

## Programmatic Review of the School of Science 2016

### Phase 2: Programme Review

# PROGRAMME PANEL REPORT

SCHOOL: School of Science  
DEPARTMENT: Department of Biological Sciences  
DATE: March 28 – 29<sup>th</sup> 2017

## PROGRAMMES SUBMITTED FOR REVIEW

### **Major Awards**

Bachelor of Science (Honours) in Biomedical Science

### **Non-Major Awards**

Diploma in Clinical Laboratory Practice

## PROGRAMME REVIEW PANEL MEMBERSHIP

Dr Eleanor Rainsford, Lecturer, Galway-Mayo Institute of Technology (Chairperson)  
Mr Colm O'Rourke, Senior Lecturer (retired), Dublin Institute of Technology  
Mr Brendan O'Reilly, Laboratory Manager, Cork University Hospital  
Mr Don O'Connor, Laboratory Manager, Portiuncula Hospital  
Dr Stephen Cassidy, Dean of Academic Quality Enhancement, Cork Institute of Technology

## PROGRAMME REPRESENTATION

### **Programme Staff**

Dr Brendan O'Connell, Head of Department, Department of Biological Sciences, CIT  
Dr Lesley Cotter, Department of Biological Sciences, CIT  
Dr Sinead Kerins, School of Biochemistry and Cell Biology, UCC (Deputy Course Director)  
Dr Collette Hand, Department of Pathology, UCC  
Mr Michael Healy, Department of Biological Sciences, CIT (Course Director)  
Dr Brigid Lucey, Department of Biological Sciences, CIT  
Dr John Morgan, School of Microbiology, UCC  
Dr Fiona O'Halloran, Department of Biological Sciences, CIT

### **Learner Representatives**

Muireann Hickey, Stage 1, Bachelor of Science (Honours) in Biomedical Science

James Harte, Stage 2, Bachelor of Science (Honours) in Biomedical Science

Dawn Keyes, Stage 3, Bachelor of Science (Honours) in Biomedical Science

Ciaran O Halloran, Stage 4, Bachelor of Science (Honours) in Biomedical Science

Faye Morton, Stage 4, Bachelor of Science (Honours) in Biomedical Science

Stephanie Bradley, Cork University Hospital, Diploma in Clinical Laboratory Practice

Julianne O Connell, Mercy University Hospital, Diploma in Clinical Laboratory Practice

David Leen, Bon Secours Hospital, Cork, Diploma in Clinical Laboratory Practice

### **Graduates**

James O Connor, 2013, Medical Scientist, Mercy University Hospital

Caoimhe Lynch, 2015, PhD student, CIT

Kate Hayes, 2014, PhD student, CIT

Mary Claire O Grady, 2014, Medical Scientist, Cork University Hospital,

Andrew Evans, 2013, Medical Scientist, Cork University Hospital

### **External Stakeholders**

Mr. Pdraig O Sullivan, Senior Medical Scientist, Blood Transfusion, Cork University Hospital

Ms Eithne Barden, Medical Laboratory Scientist, Mercy University Hospital

Ms Sinead Daly, Laboratory Services Manager, Department of Pathology, Bon Secours Hospital,  
Cork

## PROGRAMME SUMMARY AND MAJOR CHANGES PROPOSED

### 1. HONOURS BACHELOR OF SCIENCE IN BIOMEDICAL SCIENCE

#### 1.1. Programme Summary

Biomedical Science education has a long tradition in Cork Institute of Technology (CIT) beginning in the early 1970s. The collaboration with University College Cork (UCC) in the early 1990s led to the development of a Bachelor of Science (Honours) in Biomedical Science for graduates of the CIT Certificate in Medical laboratory Science (later level 7 Bachelor of Science in Biomedical Science) and for third year students from the common Chemical and Biological Sciences entry in UCC. In 2009, the *ab initio* joint Honours Bachelor of Science in Biomedical Science (CR320) commenced, and the first graduation was in 2013. The programme has been accredited since 2013 by following the professional bodies; the Academy of Clinical Science and Laboratory Medicine (ACSLM) Ireland, and the Institute of Biomedical Sciences (IBMS) United Kingdom. This is the first programmatic review of this programme.

