and experienced staff. As well as holding relevant qualifications, teaching staff were from an industrial background and were involved in projects which enabled them to keep abreast of modern advances and bring these into the classroom. It could however be challenging to attract qualified staff for craft-based teaching areas, such as electrical installation, due to competition from the private sector.

5 PHYSICAL RESOURCES

During the tour of facilities, Panel members had been informed that work on the new College building would commence shortly. The Panel therefore enquired how the quality of the overall student experience would be ensured during the transition to the new building. The Panel was informed that the plan was to retain the Engineering block while the new building was being constructed and on completion of the new building, the machinery would be transferred. Only two of the rooms utilised by these courses would be affected by the building work.

6 HIGHER EDUCATION LEARNING ENVIRONMENT

The Panel enquired how the student experience for Higher Education students differed from that of the Further Education students. The Senior Staff assured the Panel that the transition to Higher Education within the College was a smooth one and that students were provided with the skills required to undertake more self-directed learning. The Panel enquired if there was a dedicated Higher Education space for students and was informed

that, although there was no dedicated space particularly for this provision, there was a common room specifically for Higher Education students. All students, regardless of their level of study, had access to industry-standard equipment.

7 PROGRESSION

The Panel noted that the number of students progressing to Honours degree study was modest and that the revalidation document referred to the current progression model as "restrictive" and stated that "NRC would wish to enter negotiations with UU to develop a shared Part-time Degree model that could be completed in a timely fashion and suit part-time employers." The Senior Staff explained that it had historically been difficult for part-time Foundation Degree graduates to progress as it took a long time to complete the Honours Degree in part-time mode and full-time mode was not suitable for those with other commitments. Some students had chosen to progress through the Open University. Measures were taken to encourage Foundation Degree students to progress, such as tours of the University's Learning Resource Centres and guest speakers.

It was noted that graduates of the FdEng Mechanical and Manufacturing Engineering could progress to Year 2 of the following University Honours Degrees:

- BEng Hons Mechanical Engineering (FT) (Jordanstown campus);
- BEng Hons Mechanical and Manufacturing Engineering (FT/PT) (Magee campus).

Graduates of the FdEng Electrical and Electronic Engineering could progress to Year 2 of :

- BEng Hons Electrical and Electronic Engineering (FT/PT) (Magee campus);
- BEng Hons Mechatronic Engineering (FT/PT) (Jordanstown campus).

To be considered for progression to the above full-time programmes, graduates were required to have achieved an average mark in the Level 5 Foundation Degree modules of 55% and minimum 55% in all taught Level 5 modules, and 55% in the Level 4 Mathematics modules within the Foundation Degree, in line with the standard used for Year 1 entry to the related Honours Degree programme. GCSE Mathematics at grade C or an alternative Mathematics qualification acceptable to the University was also required.

In order to be considered for progression to the part-time programmes, an average mark of 40% in the Level 5 Foundation Degree modules was required and minimum 40% in all taught Level 5 modules, and 55% in the Level 4 Mathematics modules within the Foundation Degree, in line with the standard used for Year 1 entry to the related Honours Degree programme. GCSE Mathematics grade C or an alternative Mathematics qualification acceptable to the University was also required.

It was agreed that the University's Faculty of Computing, Engineering and the Built Environment would work with the College to ensure students were aware of progression routes and to consider how to better accommodate part-time progression.

8 PROSPECTS FOR GRADUATES

The Panel enquired what employment opportunities existed for those who did not wish to progress to Honours Degree level study and was advised that there was a substantial number of sub-contracting companies across the province, as well as opportunities for business start-ups.

9 INDUSTRIAL ADVISORY PANEL

The Panel enquired if an Industrial Advisory Panel had been established to support and provide input into the programmes. The Senior Staff stated that industrial panels were convened from time to time and that an Engineering Hub had been developed at South West College. College staff engaged with employers on a regular basis.

MEETING WITH STUDENTS

The Panel met with a group of five students comprising representatives from both courses.

10 PURPOSE OF THE FOUNDATION DEGREE

The Panel began by asking the students what they considered to be the purpose of a Foundation Degree. Two students were undertaking the Foundation Degree as they required a Level 5 qualification to be able to teach, while the other students stated that the Foundation Degree was preparing them for study at University.

