Programmatic Review of the School of Science 2016

Phase 2: Programme Review

PROGRAMME PANEL REPORT

SCHOOL:	School of Science
DEPARTMENT:	Department of Computer Science
DATE:	March 30 – 31st 2017

PROGRAMMES SUBMITTED FOR REVIEW

Major Awards

Higher Certificate in Science in Information Technology

Bachelor of Science in Information Technology

Bachelor of Science (Honours) in IT Management

Bachelor of Science (Honours) in Cloud Computing

PROGRAMME REVIEW PANEL MEMBERSHIP

Dr Barry Feeney, Head of Department, Department of Computing, Institute of Technology Tallaght (Chairperson)

William Dalton, Director EMEA IS and Corporate Technology, TrendMicro

Paul O'Connell, Senior Manager, Global Support Services, VMware

Dr Stephen Cassidy, Dean of Academic Quality Enhancement, Cork Institute of Technology

PROGRAMME REPRESENTATION

Programme Staff

Mr Tim Horgan, Head of Department

Olivia Brickley, Lecturer

Helen Fagan, Lecturer

Noreen Gubbins, Lecturer

Seamus Lankford, Lecturer

Gerard MacSweeney, Lecturer

John O'Brien, Lecturer

Pat McCarthy, Lecturer

Paul Rothwell, Lecturer

Vincent Ryan, Lectuer

Jonathan Sherwin, Lecturer

Arthur Tobin, Lecturer

Learner Representatives

Stephanie Buckley, Stage 4, BSc (Hons) in IT Management

Orla Stanton, Stage 4, BSc (Hons) in IT Management

Yuliya Verbishchuk, Stage 4, BSc (Hons) in IT Management

Magloire Hateka, Stage 2, BSc (Hons) in IT Management

Dennis Sheehan, Stage 2, BSc in Information Technology

Ivo Vaclavek, Stage 2, BSc in Information Technology

Graduates

Edward Sexton, Bachelor of Science (Hons) in Cloud Computing, Dell EMC

Dave Barry, Bachelor of Science (Hons) in Cloud Computing, Dell EMC

Adam Deane, Bachelor of Science in IT Management, VMware

Robert O'Leary, Bachelor of Science in IT Management, VMware

Shane Goulding, Bachelor of Science in IT Management, Dell EMC

Jerry Cronin Bachelor of Science in Information Technology

External Stakeholders

Raymond Deasy, Principal Network Engineer, Virtustream, Dell EMC

Jerry Teahan, Head of Business Development (Cloud Services), BT

Donal Burke, Technical Support Manager, VMWare

PROGRAMME SUMMARY AND MAJOR CHANGES PROPOSED

1. HIGHER CERTIFICATE IN INFORMATION TECHNOLOGY

1.1. **Programme Summary**

This programme produces graduates with foundation skills in Information Technology. Graduates will have knowledge of networking, databases, computer programming, IT security, systems administration, operating systems and virtualised environments.

This programme is designed to provide the student with the knowledge and skills needed to pursue a career as an Information Technology Support Technician, IT Maintenance Technician, Desktop Support Technician, IT Service Technician, Helpdesk Support Technician or similar roles as they develop in industry.

On successful completion of this programme there is a progression pathway available to enable students to enter the Level 7 BSc in Information Technology programme.

1.2. **Major Changes Now Proposed**

This programme is an embedded award of the Bachelor of Science in Information Technology. Changes to this programme will be elaborated in the section

2. BACHELOR OF SCIENCE IN INFORMATION TECHNOLOGY

2.1 Programme Summary

The BSc in Information Technology is a three-year ab-initio level 7 degree programme designed to provide students with the knowledge, skills and competencies in IT infrastructure, security, emerging technologies, systems management, database systems and IT applications. The programme is designed around five key strategic pillars; Networking, Security, Cloud Computing Technologies, Scripting and Database Systems. The students who enroll on this programme will undertake modules over the three year duration in modules aligned to the above areas.

The educational aim of the BSc in Information Technology programme is to produce graduates have strong Information Technology skills in areas such as IT infrastructure, operating systems, administration, cloud computing technologies and security. Graduates will be able to deploy and administer virtualised environments, deploy and configure networks, and secure the IT infrastructure. The programme aims to produce high-quality graduates with the knowledge, skills and understanding for the effective pursuit of a variety of careers in Information Technology.

These include careers in IT Services, IT Support Roles, Network Administration, Data Centre Administration, IT Engineers and Security Engineers.

On successful completion of this degree programme there is a progression pathway available to enable students to enter the Level 8 BSc (Hons) in IT Management programme.

2.2 Major Changes Now Proposed

Work placement is not currently offered in the BSc in Information Technology (level 7). In this programmatic review, it is proposed to incorporate work placement into the BSc in Information Technology.

Overall the programme structure has been significantly redesigned so that modules are aligned within five key pillars, Networking, Security, Cloud Computing Technologies, Scripting and Database Systems. Individual modules have been updated to

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

Finally, mathematical modules more aligned with the programme have been introduced into the first year of the programme.

