

UNIVERSITY OF ULSTER

REPORT OF THE REVALIDATION PANEL MEETING FOR SUBJECT UNIT 10B3: FDENG MECHATRONIC ENGINEERING (FT/PT) AT SOUTH EASTERN REGIONAL COLLEGE (SERC) AND SOUTHERN REGIONAL COLLEGE (SRC)

26 November 2018

PANEL: Professor J McCoy, Associate Dean (Global Engagement), Ulster University Business School, Ulster University (Chair)
Dr A Brown, Associate Head of School, School of Engineering, Faculty of Computing, Engineering and the Built Environment
Dr M Tambulwala, Lecturer, School of Pharmacy, Faculty of Life and Health Sciences, Ulster University
Dr A Alaswad, Senior Lecturer, School of Engineering and the Built Environment
Dr M Jones, Lecturer in Mechanical Engineering, Wrexham Glyndwr University,
Mr R Mackey, Student Representative, South Eastern Regional College, Lisburn

IN ATTENDANCE: Mrs M Paris, Faculty Partnership Manager, Faculty of Computing, Engineering and the Built Environment
Mrs K McCafferty, Academic Policy and Standards Officer, Academic Office, Ulster University

1 INTRODUCTION

The Panel met to consider the revalidation of the FdEng in Mechatronic Engineering (with CertHE exit award) offered at South Eastern Regional College (SERC/Lisburn campus) and Southern Regional College (SRC/Newry and Portadown campuses).

The programme comprises ten 20-credit point compulsory modules and one 40-credit point Work-Based Learning module. Students attending SERC can choose to study in either full-time or part-time mode. At SRC the programme is offered on a full-time basis only at the Newry campus and on a part-time basis only at the Portadown campus. Students graduating from the FdEng in Mechatronic Engineering are eligible to apply for entry to Level 5 of the BEng Hons Mechatronic Engineering at Ulster University. The following are the minimum and maximum cohort sizes agreed by the Panel:

	Mode of Attendance	Year of 1st Intake	Year of 2nd Intake	Year of 3rd Intake	Year of 4 th Intake	Year of 5 th Intake
<u>SERC(Lisburn)</u> Maximum cohort size	FT	24	24	24	24	24
	PT	24	24	24	24	24
Minimum cohort size	FT	15	15	15	15	15
	PT	15	15	15	15	15

<u>SRC (Newry)</u> Maximum cohort size	FT	20	20	20	20	20
Minimum_cohort size	FT	15	15	15	15	15
<u>SRC (Portadown)</u> Maximum cohort size	PT	20	20	20	20	20
Minimum cohort size	PT	15	15	15	15	15

[SRC/Portadown plan to offer 2 part-time classes]

The Panel initially met with Senior Staff from both SERC and SRC to discuss such matters as industry involvement, progression opportunities, staffing and other resources. The Panel then met with two students currently studying on the programme before finally discussing the programme in detail with the Course Team.

The Panel noted from the document that the aim of the FdEng in Mechatronic Engineering was to provide students with a broad-based education, complemented by a range of skills encompassing machining, pneumatics, hydraulics and electronics. The Panel also noted the programme was relevant to local industry and prepared students for a range of technical and management careers in engineering, eg, Manufacturing Engineer, Production Engineer, Design Engineer, R & D Engineer;

2 DOCUMENTATION

The Panel received the following documentation:

- Revalidation Document
- Guidelines for Revalidation Panels
- QAA Subject Benchmark Statement for Engineering (February 2015)
- QAA Characteristics Statement, Foundation Degree (September 2015)
- External Examiners' Reports for 2016/17 and 2017/18
- Statement from the Faculty Partnership Manager (CA4)
- Preliminary comments from Panel members (CA7)

3 MEETING WITH SENIOR MANAGEMENT TEAM

3.1 Background

The Panel noted that the FdEng in Mechatronic Engineering replaced HNC/Ds previously delivered in both colleges. The programme has been very successful and student numbers good. Students have the opportunity to experience a flavour of the different types of engineering thus helping them decide on the direction they wish to follow. The programme also reflects the development of strong vocational skills and provides good links with industry. The Panel noted that the colleges had been pleased with how the Higher Level Apprenticeships (HLAs) had bedded into the foundation degree.

Recruitment to the programme through HLAs had been very strong. Students study part-time over three years and attend college one day per week. Both colleges advised the Panel that they anticipated growth in demand for the foundation degree programme.

3.2 Professional Body Accreditation

The Panel noted that professional body accreditation of the programme had not been something the colleges had considered but advised the Senior Team that securing accreditation would be beneficial to the programme and help raise its professionalism. The Panel also felt that it would enhance the marketing of the provision. The Senior Team accepted the significance of accreditation of the programme and agreed that it would be something they would explore in the future.

3.3 Progression

The Panel enquired about progression and noted students could progress to the BEng Hons Mechatronic Engineering at Ulster University. The Panel also noted that currently students must achieve an overall mark of 55% in the Level 5 modules and a minimum of 55% in all taught level 5 modules. A mark of 55% or more was also required in the Mathematics module.