#### 1.2. Major Changes Now Proposed

Since 2009, the programme has undergone a number of revisions arising from professional accreditation review by The Academy of Clinical Science and Laboratory Medicine (ACSLM) and the Institute of Biomedical Science (IBMS). In 2016, the UCC modules were subjected to internal review during the university semesterisation process. In addition some minor modifications to the CIT modules were facilitated through internal module amendment procedures.

Giving regard to the stakeholder feedback, including graduates, employers and external examiners, the current programme was deemed to be preparing the graduates well for their future careers as Medical Scientists. In addition the programme provides graduates with a sufficiently broad scientific base in order to diversify and acquire employment elsewhere such as in research or industry.

However, an identified deficit within the programme was an absence of an awareness of the responsibilities and ethical issues of working as a Medical Scientist in a pathology service. The impending introduction of mandatory state registration of all practicing Medical Scientists by CORU (Health & Social Care Professionals Council) is a further driver of a need for addressing this deficit. To this end, a new module “Research and Professionalism” has been introduced into the programme in semester 6 to replace the existing “Research Methods in Biomedical Science” module. The new module content has retained a substantial amount of the research content of

the old module but has incorporated a significant emphasis on professionalism in biomedical science.

All other Biomedical Science modules on the programme coordinated by CIT were reviewed and updated to

- Reflect discipline specific advances since 2009 in changes to indicative contents
- Refine and update learning outcomes so they better reflect module content
- Make minor modifications to assessment load so as to relieve assessment workload on students
- Update resources on all modules.

## 2. DIPLOMA IN CLINICAL LABORATORY PRACTICE

### 2.1. Programme Summary

With the introduction of the joint CIT/UCC BSc (Honours) in Biomedical Science (CR320) it was decided to offer the Clinical Placement programme as a distinct award (in the previous programme the placement was an integral component of the course). The rationale for this decision was based primarily upon the changes and reconfiguration occurring in Pathology Laboratories within the Irish Health sector. Also it was recognised that a significant number of the Biomedical Science graduates were opting for career paths other than the Medical Scientist profession.

The Diploma in Clinical Laboratory Practice Programme was thereby proposed and validated by Cork Institute of Technology in 2013 as a Special Purpose Award for those who completed the Bachelor of Science (Honours) in Biomedical Science (CR320) and wished to undertake a clinical placement training in an accredited hospital Pathology Laboratory for the purpose of training to qualify as a Medical Scientist.

The programme commenced in the academic year 2013/2014. The primary aim of the programme is to ensure that students achieve the high level of practical competence required to practice as Medical Scientists in the hospital laboratory or allied diagnostic services. The clinical placement is conducted in a designated ISO15189 accredited training laboratory. Each student spends a minimum of seven weeks' duration in each of the five main disciplines of Biomedical Science, namely, Biochemistry, Haematology, Histopathology, Microbiology and Transfusion. In addition, students may spend some time in other laboratory areas, such as the Quality Assurance,

Haemovigilance, Immunology, Serology, Molecular Diagnostics and at the Irish Blood Transfusion Service.

The Diploma in Clinical Laboratory Practice is a 60 credit programme offered over 2 semesters from September to December (Internship Clinical Placement 1) and January to May (Internship Clinical Placement 2). This Diploma is a level 8 programme awarded by Cork Institute of Technology and is accredited by both the Academy of Clinical Medicine and Laboratory Science, Ireland and the Institute of Biomedical Science, UK as a requirement in addition to the BSc (Honours) Biomedical Science Programme (CR320) to practice as a Medical Scientist. This is the first programmatic review of this programme.