11 MARKET

The Panel sought the students' views on why so few female students chose to undertake Engineering courses. A female student was of the view that Engineering programmes would be more popular amongst female students if they were encouraged to study this subject area more in school.

12 OVERALL EXPERIENCE

The students were in agreement that their experience of the provision was very positive and that staff were very helpful and supportive. One of the students who had progressed from BTEC stated that he felt much more challenged by the Foundation Degree.

13 CONTENT

With regard to the content of the provision, the students reported that they were uncertain why they were required to learn two different programming languages – C and Python. When they had raised this query with staff, they had been advised that both programming languages were studied in order to align with what was taught in the first year of the Honours Degrees at Ulster University. The students queried the relevance of both programming languages.

In response to a question from the Panel, the students advised that the balance between lectures and practical work depended on the lecturer and the subject area, with more practical subjects involving more group work.

14 PLACEMENT

When asked to elaborate on the work-based learning process, the students advised that they were asked what type of placement would be of most interest and placements were sourced by staff. Students were invited to select a placement from a list and then went for an interview at the chosen company. Students were also permitted to find their own placements if they so wished.

15 ASSESSMENT AND FEEDBACK

The Panel sought the students' views on assessment. The students were of the view that there was a large amount of assessment and advised that this issue had been raised by the student representatives at Staff Student Consultative Committee meetings. The students had been informed that the volume of assessment would be reviewed as part of the revalidation process. The Panel enquired if any of the assessment tasks involved interaction with industry and the students gave an example of a recent assignment where they had been required to carry out research into robotic welding, which had involved the full-time students undertaking a visit to Terex. The part-time students had not had the opportunity to visit Terex as their classes were held in the evening when the company was closed.

When asked about feedback on assessment, the students confirmed that they generally received good feedback on assignments but would like additional feedback on end of year examinations for which they currently only received a mark. The students advised that they could request further feedback, but stated that they would prefer to have their examination scripts returned so they could review them to see where they had lost marks.

16 PROGRESSION

The students confirmed that they were aware of the process for progression and most stated that they wished to progress to Honours Degree study.

17 PHYSICAL RESOURCES

In response to a question from the Panel, the students confirmed that they had access to computer rooms when needed and that they could access Python remotely and had student versions of SolidWorks and AutoCAD on their personal computers.

18 CLUBS AND SOCIETIES

The students were unaware of any Engineering clubs or societies within the College and stated that it would be difficult to find the time to participate in such activity.

The Chair thanked the students for taking the time to meet with the Panel and wished them success in their studies.

MEETING WITH THE SUBJECT TEAM

19 ADMISSION CRITERIA

In response to a query from the Panel, the Team confirmed that part-time students were not required to be in full-time relevant employment.

20 RECRUITMENT OF FEMALE STUDENTS

The Panel enquired if consideration had been given as to how larger numbers of female students could be attracted to the programmes. The Team advised that, in the past,

STEM-focussed events had been held for school pupils and that a STEM-focussed careers event had been held for local schools and employers. Although there had been no gender-specific events held in recent years, there were two females on the provision this year. The Panel suggested that female graduates could be trained to promote the idea that Engineering courses were not just for male students.

21 SCHOLARSHIP-INFORMED TEACHING

The Panel noted that the commentary in the revalidation document about scholarship-informed teaching was brief and asked the Team to elaborate on how the curriculum had been informed by research and scholarship. The Panel was advised that members of the Team were involved in projects, exchanges and writing papers, and that there was an opportunity for one of the Higher Education Engineering students to spend time at a college in South Africa. Staff involvement in projects was integrated informally into the curriculum through, for example, the use of case studies. The Team also advised that a large amount of industrial training took place at the College and that members of staff spent time in industry. One member of staff currently spent one day per week in a company as a consultant and other members of staff were involved in delivering bespoke training in industry.

22 CONTENT

22.1 Future-Proofing

The Panel noted that the programmes' content did not appear to incorporate much future technology and queried if the provision was adequately future-proofed. The Team stated that the curriculum had been largely designed around employer feedback. The Panel highlighted the need for Higher Education to be future-facing and encouraged the Team to include Industry 4.0 within the module descriptions and to provide opportunities for students to undertake research activities. The Team stated that the content of modules could be adjusted to incorporate future technologies and developments but that, within the limited credit points of the Foundation Degree, it was necessary to ensure students acquired a basic knowledge of the subject area. The Team assured the Panel that areas such as CNC and CAD/CAM techniques were explored and that renewable energy technology had been incorporated within the *Energy & Maintenance Systems* module. The Panel suggested the use of case studies as a means of introducing future technologies.

