

ULSTER UNIVERSITY

REPORT OF A MEETING OF THE REVALIDATION PANEL FOR UNIT 10B1 ENGINEERING AT SOUTH WEST COLLEGE, DUNGANNON CAMPUS

12 March 2020

PRESENT: Dr David Barr, Head of School of Education, University of Ulster
Dr Ursula Chaney, Lecturer in Nursing, Faculty of Life and Health Sciences, University of Ulster
Dr Edward Archer, Senior Lecturer, School of Engineering, University of Ulster
Mr Clifford Mayhew, School of Electronics and Electrical Engineering, Liverpool John Moore's University
Mr Martyn Jones, Senior Lecturer in Mechanical Engineering, Glyndwr Wrexham University
Mr Marius McBrien, SWC Student Representative

IN ATTENDANCE: Dr Michaela Keenan, Associate Dean (Education) Faculty of Computing, Engineering and the Built Environment, Ulster University
Ms D Troy, Academic Policy and Standards Officer, Academic Office, Ulster University

1 BACKGROUND/INTRODUCTION

The panel was convened to consider the following provision.

- FdEng Engineering (with specialisms in Mechatronic and Manufacturing Engineering) (with CertHE exit award) (FT/PT) (Omagh/Dungannon campuses)

The programme is offered in full-time and part-time modes over 2 years (4 semesters) and 3 years (6 semesters) respectively. Normal part-time mode has replaced the previous 2Y3S model in the revised programme. A part-time accelerated route delivered over 2.5 years (7 semesters) is also available for students undertaking the course through the Higher Level Apprenticeship (HLA) model.

The course comprises 240 credit points at Levels 4 and 5 and includes 40 credit points of work based learning. The first year is common to both specialisms. In year two, students undertake 40 credit points at Level 5 in their choice of specialism - either Introduction to Operations Management *and* DFM and DMAIC Implementation if choosing to follow the Manufacturing pathway; or Electrical Systems *and* Programmable Logic Controllers for the Mechatronic Engineering pathway.

The course articulates to three programmes at Ulster – BEng Hons Mechatronic Engineering, BEng Hons Mechanical and Manufacturing Engineering; and BEng Hons Engineering Management.

A CertHE exit award is available for students who exit early having completed 120 credit points at Level 4.

2 DOCUMENTATION

The Panel received the following documentation:

1. Course submission;
2. Guidelines for Evaluation and Revalidation Panels;
3. UK Quality Code's Benchmark Statements for Engineering (2019) and Foundation degree Characteristics Statement (2015);
4. External Examiner reports for past two years;
5. Preliminary comments from Faculty Partnership Manager (CA4);
6. Preliminary comments from Panel members (CA7).

3 MEETING WITH SENIOR MANAGEMENT TEAM

3.1 Background and Rationale

The Panel asked the Senior Team to provide details of how this programme fitted within the College's wider provision and was advised that it was an important part of a portfolio of 19 Ulster validated Foundation Degrees offered by the College. The Mid-Ulster area was one of the world leaders in heavy plant engineering and there was, therefore, significant local industry demand for this Level 5 course which was meeting this need. The programme had continually developed to meet the changing needs of both employers in the industry and the field of engineering which both future proofed the course and local employers.

3.2 Professional Accreditation

The Panel enquired if the College had any intention to seek professional accreditation for the programme and was advised that the six broad principles of the Engineering Council were already built into the course and this prepared students well for progression to accredited Ulster programmes. The aspiration would be for FdSc students to be eligible for EngTech status.

3.3 Industry Advisory Board

The Senior Team provided some additional information on the Industry Advisory Board which comprised representatives from across local and international companies, sectoral partnerships and College academic staff. It met at least once a year with a number of sub-groups meeting more frequently. The Board very much informed the design of the curriculum for the revalidation and on an ongoing basis and also provided placement opportunities and work-based projects. Many of the teaching team were involved in industry projects which assisted with employer engagement and kept their knowledge and skills current.

The College was also starting to increase its engagement with Knowledge Transfer Partnerships (KTPs) and was the largest provider of Higher Level Apprenticeships (HLAs) in the NI sector.

3.4 Staff Development

The Senior Team advised the Panel that staff were kept current through employer engagement but more formally through an established staff development policy in the College. Over and above Faculty staff development budgets, a dedicated Higher Education Professional Development Fund was available for staff to undertake MSc and PhD study or other relevant further training.

The College was very supportive of and proactive in all forms staff development and the importance of staff skills remaining current in an ever-changing industry environment. This was also essential for the student learning experience and informing the curriculum and developing authentic assessments.

The College also had a number of very successful partnerships globally which were utilised for student study trips and staff industry engagement.