## **2.2. Major Changes Now Proposed**

Following feedback from the stakeholders (current graduates, recent graduates, the employers and the external examiner) some modifications to the indicative content of the programme have been included. The changes primarily relate to including a case study option as part of their training and to expanding the choice when it comes to performing laboratory projects so that this exercise is not restricted to a wet based biomedical science laboratory practical project.

An issue raised during the review process related to the inclusion of a reflective element during the course of the training relating to the professionalism required to practice as a Medical Scientist. This has been proposed as a change going forward.

Some additional issues raised by the stakeholders relate to providing more knowledge and skills to the students during the BSc (Honours) in Biomedical Science programme which would make the transition to the Diploma in Clinical Laboratory Practice training program more meaningful and less arduous for the students have been addressed as part of the programmatic review of the undergraduate programme.

## A. PANEL FINDINGS AND RECOMMENDATIONS

### 1. OVERALL RECOMMENDATION TO ACADEMIC COUNCIL ON REVALIDATION

Contingent upon confirmation of the successful completion of the internal programme and module moderation process, the Panel **recommends to Academic Council that the programmes listed above be revalidated** for a further five years or until the next Programmatic Review, whichever is sooner, with effect from 1 September 2017.

Other than Registrar's Office approval of the programme and module specifications on conclusion of internal moderation, no conditions are attached to this recommendation.

### 2. GENERAL

2.1. **Commendation:** The Panel **commends** the commitment of the academic staff to the Programmatic Review process evidenced by the detailed analysis and reflection underpinning the self-review of their programmes, the quality of documentation submitted and the professional manner in which they engaged with the review panel throughout the visit.

### 3. ENTRANT AND GRADUATE PROFILE, AWARD AND PROFESSIONAL ENVIRONMENT

3.1 Entrants to the Honours Bachelor of Science programme are high achieving students who typically have achieved CAO points in the region of 550 points. The majority have undertaken a number of science subjects as part of their second level studies. On completion of their studies, most graduates take up roles as Medical Scientists on completion of the associated Diploma award. A smaller number of graduates opt to go into industry whilst a number of graduates undertake postgraduate research studies, typically at doctoral level, either in full-time or part-time mode.

3.2 Entrants to the Diploma in Clinical Laboratory Practice hold an honours degree in Biomedical Science. On successful completion of the programme, graduates are deemed to meet the professional requirements of the Academy of Clinical Medicine and Laboratory Science, Ireland and the Institute of Biomedical Science, UK are thus work as a Medical Scientist.

### 4. PROGRAMME OPERATION AND PERFORMANCE

#### HONOURS BACHELOR OF SCIENCE IN BIOMEDICAL SCIENCE

4.1 **Commendation:** The panel **commends** the work of the programme team for the support they provide to their students. Clear evidence was presented to the panel of the work being done in the area of student success. This work included Institute and Departmental initiatives such as Good Start, Just Ask, PALS, Academic Learning Centre etc.

4.2 **Commendation:** The panel **commends** the Department on the operation of their programme in terms of student recruitment, retention and graduation rates.

- 4.3 **Commendation:** The panel **commends** the programme team on their evident commitment to the joint undergraduate programme and its students. The programme, operates across two Institutes with differing academic calendars, MIS systems etc., resulting in logistical issues in areas such as timetabling, student records and result processing. The programme team have developed a number of manual interventions and work-arounds to ameliorate the effects of these issues on the students of the programme.
- 4.4 **Recommendation:** The panel **recommends** that the two Institutes through the Joint Operations Group would seek to develop more streamlined administrative processes for the operation of the joint programme to enhance the student experience and to lessen the administrative workload on the programme team.