22.2 *CAD/CAM* Module

The Panel enquired why AutoCAD and SolidWorks were both used in the *CAD/CAM module* and was informed that AutoCAD was used for the 2D element of the assessment and SolidWorks was used for the remainder of the assessment. Most of the focus was on SolidWorks but the Team was of the view that it was important for students to have a knowledge of AutoCAD as it was used in the workplace. The Panel considered it odd that the module required drawing to industry standard but failed to include any reference to industry standards.

22.3 *Mechanical Systems & Materials* Module

The Panel noted that the module learning outcomes for the Level 5 *Mechanical Systems & Materials* module were identical to those of the Level 4 *Engineering Science* module and asked that the learning outcomes for the Level 5 module be revised.

22.4 *Programming Techniques* Module

The Panel reported to the Team that the students had queried why they were required to learn two different programming languages (Python and C). The Team stated that Python was taught on the Honours Degree at Jordanstown and C was taught at Magee, so the rationale for teaching both was to prepare students for progression at either campus. The provision being brought forward for revalidation focussed mainly on C but had retained an element of Python. The Panel encouraged the Team to explain to students why certain aspects of content, such as the two programming languages, had been included in the provision in terms of how they would be useful in the workplace.

22.5 Group Work

The Panel enquired if there were opportunities for students to work in groups. The Team stated that there was not a large amount of group work, but that some modules included group assignments. The Panel encouraged the Team to create more opportunities for students to engage in group work.

23 ASSESSMENT

Following on from the meeting with students where the issue of overassessment had been raised, the Panel sought the Team's view on the volume of assessment within the two programmes. The Team stated that for revalidation a number of 10-credit point modules had been increased to 20-point modules and that there were now two pieces of assessment per module, in line with the University's Curriculum Design Principles. The Chair of the Panel pointed out that in many of the module descriptions, a number of pieces of assessment had been included under one heading 'Coursework'. [Note: the Team has been asked by the University's Academic Office to review the assessment and how it has been presented in the module descriptions, and provide a rationale where a module has more than two pieces of assessment.]

24 FEEDBACK

The Panel reported that the students had stated that they would welcome the opportunity to review their marked end of term class tests and examinations and suggested that the VLE be used for this. The Team advised that students could request feedback individually, but agreed to consider how more comprehensive feedback for class tests and examination scripts might be given.

25 WORK-BASED LEARNING

The Panel noted that there was very little information included in the revalidation document about the work-based learning element of the provision and asked the Team to elaborate. The Team explained that each year staff contacted companies to seek placement

opportunities for students. The Panel enquired how an equitable experience was assured for all students. The Panel was advised that a work-based learning handbook had been developed and College staff liaised closely with companies to ensure they were aware of the required learning outcomes and to agree a suitable project for the student to undertake. An Industrial Supervisor was appointed by the work-based learning provider to act as the student's workplace mentor and prior to commencing the placement, the student met with the Industrial Supervisor. A tripartitie arrangement was in place between the student, Industrial Supervisor and College staff and students were visited regularly by College staff whilst on placement. The Panel highlighted the importance of ensuring students undertook the correct type of placement as those who progressed to an Honours Degree at the University would be exempt from the placement year.

The Panel enquired what type of projects students would have the opportunity to undertake and was informed that projects varied from company to company. As the part-time HLA students would already have been employed by the company for two years prior to undertaking the work-based learning element of the Foundation Degree, their projects might differ to those carried out by the full-time students. Students could be involved in undertaking a project on their own or might have a role in a larger project. The Panel was given an example of how a full-time student on the FdEng Electrical and Electronic course and a student on FdEng Mechanical and Manufacturing had worked together on placement at MMS in Toome to carry out a project which involved designing an assembly line for putting tyres on wheels.

The Panel noted that it was not clear in the *Work-Based Learning* module description how the placement was assessed and asked the Team to outline the assessment requirements. The Team explained that students would be assessed through feedback from the employer (worth 10%), a presentation (worth 10%) and a report. The assessment criteria was the same for full-time and part-time students.