3.5 Student Feedback

The Panel sought clarification on how student feedback was collected and collated to inform the curriculum and student experience. The Senior Team advised that the Quality Unit played a key role in this regard and the student voice was heard through the annual 'quality cycle' which commenced post-induction and at intervals throughout the year. Feedback was captured through focus groups, Staff Student Consultative Committees, student representatives and module evaluations and the College also participated in the National Student Survey (NSS). The College was very proactive in putting measures in place to address any issues which arose or similarly in reporting good practice and student satisfaction and strongly encouraged all students to provide feedback through all channels to help inform all aspects of the curriculum and the overall student experience.

It was noted that recent attrition rates had been high but the Panel was advised that this was not due in the main to any course issues but rather that due to local demand, some students had left to take up job opportunities. The challenges of the 2Y3S mode of the programme had also contributed but this was now being replaced by standard part-time.

Attrition rates were closely monitored on a monthly basis. A well embedded tutorial system was in place in the College and a number of interventions could be put in place for any student as required.

4 MEETING WITH STUDENTS

The Panel met with a group of ten students from across both pathways and modes of study. During discussions the following was noted:

- The course was relevant and students were able to apply the knowledge and skills developed in a work setting.
- There was a good depth of coverage in a wide range of subject areas.
- There was a good spread of modules and the CAD module had been particularly beneficial to some.
- The Work Based Learning module was invaluable in gaining practical experience and building employability skills and many gained job opportunities as a result.
- Full-time and part-time student cohorts were separate although both studied the same modules albeit in a different sequence.
- All students felt well supported both academically and otherwise – this was through structured tutorials, personal mentors, studies advisers and academic staff.
- Staff were very supportive and provided assistance and guidance to all students in a proactive and timely manner. This was facilitated further by the small cohort sizes.
- The student voice was heard and this was evidenced by action.
- Feedback was provided in writing and students confirmed that the turnaround time was always adhered to. Feedback was useful and showed students where they had performed well and how they could improve going forward.
- Marking schemes were provided for all modules so students were clear of the requirements for all assessments and what constituted the different grades.

- Some students would like to see more general hands-on practical experience on the programme for example, CAD on-site, engines and clutches.
- The programme provided students with great insight into the Engineering sector as a whole and the very many different roles available, and of which many were not aware before starting the course.
- The students confirmed that there was little coverage of the commercial, environmental or sustainability aspects but would be beneficial on both specialisms. The commercial aspects would prepare students better for the workplace.
- Depending on their own individual interests, students had differing views on the most enjoyable elements of the programme but some noted science and design, maths and physics and practicals.
- To date, students had not been made aware of the possibilities of professional body membership but would be interested in this going forward.
- Students all felt well prepared for and supported during placement. For the number of different roles that students undertook, this worked well and catered for all interests.

The Panel thanked the students for their time and engagement and wished them well in their future studies.

5 MEETING WITH COURSE TEAM

5.1 Professional Accreditation

The Panel enquired if any consideration had been given to seeking professional accreditation for the course and was advised that the six broad aspects of AHEP3 Engineering Council professional body accreditation standards had been used as a curriculum design guide and were already mapped to the course. Level 5 students were not eligible for full engineering status but longer term, it was the intention to seek EngTech status for the Foundation Degree students. It was acknowledged that to meet professional body standards, the coursework/examination ratio may need to be reviewed but that this could be easily accommodated.

5.2 Assessment

The Course Team advised the Panel all coursework was submitted through Turnitin and the fact that the staff knew their students, any instances of plagiarism were quickly identified.

The Panel noted the workload and timing of assessments, in particular for part-time students. The Team advised that they endeavoured to ensure a spread of assessments and staggering of submission dates and that this was under constant review.

The Course Team advised the Panel that the Ulster Curriculum Design Principles had been taken on board in the programme re-design. They recognised that a number of modules departed from what was expected in relation to number of assessments and learning outcomes and required to be reviewed. In some modules, however, three pieces of assessment were entirely justified and provided opportunities for a variety of learning styles.

Students were encouraged to provide feedback on modules and assessment, including number, type, timing and relevancy, through module evaluations and all comments were considered. Early interventions would be put in place for any student who was seen to be experiencing difficulties.

The Panel queried the work based mentor's role in assessment in the Work Based Learning module and was advised that their comments were considered but as they were not academics, did not impact on the overall grade. The Panel voiced concern that the

competencies on which the work based mentor signed off, were marked on a Pass/Fail basis and had to be passed to pass the module. This required to be reviewed to ensure that the module learning outcomes clearly reflected what was required to be achieved in the module. It was noted that assessment rubrics had not been provided and would have been useful for this module in particular.

5.3 Course Structure

The Panel noted that students in some modes were required to undertake one Level 5 module prior to completing the final module at Level 4. This had implications in terms of scaffolded learning but also for the CertHE exit award. Despite the Team's explanation in relation to linkages between the modules and there being no issue in this sequencing from a student perspective, it appeared that this was being done for resourcing reasons.

The Course Team pointed out that few students exited early, most were apprentices and very motivated in completing the qualification. There was also very active buy-in from the employers.