## 5. PROPOSED PROGRAMME SPECIFICATION (INCL. DELIVERY AND ASSESSMENT)

### HONOURS BACHELOR OF SCIENCE IN BIOMEDICAL SCIENCE

- 5.1 **Commendation:** The panel **commends** the programme team for the use of fully coursework assessed modules in early semesters of the joint programme. The panel believes that these coursework elements develop core practical skills required by the graduate of this programme as well as supporting the student transitioning into third level education.
- 5.2 **Recommendation:** The panel **recommends** that the joint programme team consider how key professional skills such as reflective practice, teamwork, presentation and IT skills may be more formally developed and assessed through the programme.
- 5.3 **Recommendation:** The panel **recommends** that the programme team consider the use of guest speakers to support the delivery of modules. Topics such as Quality Management and Point of Care for example may be made more relevant to students when delivered by practitioners working in a laboratory environment.
- 5.4 **Recommendation:** The panel **recommends** that the programme team include a number of site visits to a hospital laboratory in the programme. Visits early in the programme would introduce students generally to the laboratory environment and the role of the medical scientist. Visits later in the programme may introduce students to more specialist laboratories, their equipment and procedures.
- 5.5 **Recommendation:** The panel notes that graduates of the joint undergraduate programme must have developed critical practical skills and competencies to work professional in a medical laboratory setting. In similar programmes, ensuring that graduates of the programme have these key practical skills is confirmed by the use of failed element requirements. Through this requirement, students may not pass modules containing a mixture of practical and written assessments without achieving a minimum standard in the practical assessment element. The panel notes that the CIT modular framework considers a module to a singular educational entity not amenable to further sub-division into component elements. The programme team were aware of modules within UCC which operated a failed element policy. They noted that the operation of this policy placed a large administrative burden on the lecturers involved to ensure that students were made aware of their performance in the practical laboratories throughout the semester. Students who were underperforming and at risk of not meeting the minimum standard were formally notified by letter to both home and term address in sufficient time for them to address the issue. Additionally, supplementary assessment procedures needed to be put in place for

students who missed laboratory elements due to verified extenuating circumstances. The programme team who currently monitor closely student performance are satisfied that graduates of the programme are developing the necessary practical skills required of the medical scientist. This view was confirmed when, in discussion with the panel, employers stated they were happy with the practical skills of the graduates. The panel **recommends** that the programme team continue to ensure the graduates of the programme have the necessary practical skills required of the medical scientist.

- 5.6 **Recommendation:** The panel notes the majority of modules contain formative assessment elements to support student learning during the module. In a small number of modules, the assessment of the module consisted of a single summative assessment event at the end of the semester. The panel **recommends** that the programme team review all modules within the programme to ensure that each contains at least one assessment element during the semester from which the student receives feedback in relation to his/her performance.
- 5.7 **Recommendation:** The panel is complementary of the format and style of the CIT module descriptor which captures key information such as module resources and detailed descriptions regarding the nature and timing of assessments. This assessment timing data may then be collated into an overall assessment matrix for a given semester allowing both the programme team and students to see if there are particular times during the semester when assessment overload and conflicts may potentially be happening. The panel also note that the offset nature of the two academic calendars has the potential to lead to more uncertainty regarding assessment timing. The panel **recommends** that the programme team develop and publish an overall assessment schedule for each semester of the programme. The appropriate schedule should then be given to students prior at the commencement of the semester to facilitate them in prioritising their effort.
- 5.8 **Recommendation:** The panel **recommends** that the programme team consider swapping the Stage 4 Virology and Stage 3 Medical Microbiology modules.

## DIPLOMA IN CLINICAL LABORATORY PRACTICE

- 5.9 **Recommendation:** The panel **recommends** that the programme team look to further strengthen the induction programme offered to entrants to this programme to prepare them for working in an accredited laboratory. The programme team might consult with its industry partners how they might also support this induction process.
- 5.10 **Recommendation:** The panel **recommends** that the programme team look to develop a training log which would capture expected student learning whilst on placement. This training log would capture both core competencies which each student, regardless of placement location, should achieve as well as allowing additional competencies achieved to be listed. These additional competencies may vary from student to student due to the nature and discipline of the placement undertaken and the laboratory in which the placement occurred. This training log would also be useful for workplace mentors to assist them in supporting the student placement.

## 6. MODULES

This section presents the findings and recommendations from an indicative review of modules carried out by the members of the Peer Review Panel. The Panel notes that the UCC modules on the programme were previously reviewed and approved as part of a UCC Semesterisation review.