3.4 Industry Consultation

The Panel enquired about industry consultation and if this had taken place during the preparation for the revalidation.

The Senior Team explained that a great deal of discussion took place between the colleges and employers. Employers had received the Programme Specification to review and provide comments. The Senior Team emphasised that employers fully understood the structure of the programme the colleges were delivering and had suggested amendments to module content.

The Panel asked what mechanism the Senior Team used to get feedback from employers and noted that generally meetings on a one to one basis were organised. This helped provide a consensus on what the programme should look like. The Panel was impressed with the strong relationships the colleges had built-up with employers and asked for examples of discussions and action points to be included in the revised document.

3.5 Staff Development

The Panel enquired about staff development and the opportunities for staff to conduct research in their subject area. The Panel heard some staff from SRC had gone out to work in the industry and that the experience and knowledge gained through working on projects would filter through to the teaching. The Panel also noted that some of the company contacts the colleges had made came in to deliver relevant training to staff. Some staff members had also gone to Berlin for training on how to teach mechatronic engineering.

The discussions also revealed that SERC had recently become the only provider on the island of Ireland of the prestigious internationally recognised 'Siemens Mechatronic Systems Certification Programme' (SMSCP).

The Senior Team stated that they adopted a strong vocational approach to staff development and encouraged staff to explore any opportunities they felt would be of benefit to them and the programme. The Panel also heard that both colleges had recently committed to HEA membership.

Looking to the future the Panel noted that plans were in place at a strategic level with aims and objectives already set out to establish how the college network envisaged the programme developing. The Senior Team stated that they were looking into at what industry wants and needs and any other ways to enhance the provision, eg, the possibility of more training on simulation.

The Panel was impressed with the pedagogic research currently undertaken in both institutions and the many examples of good practice and forward-thinking arrangements. The Panel felt that the information should be included in the revised document.

4 MEETING WITH STUDENTS

The Panel met with two students currently studying on the FdEng in Mechatronic Engineering. The following points were noted by the Panel:

Work-Based Learning Placement

- Support was provided in preparing covering letters to be sent to employers;
- Students were encouraged to organise their own placement, but the college stepped in if they were unable to secure a position;
- The work-based learning placement started in Semester 2 but search for placements began in Semester 1;
- Generally, placement was not paid but some employers covered travelling expenses or gave the student a bonus at the end of the work-based learning;
- The students felt it was better to go out and look for their own placement to try and ensure they ended up working in a company that could help them achieve their future career aspirations

Programme Structure

- The students understood that if they wished to progress to Ulster University they would enter at Level 5 and follow the 2 + 2 model
- The students also understood that they needed to achieve an average of 55% in all taught modules including Mathematics in order to progress into Year 2 of the BEng Hons in Mechatronic Engineering

Student Support

- The students stated that there was a high-level of pastoral care and that staff were very approachable
- The students had good relationships with staff and any issues they raised through the Staff/Student Consultative Committees were addressed quickly

Feedback

- Feedback after class tests was on a one-to-one basis
- Feedback was generally provided after two weeks

Resources

- The students were satisfied with the resources to support the programme including library facilities and computer access

- Students had access to all the necessary software used within the programme off-campus

5 MEETING WITH COURSE TEAM

5.1 Curriculum Design Principles

The Panel asked if Ulster University's Curriculum Design Framework had been a part of the revalidation preparation. The Course Team explained that all modules had been revised to 20-credit points and the number of learning outcomes had been reduced to four. The Course Team also explained that a review of the module assessments had been undertaken to ensure only two pieces of work were required. The Course Team assured the Panel that they had been very conscious of the curriculum design principles in the preparation of the revalidation document.

5.2 Programme Learning Outcome Map

The Panel noted there had been no distinction made between the programme learning outcomes for the Foundation Degree and the CertHE exit award. The Programme Specification did not show distinct CertHE learning outcomes. The Panel asked the Course Team to review the learning outcomes and present separate learning outcomes for the CertHE and the FdEng in the Programme Specification.

5.3 Teaching and Learning Methods

The Panel noted the programme was offered in both part-time and full-time modes and asked the Course Team if different learning styles were adopted to suit the different student profiles.

The Course Team explained that the emphasis was on making Higher Education accessible to everyone. Full-time students and part-time students were taught separately. The students experienced a blended learning environment and took advantage of the online support and learning opportunities, eg, access to software at home.

The Panel was impressed with the online access students had to software and asked the Course Team if there was any other software they would like made available to students. The Course Team stated that they would like to introduce software to allow students to program offline and experience factory simulation.

5.4 Gender Balance

The Panel noted that students on the FdEng in Mechatronic Engineering were predominately male with only 2 or 3 females in each cohort. However, the Course Team informed the Panel that they had recently signed up to 'Robogals' which was an organisation that aimed to get more females to consider engineering as a career. The Panel noted that the colleges planned to visit local schools in the next academic year to promote engineering as a career path for women.