3. Bachelor of Science (Honours) in IT Management

3.1. Programme Summary

The BSc (Hons) in IT Management is a four-year ab-initio level 8 degree programme designed to provide students with the knowledge, skills and competencies in IT infrastructure. The programme is designed around five key strategic pillars; Networking, Security, Cloud Computing Technologies, Automation and IT Management..

The educational aim of the BSc (Hons) in IT Management is to produce high-quality graduates with the knowledge, skills and understanding for the effective pursuit of a variety of careers in Information Technology. These graduates will have the skills and competencies to manage the transition to new and emerging technologies within organisations. The theoretical content and

practical lab work ensures that students will be highly-qualified to work in roles in IT service management, IT solutions architecture, IT security, network management, data centre management and systems management.

On successful completion of this degree programme, there are further taught postgraduate study options in the Department of Computer Science as well as research and PhD programmes.

3.2. **Major Changes Now Proposed**

It is proposed to extend work placement in stage 3 from 15 to 30 credits. The programme runs in parallel to the Bachelor of Science in Information Technology and shares the majority of its modules with this programme.

4. Bachelor of Science (Honours) in Cloud Computing

4.1. **Programme Summary**

The BSc (Hons) in Cloud Computing is a one-year level 8 add-on degree programme designed to upskill graduates who hold a level 7 degree in a Computing field. This unique online-only programme was developed in conjunction with leading experts from EMC, VMware, Cisco, SpringSource, Microsoft, RSA and other key cloud computing companies.

Students are based in Ireland, the UK and across Europe. Lectures are delivered using Adobe Connect and labs are available 24/7 using CIT's world-class private cloud environment.

This one year add-on BSc (Hons) in Cloud Computing degree aims to develop students both technically and personally, and produce graduates of high academic and practical standards to match the needs of both the Irish and international IT industry.

An emphasis is placed on cloud computing throughout and this focus is supported by the addition of modules in Networking, Virtualisation, Storage, IT Security, IT Architecture, Analytics and an individual project. This combination of modules along with practical and laboratory workshops provides graduates with an ideal education that will enable them to seek entry to a wide variety of roles and levels of responsibility within the workforce.

On successful completion of this Level 8 one-year add-on degree programme, there are taught postgraduate study options in the Department of Computer Science as well as research options at PhD level.

4.2. **Major Changes Now Proposed**

Individual modules have been updated to

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

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 **Commendation**: For the suite of programmes under review, the panel would like to commend the programme team for the design of their programmes which the panel believe are fit-for-purpose and aligned with the needs of industry. There was clear evidence of systematic engagement with industry at many of the stakeholder sessions. The use of an industry panel to give both programme and module feedback was exemplary.

4. PROGRAMME OPERATION AND PERFORMANCE

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 **Recommendation:** The panel notes the student progression through the suite of Information Technology related programmes remains a challenge in line with national norms for similar programmes. The panel **recommends** that the programme teams continues to priortise initiatives to address the issue.

4.3 **Recommendation:** The panel notes that there was evidence at both the staff and student sessions of informal student feedback being considered. The panel **recommends** that the department should seek to develop a more formal structure to capture and act on student feedback.

4.4 Recommendation: The panel **recommends** that an assessment matrix describing the nature and timing of assessments across all modules in a given semester be available to students at the start of the semester.

5. Proposed Programme Specification (incl. Delivery and Assessment)

5.1 **Commendation:** The panel **commends** the programme team on the collegial approach taken to programme design. The resulting programme offers clear progression of modules within identified programme pillars. The panel would like to support the proposed inclusion of additional scripting/automation & software defined networking which was requested at student, graduate and employer sessions.

5.2 **Finding:** The panel strongly **supports** the inclusion of the work placement in the Bachelor of Science in Information Technology programme and the extension of work placement to 30 credits in the IT Management programme.

5.3 **Recommendation:** The panel **recommends** that the programme team consider formally and deliberatively including material relating to teams; team formation, team culture, and team roles into the programme.

5.4 **Recommendation**: The panel **recommends** that the programme team consider introducing early low stakes assessment elements into first semester modules. The elements would have the effect of highlighting to staff students who may be disengaging from the programme and giving early feedback to students.

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 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 Registrar's Office.

SOFT7003 Group Project: The panel **recommends** that staff reflect on the assessment of the group project to ensure that the individual student mark awarded reflects student effort.

7. Derogations Sought

Derogation is being sought from free choice in Semester 2 of the IT suite of programmes to allow the Department offer a common first year curriculum across its suite of programmes. This common curriculum facilitates students wishing to transfer between programmes within the Department.

The panel supports this derogation request.

B. PROGRAMME FINALISATION

*[This section will be completed by the **CIT Registrar's Office.***

It records the implementation of any panel requirements and the completion of the internal module moderation process. Confirmation of completion by the CIT Registrar's Office is required for both before the programmes can be submitted to the CIT Academic Council for revalidation.]