5.4 Student Support

Given that students were required to achieve a minimum of 55% in the maths element, the Panel enquired what support was available to students in this regard. The Team confirmed that maths had been introduced earlier in the revised programme to identify the weaker students and allow for action to be taken to provide any additional support required.

Support was available to students through a number of channels in relation to, for example, Harvard Referencing, using the library and research skills, examination technique and study skills through Academic Mentors and other staff. Students had access to Athens via the College's library and were encouraged to read and reference journals. This was embedded into the written assessments.

Students were fully supported at all stages of work based learning. The majority of students were part-time on a Higher Level Apprenticeship and already in employment. Full-time students were encouraged to find their own placement, but staff were able to provide industry contacts and details of opportunities coming forward. Prior to placement, students were provided with a standard presentation and support in writing CVs, developing employability skills and interview preparation. The development of employability skills were introduced in the programme early in year one. Once a placement had been confirmed, a tripartite agreement between the College, employer and student was agreed and signed by all parties prior to commencement. Staff visited all students during placement and students were also able to contact staff at any time should any issues arise.

5.5 Peer Review

The Course Team explained how the peer review process worked in practice. A standard College peer assessment matrix contextualised to the course was used with the mark being added to the student's overall percentage. It was completed in a very open environment to ensure fairness and transparency and it was the view that it encouraged students to contribute and they enjoyed using peer review.

5.6 Contact Hours

The Panel noted different contact hours between modules and between full-time and part-time students. The Course Team advised that a standardised approach was in place and that given the large number of apprentices on the programme, subjects were broken down into

smaller pieces as from experience they had found that this was easier managed and ensured increased engagement. Contact hours had been very considered and the Team viewed as a strength of the revised programme.

Full-time and part-time students were not generally co-taught, however, the Panel suggested that the wide-ranging experience that the HLA students gained from employment and shared learning could really enhance the overall learning experience. The Course Team advised that they were already looking into asking HLA students to speak to other students in the preparation for work-based learning.

5.6 Articulation

The Course Team advised that articulation to undergraduate study at Ulster or elsewhere was relatively low (in the region of 25%). It was a very buoyant industry and given the excellent employment opportunities available to students either through the HLA or on completion of the Level 5 qualification, this was the aspiration for many students. Employers were satisfied that the FdSc produced work ready students with the skills to meet their needs. Students, however, were also equally prepared for further study if they chose to progress.

5.7 Modules

CAE and Design

The Team confirmed that the 'suitable' standard referred to the British Standards for Engineering Drawings and would be inserted into the module description.

Applied Maths

The Panel recommended that complex numbers be introduced in this module.

The Professional Engineer

The Panel recommended that some coverage of the PSRBs, engineering ethics and sustainability be included in the programme and this module seemed appropriate.

Materials and Manufacturing Processes

The Panel recommended that additional programming skills be introduced into this module to provide students with more awareness of modern electronics. The Team noted that there had been considerable discussion around this module and that the local linkage was more towards PLCs and that this was the rationale for the current content. The College was offering a number of short industry based courses and programming would be one that they would consider going forward.

DFM and DMAIC Implementation

Following discussion, there was no issue in terms of content, however, the Panel recommended that the title of this module be reviewed.

Robotics and Automation

The Panel recommended that coverage of Industry 4.0 be included. The Team advised that the module description had a wide coverage but had been made more concise so may not fully reflect what is actually covered in practice.

6 CONCLUSIONS

The Panel commended the following:

- i) Employer engagement and industry links;
- ii) The role of the Industry Advisory Board;
- iii) The overall student experience and how the student voice was heard;
- iv) The range of professional experience of the Course Team;
- v) The broad range and types of assessments;
- vi) The quality of the documentation.

The Panel agreed to recommend to the Academic Standards and Quality Enhancement Committee that the programme be approved for a period of five years (intakes 2020/21 to 2024/25 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 30 April 2020** for approval by the Chair of the Panel.

Conditions

- i) That all issues identified by the Academic Office and detailed in the appendix to the panel report are addressed;
- ii) To review the sequencing of modules in all modes of delivery to ensure that all Level 4 modules are undertaken before Level 5 (sections 4 and 5.3 refer);
- iii) To ensure that the competency standards in the Work Based Learning Module are explicit in and aligned to the module learning outcomes (section 5.2 refers);
- iv) That the overall assessment strategy is reviewed to ensure that all modules align with the Ulster Curriculum Design Principles and where they depart, that a narrative is included setting out the rationale (sections 5.2 and 5.5 refer);
- v) That the module learning outcomes are reviewed to better differentiate between levels (section 5.2 refers).

Recommendations

- i) To assure that the articulation pathway is aligned with PSRB requirements, specifically in relation to the examination/coursework ratio (sections 3.2 and 5.1 refer);
- ii) That Assessment Rubrics are developed for each individual assessment across all modules (section 5.2 refers).

7 APPRECIATION

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