5.5 Staff Research Opportunities

The Panel noted many of the Course Team would like to undertake some research but that getting the time to do this was an issue. Many of the staff were already members of professional bodies in the subject field and had access to current research. Having listened to the Course Team's plans for the provision the Panel felt that there were many

opportunities for pedagogic research and encouraged the staff to consider writing research papers, which would give richness to their teaching.

5.6 Work-Based Learning

The Panel acknowledged that students were encouraged to go out and find their own placements but asked what would happen if they were unable to secure a position. The Course Team explained that they asked the students to take the initiative first and seek out a placement that matched their interests and career aspirations. If the student was unable to get a placement staff had numerous company contacts the students could approach. The Panel also heard that the college had in-house companies and that students could work with if all other options for a work-based learning placement had been explored.

The Panel asked what would happen if a placement ended and a student had to go elsewhere. The Course Team informed the Panel that the collapse of placement had never happened before but that they would ensure a student found a placement quickly with another company.

The Panel noted that students met with their academic mentor once during the placement. Full-time students were required to attend college one day a week and part-time students for half a day. During this time spent in college the Panel noted that students had the opportunity to raise any issues about their placement with staff.

The Panel noted that assessment of the work-based learning involved the completion of a project and students worked on this during their weekly attendance at college. The academic supervisor assessed the work-based learning project. Students were also required to do a presentation in front of college staff and the industrial mentor.

The Panel felt the current format of the current work-based learning project could be revised and suggested a staged approach to the project with an interim point for the academic supervisor to assess the student's work, in consultation with the industrial mentor, for example, after four weeks. This would ensure a better understanding of each person's role during the work-based learning.

A suggestion from the Panel was for the project to be broken up into parts/stages, eg, submission of a project plan by week four. The Panel felt this would provide an opportunity for students to receive feedback on the progress of the project. The Panel also felt an opportunity for students to reflect on their work-based learning experience should be included.

5.7 Student Independent Learning Opportunities

The Panel queried how students developed their independent learning, had the opportunity to reflect on their work and improve their research skills.

The Course Team reassured the Panel that there was a focus on these skills throughout the programme. The Course Team explained that some of the modules involved students undertaking a particular piece of research. The students were then required to write a technical report. The Panel also noted that students were continuously encouraged to reflect on their work.

5.8 CAD Techniques / CAD/CAM

The Panel noted that the first piece of assessment in the above two modules had a heavy percentage weighting and was set early in the semester. The Course Team stated that they

had recently recognised this was an issue and advised the Panel that they had decided to move the submission week for the assessment to week 11.

The Panel also commented on the inclusion of an 'FEA' learning outcome in the 'CAD Techniques' module and suggested that it should be taken out and taught in Year 2 of the programme.

5.9 Business Improvement Techniques (BIT)

The Panel noted that the description of the two pieces of assessment in the BIT module were identical and asked the Course Team to differentiate between the assessment requirements.

5.10 Reading Lists

The Panel felt that many of the reading lists were out of date and asked for a review of all material to ensure the most current editions are provided to students.

5.11 Industry 4.0

The Panel appreciated that one module mentioned 'Industry 4.0' but felt that a more visible reference should appear in the document. The Panel also felt that 'Industry 4.0' should be included in the student handbook so that students could refer to it in their covering letters when looking for a placement.

6 CONDITIONS AND RECOMMENDATIONS

The Panel commended the Course Team on the following:

- The strong pastoral care and support provided to students and the student-centred nature of the provision;
- The collaborative approach to delivery of the programme across the network;
- The wealth of industry experience as evidenced in the CVs;
- The management of the Work-Based Learning module;
- The Virtual Desktop in providing students with the ability to access resources at any time.

The Panel agreed to recommend to the Academic Standards and Quality Enhancement Committee that the provision be approved for a further 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 26 February 2019 for approval by the Chair of the Panel.

Conditions

- (i) That the Course Team introduce a staged approach to the Work-Based Learning Project Report, for example, an interim report after four weeks;
- (ii) That SRC provide a staff teaching list for the programmes being taught (FT/PT) at Newry and Portadown campuses to ensure the University is content with the level of staff resources to support delivery of the provision;
- (ii) that the regulatory and standards matters identified by the Academic Office be addressed (appendix).

Recommendations

- (i) That the Course Team consider introducing more contact opportunities with students on Work-Based Learning placements through additional visits or skype calls, etc;
- (ii) That the Course Team explore future technologies and showcase what is currently being undertaken in relation to the subject area and how best to describe the provision on offer to students;
- (iii) That the Course Team move Learning Outcome 4 (which refers to FEA) from the CAD Techniques module and include in Year 2 of the programme.

APPRECIATION

The Chair thanked all the members of the Panel and in particular, the external members, for their valuable contributions to the revalidation exercise.