1. IMPLEMENTATION OF PANEL REQUIREMENTS/RECOMMENDATIONS

Please note there were no requirements. The list below indicates the recommendations received from the panel.

Section	Feedback	Response
4.2	**Recommendation:** The panel notes the student progression through the suite of Information Technology related programmes remains a challenge in line with national norms for similar programmes. The panel recommends that the programme teams continues to priortise initiatives to address the issue.	Accepted.
4.3	**Recommendation:** The panel notes that there was evidence at both the staff and student sessions of informal student feedback being considered. The panel recommends that the department should seek to develop a more formal structure to capture and act on student feedback.	Accepted.
4.4	**Recommendation:** The panel recommends that an assessment matrix describing the nature and timing of assessments across all modules in a given semester be available to students at the start of the semester.	Accepted.
5.3	**Recommendation:** The panel recommends that the programme team consider formally and deliberatively including material relating to teams; team formation, team culture, and team roles into the programme.	Accepted, this recommendation will be considered by the Programme Board and where feasible actions will be implemented.

5.4	**Recommendation:** The panel recommends that the programme team consider introducing early low stakes assessment elements into first semester modules. The elements would have the effect of highlighting to staff students who may be disengaging from the programme and giving early feedback to students.	Accepted, this recommendation will be considered by the Programme Board and where feasible actions will be implemented.
6	**Recommendation:** In relation to the SOFT7003 Group Project, the panel recommends that staff reflect on the assessment of the group project to ensure that the individual student mark awarded reflects student effort.	Accepted. A assessment rubric for this module will be developed and implemented in order to meet this recommendation.

2. Module and Programme Moderation

In total 14 modules were reviewed across the following programmes:

- Higher Certificate in Science in Information Technology
- Bachelor of Science in Information Technology
- Bachelor of Science (Honours) in IT Management
- Bachelor of Science (Honours) in Cloud Computing

In total 14 modules that were unique to the programmes indicated above were reviewed as part of the programmatic review process.

Module ID	Module Name
12792	Internet & Network Services
12802	Windows Security
12818	Cloud Networking
12826	Security Management
12838	IT Solutions Architecture
12836	IT Transformation
12827	Enterprise Storage Systems
12804	Database Administration
12817	IT Project Management
12585	Scaling and Managing Networks
12815	Data Centre Virtualisation
12816	Network Security
12828	Security Monitoring
13139	CyberEthics
13170	Linux Administration
13100	Systems Scripting
12795	Virtualisation Technologies
12864	IT Service Management

It is important to note that the following 26 modules were also reviewed that are shared with other programmes in the Software Development stream.

Module ID	Module Name
12700	Programming Fundamentals
12695	Web Development Fundamentals
12620	Computer Architecture
12624	Physical Computing
12701	Modular Programming
12704	Intro to Databases
12705	Operating Systems in Practice
12702	Networking Fundamentals
12706	Security Fundamentals

12786	Requirements Engineering
12787	Routing and Switching Concepts
12789	Server-Side Web Development
12994	Client side Web Development
12809	Agile Processes
10958	Technical Writing using XML
12808	Wireless Technologies
10890	Software Defined Networking
12837	Security Penetration Testing
12807	Group project
13171	Open Source Projects
13176	Emerging Technological Trends
13175	Technical Communication Skills
13081	Maths for Computer Science
13094	Automata and Computation
12847	Database Design
12785	Operating Systems

All modules are ready to be approved, pending approval by academic council.

C. APPENDIX – TIMETABLE OF PHASE 2 MEETINGS

		Panel 1 Software Development Computer Systems	Panel 2 IT Management, Information Technology	Panel 3 MSc Cloud, MSc in Software
Day One Thursday March 30th 2017				
11.00 to 11.30 pm	Private Panel Meeting including presentation by Registrar's Office	Council Room, 2nd Floor, Administration Building		
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	**Private Panel Lunch**	Bistro		
1.30 to 3.00 pm	Meeting with Dept. Teams re Programme Operation and Performance	Boardroom, CREATE	Boardroom, Tourism & Hospitality	Business & Humanities Boardroom
3.00 to 3.30 pm	**Private Panel Meeting (Tea/Coffee)**			
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	Kingsley Hotel		
Day Two Friday March 31st 2017				
9.00 to 9.15 am	Private Panel Meeting - emerging themes	Boardroom, CREATE	Boardroom, Tourism & Hospitality	Business & Humanities Boardroom
9.15 to 10.15 am	Meet with Students			
10.15 to 10.45 am	**Private Panel Meeting (Tea/Coffee)**			
10.45 am to 12.30 pm	Meet with Dept. Teams re General Review of Modules			
12.30 to 1.30 pm	**Private Panel Lunch**			
1.30 to 2.30 pm	Sub-panel meetings to draft outline reports			
2.30 to 3.00 pm	Feedback to overall panel - themes	Council Room		