26 RESOURCES

The Panel enquired if the Team was of the view that the programmes were adequately resourced. The Team was content with the resources in place to support the provision and advised that IT infrastructure had been renewed in recent years, which had resulted in increased usage of the VLE. The Team included a Digital Learning Advisor who trained staff in the use of the VLE and made them aware of new resources. The Team explained that the VLE was used to disseminate information, for discussion forums and for online submission and marking of coursework. The Team stated that it would be useful for students to have a large communal area where they could work in the evenings if classrooms were being used for teaching.

The Panel also enquired if the Library resources were adequate as a number of the module reading lists appeared dated. The Team confirmed that all of the texts on the reading lists were available, in addition to digital resources and a large range of e-books. Students tended to purchase their own copies of text books, particularly for subjects such as mathematics.

27 STUDENT SUPPORT

The Panel enquired what student support was available and was informed that each member of staff was responsible for providing support to an assigned group of students.

The Team stated that, as the groups were small, staff were able to build up a relationship with the students and any students who missed a class were contacted.

The Panel was impressed with how some lessons were recorded for students to review later. The Team stated that this was particularly useful for more difficult content, such as the *Engineering Mathematics* module.

28 SOCIETIES AND CLUBS

In response to a question from the Panel regarding societies and clubs for Engineering students, the Team confirmed that there were not currently any in the College. Students were however encouraged to take part in extra-curricular activities such as WorldSkills UK and industrial visits.

29 PROFESSIONAL BODIES

The Panel noted that there were no references in the revalidation documentation to Engineering Councils, professional registration or Continuing Professional Development requirements and enquired if students were aware of how to progress in their engineering career. The Team assured the Panel that this was addressed in the *Professional Studies, Quality & BIT* module.

The Panel enquired if consideration had been given to seeking professional accreditation for the programmes. The Team stated that guidance on this process would be welcomed and the Faculty Partnership Manager offered to work with the Team to investigate opportunities for accreditation.

30 CONCLUSIONS

The Panel commended the Team on the following aspects of the provision:

(i) the level of engagement with small businesses and the way in which an entrepreneurial approach is encouraged;

(ii) the physical resources which provide an excellent learning environment;

(iii) the blended learning support, including the use of supporting videos for difficult subject matter;

(iv) the pastoral care and support provided for students;

(v) the industrial background and teaching experience of the Subject Team;

(vi) the inclusion of electrical material at Level 5 of the FdEng Mechanical and Manufacturing Engineering programme;

(vii) the ongoing involvement in competitions such as Worldskills.

The Panel agreed to recommend to the Academic Standards and Quality Enhancement Committee that the programmes be approved for a period of five years (intakes 2019/20 – 2023/24), subject to the condition and recommendations of the Panel being addressed,

and a satisfactory response and revised submission being forwarded to the Academic Office by 28 January 2019 for approval by the Chair of the Panel.

Condition

That all of the points raised by the Academic Office in the Appendix be addressed.

Recommendations

(i) that a robust review of marketing and recruitment activities be carried out, drawing upon all available resources, in order to satisfy the Team that the projected intake of a minimum of 15 students is achievable (Section 3);

(ii) (a) that a formal Industrial Advisory Board comprising local employers, which meets three times per annum, be established to advise on the curriculum and matters such as marketing and work based learning (Section 9);

(b) that a more focussed discussion around progression routes to Ulster University Honours degrees, particularly for part-time students, be held with University colleagues (Section 7);

(iii) that the Team work with the Faculty Partnership Manager to revise the Work-based Learning module description in line with the generic Level 5 Work-based Learning module description template developed by the University's Faculty of Computing, Engineering and the Built Environment, and that the assessment of this module be reviewed (Section 25);

(iv) that opportunities to gain professional accreditation for the programmes be explored (Section 29);

(v) that the module reading lists be revised to ensure that they are up-to-date (Section 26);

(vi) that female graduates of the programmes be encouraged to act as ambassadors to promote the provision to the female market (Section 20);

(vii) that involvement in competitions be used as an opportunity to establish clubs and societies (Sections 18 & 28).

31 APPRECIATION

The Chair of the Panel thanked the College staff for their hospitality and the Panel members for their valuable contribution to the revalidation process. The Panel was also thanked by the Revalidation Unit Co-ordinator on behalf of the College.