The recommendation of the Panel to revalidate the programmes under review is contingent on the successful completion of the subsequent internal module moderation process carried out by, or on behalf of, the respective Registrars' Office.

**6.1 Recommendation:** The panel is happy to support the inclusion of the new Research and Professionalism practice to address the professional responsibilities and ethical requirements of the Medical Scientist. The panel **recommends** that Research and Professional Practice may be a more appropriate title for this module. The panel notes that they are a number of resources on the relevant professional body websites which would support this module. Furthermore, guest speakers and appropriate use of case studies might also benefit the delivery of this module.

**6.2 Recommendation:** The panel **recommends** that format and language of module learning outcomes be reviewed to ensure they are consistent with recommended practice.

### DIPLOMA IN CLINICAL LABORATORY PRACTICE

**6.3** The panel is happy to support the proposal that the nature of the project in module Intern Clinical Placement 2 be expanded to include a range of project modalities such as audit, data set analysis etc.

## 7. DEROGATIONS SOUGHT

The panel supports the following the derogation request.

**7.1** Due to professional accreditation requirements, derogation from Free Choice is sought for the Honours Bachelor of Science in Biomedical Science.

## B. PROGRAMME FINALISATION

### 1. IMPLEMENTATION OF PANEL REQUIREMENTS

#### HONOURS BACHELOR OF SCIENCE IN BIOMEDICAL SCIENCE

Ref	Recommendation	Response
<b>4</b>	<b>Programme Operation and Performance</b>	
4.4	The panel <b>recommends</b> that the two Institutes through the Joint Operations Group would seek to develop more streamlined administrative processes for the operation of the joint programme to enhance the student experience and to lessen the administrative workload on the programme team.	The program team welcomes this recommendation and the Head of Department will contact the CIT-UCC Joint Board to progress this proposal.
<b>5</b>	<b>Proposed Programme Specification (incl. Delivery and Assessment)</b>	
5.2	<b>Recommendation:</b> The panel <b>recommends</b> that the joint programme team consider how key professional skills such as reflective practice, teamwork, presentation and IT skills may be more formally developed and assessed through the programme.	The outlined professional skills to be incorporated in Creativity Innovation and Teamwork module and the Professionalism and Research module. In addition the programme team will focus on integrating the skills into other relevant modules.
5.3	<b>Recommendation:</b> The panel <b>recommends</b> that the programme team consider the use of guest speakers to support the delivery of modules. Topics such as Quality Management and Point of Care for example may be made more relevant to students when delivered by practitioners working in a laboratory environment.	The programme teams welcomes this suggestion and will invite guest speakers to support the delivery of modules.
5.4	<b>Recommendation:</b> The panel <b>recommends</b> that the programme team include a number of site visits to a hospital laboratory in the programme. Visits early in the programme would introduce students generally to the laboratory environment and the role of the medical scientist. Visits later in the programme may introduce students to more specialist laboratories, their equipment and procedures.	Visits to Pathology centres to be organised in years 1 and 4, to address this recommendation.
5.5	<b>Recommendation:</b> The panel notes that graduates of the joint undergraduate programme must have developed critical practical skills and competencies to work professional in a medical laboratory setting. The panel <b>recommends</b> that the programme team continue to ensure the graduates of the programme have the necessary practical skills required of the medical scientist.	The programme team will continue to monitor the graduates of the programme to ensure that they have the necessary practical skills required.
5.6	<b>Recommendation:</b> The panel <b>recommends</b> that the programme team review all modules within the programme to ensure that each contains at least one	Board of Studies to conduct a review of same.

	assessment element during the semester from which the student receives feedback in relation to his/her performance.	
5.7	<b>Recommendation:</b> The panel <b>recommends</b> that the programme team develop and publish an overall assessment schedule for each semester of the programme. The appropriate schedule should then be given to students prior at the commencement of the semester to facilitate them in prioritising their effort.	The programme team will develop and publish an overall assessment schedule for each semester of the programme. An overall assessment matrix for a given semester will be given to the students.
5.8	<b>Recommendation:</b> The panel <b>recommends</b> that the programme team consider swapping the Stage 4 Virology and Stage 3 Medical Microbiology modules.	Board of Studies to consider same in the context of shared delivery across multiple programmes
6	<b>Modules</b>	
6.1	<b>Recommendation:</b> The panel is happy to support the inclusion of the new Research and Professionalism practice to address the professional responsibilities and ethical requirements of the Medical Scientist. The panel recommends that Research and Professional Practice may be a more appropriate title for this module. The panel notes that they are a number of resources on the relevant professional body websites which would support this module. Furthermore, guest speakers and appropriate use of case studies might also benefit the delivery of this module.	The programme team welcomes this recommendation
6.2	<b>Recommendation:</b> The panel recommends that format and language of module learning outcomes be reviewed to ensure they are consistent with recommended practice.	The programme team welcomes this recommendation

## DIPLOMA IN CLINICAL LABORATORY PRACTICE

Ref	Recommendation	Response
<b>5</b>	<b>Proposed Programme Specification (incl. Delivery and Assessment)</b>	
5.9	<b>Recommendation:</b> The panel <b>recommends</b> that the programme team look to further strengthen the induction programme offered to entrants to this programme to prepare them for working in an accredited laboratory. The programme team might consult with its industry partners how they might also support this induction process.	The programme team with the assistance of our clinical partners will identify initiatives that can be employed to strengthen the induction of the students.
5.10	<b>Recommendation:</b> The panel <b>recommends</b> that the programme team look to develop a training log which	This recommendation will be introduced for the next academic year

	would capture expected student learning whilst on placement.	
<b>6</b>	<b>Modules</b>	
6.3	The panel is happy to support the proposal that the nature of the project in module Intern Clinical Placement 2 be expanded to include a range of project modalities such as audit, data set analysis etc.	This recommendation will be introduced for the next academic year

## 2. MODULE AND PROGRAMME MODERATION

Module and programme descriptors have been amended in line with feedback from the panel and module moderator. The module and programme descriptors are proposed for adoption by Academic Council.

Modules from the Department of Physical Sciences delivered on these programmes were not updated. They must be reviewed as part of the department's forthcoming programmatic review.

## C. APPENDIX – TIMETABLE OF PHASE 2 MEETINGS

### Programmatic Review of the School of Science & Informatics

(March 28-29, 2017)

Department of Biological Sciences - Biomedical Science Programmes

<b>Day One Conference Room, Admin Building</b>	
11.00 to 11.30 pm	Private Panel Meeting including presentation by Registrar's Office
11.30 to 12.00pm	Department Overview Presentation / Discussion
12.00 to 12.30pm	Departmental Research Overview - Links to Teaching
12.30 to 1.30 pm	<b>Private Panel Lunch</b>
1.30 to 3.00 pm	Meeting with Dept. Teams re Programme Operation and Performance
3.00 to 3.30 pm	<b>Private Panel Meeting (Tea/Coffee)</b>
3.30 to 5.00 pm	Meet with Dept. Teams re Proposed Changes to Programme Structures
5.00 to 5.30 pm	Meet with Recent Graduates
5.30 to 6.00 pm	Meet with Employers
8pm	Panel Dinner
<b>Day Two Conference Room, Admin Building</b>	
9.00 to 9.15 am	Private Panel Meeting - emerging themes
9.15 to 10.15 am	Meet with Students
10.15 to 10.45 am	<b>Private Panel Meeting (Tea/Coffee)</b>
10.45 am to 12.30 pm	Meet with Dept. Teams re General Review of Modules
12.30 to 1.30 pm	<b>Private Panel Lunch</b>
1.30 to 2.30 pm	Sub-panel meetings to draft outline reports
2.30 to 3.00 pm	Feedback to overall panel - themes
3.00 to 3.15 pm	Feedback to school and department management