



University College Dublin

Periodic Quality Review

**UCD School of Mathematics & Statistics
(formerly the UCD School of Mathematical Sciences)**

April 2015

Accepted by the UCD Governing Authority at its meeting on 22 March 2016

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Summary Findings of the Review Group

The Review Group has prepared a summary of their key findings in relation to areas of good practice operating within the School and areas which the Review Group would highlight as requiring future improvement. The main section of this Report sets out all observations, commendations and recommendations of the Review Group in more detail. A summary of all commendations and recommendations is set out in Appendix 1.

Examples of Good Practice

The Review Group identified a number of commendations, in particular:

a. Teaching Quality and Commitment, including Curriculum Innovation

The Review Group was hugely impressed by the degree of commitment demonstrated by the School to the teaching of Mathematics, and to the quality of the teaching delivered. The Review Group recognised the scale and complexity of the offering, and the large number of undergraduate programmes involved. The Review Group was also impressed with the number and quality of recent innovations, including the Science and Mathematics Education programmes, the online Data Analytics MSc, the new MSc in Actuarial Science, and the soon to be launched MSc in Climate Change. The Review Group appreciates that some of the new courses have yet to prove themselves, but do not underestimate the continuing effort that is being invested.

b. Co-operation with other Schools (in teaching)

The Review Group was impressed also that there is a high level of appreciation of the School's teaching, not only amongst students, but also amongst other Schools, the College of Science, and in the University. People who met with the Review Group went out of their way to stress that the School was helpful and responsive and dedicated to providing a very positive student experience, and to co-operative working.

c. Research quality

UCD is the leading university in Ireland in the disciplines spanned by the School, according to the QS rankings, 2014, one of the few objective international cross-discipline metrics available. Because of similar problems of scope as other metrics used within UCD, the QS rankings may actually disadvantage the School (as some high-rated work may be attributed elsewhere).

d. Research funding

Even according to a University research-grant attribution system that disadvantages all but the lead members of cross-discipline research consortia, the School wins competitive research funding at a very healthy level.

e. External connections

The Review Group praises the School for its deep involvement and good relations with various internal and external partners, including (in a very long list):

- the partnership of members of the School in valuable and high-profile cross-discipline activities such as the Insight Centre for Data Analytics (INSIGHT), the Complex & Adaptive Systems Laboratory (CASL), the Conway Institute (and, formerly, the Shannon Institute), is hugely valued by the other Schools involved.
- a strong record of outreach at sub-research level (e.g. Mathematics Support Centre), and to secondary schools (e.g. Mathematical Enrichment) and the public. The Mathematics Support Centre is widely praised and must be considered an outstanding success.
- strong and developing connections with industry, e.g. via Met Éireann and the European Study Groups in Industry.

Recommendations for Future Improvement

The full list of recommendations is set out in Appendix 1; however, the Review Group would suggest that the following be prioritised:

a. Strategy

- The School should seek to establish a longer-term strategic approach in several areas, based around a firm expectation that in due course all members of the School will be co-located. Much of the School's current thinking, reflected in the SAR and in meetings with the Review Group, is perhaps tied too tightly to features of organisation and motivation that are historical, and/or responsive to more recent real or perceived economic and institutional difficulties, and/or reactive to shorter-term considerations. The School must plan for, and look forward to, better times ahead.
- In particular, the School should be organised: (a) to allow strategic thinking about research priorities across all the School's current and potential interests; (b) to allow structures to develop that support individual staff in the long-term development of their careers; (c) to allow longer-term and overview thinking about curriculum and approach to teaching.
- The School needs to move beyond a resistance to change in evidence in certain subject areas and adopt a collective, pro-active and positive approach. There appears to be a great deal of good will towards the School in the College of Science and more widely in UCD, together with an appreciation that the School has had some difficult challenges to face. These attitudes should be leveraged to the advantage of the School and its staff.

b. Location

The members of the School are to be commended for their patience, resilience and flexibility in the context of the fragmented provision of space for the School. This fragmentation of space is not conducive to developing a School community and is, in the opinion of the Review Group, untenable – not just uncomfortable, it is a serious obstacle to quality in the School. Welcoming the President's stated desire that all Schools be located in contiguous space, the Review Group recommends that the College should work closely with the School and with other Schools in Science North, to comprehensively plan and provide for the immediate co-located space needs of the School. While the Review Group supports the School's ambitions with regard to the development of Phase 3 of Science, it strongly recommends that immediate, cost effective plans should be drawn up and implemented independently of an expectation regarding the progress of Science 3.

c. Support for individual career development

- Mentoring – early-career researchers often need help and advice in choosing directions in which to concentrate their research efforts, balance between core and interdisciplinary research, long- and short- term goals, etc. The Review Group's impression is this is done in a somewhat *ad-hoc* way, differently in different subjects. The Review Group recommends that the School works to share best practice across the whole School.
- With regard to academic promotions, the Review Group recommends that support be provided by the School to assist applicants for promotion in presenting their cases effectively; this can be done without compromising confidentiality or propriety.

d. Teaching efficiency

The School should consider whether, notwithstanding their dedication to the principle that Mathematics in all or most UCD courses should be taught by the School, there is scope to refocus some part of their teaching effort towards higher priority teaching and research. The quantity and quality of the current teaching is clearly highly valued by colleagues in other parts of UCD, but the current load of 160+ taught modules seems to be considered to be "above and beyond the call of duty" by most of the non-School colleagues that met with the Review Group. Though financial considerations will rule out certain changes, the School should carefully examine whether there are any opportunities for efficiencies, and in the longer-run should not always reject the possibility that in some cases other schools that wish to take over some teaching in mathematical areas should be "allowed" to do so. Time saved could be used, for example, to target support for requests for semesters of sabbatical leave within the School, to allow time for the development of new courses, to alleviate teaching loads for new lecturing staff, and to invest in steps designed to increase the attractiveness of the core School degree courses.

e. Metrics

The Review Group identified issues with the metrics used by the University in the summary "Research Statement for Schools" used in decision-making, and in other places. These include

problems of scope, differential need for and availability of research funding, counting of publications without regard to quality and publication culture, and/or differential citation half-lives. While the metrics in use may be appropriate to other disciplines in the University, the Review Group believes that they are not useful for many disciplines, including mathematics. The Review Group knows that these problems are acknowledged by the University and work is under-way to address them.

It is recommended that Schools work together with appropriate University offices to produce a range of metrics that are robust and fit-for-purpose in comparing research activity and achievement in different disciplines.

f. Promotions

The Review Group understands that the University is reviewing its methodology for the academic promotions process: this is welcomed. The Review Group recommends that in this review, attention be paid to equal opportunities issues among academics with different profiles of basic, applied and interdisciplinary research, and in different disciplines, particularly with regard to the differential availability of external research funding.

g. Visibility

The School undertakes a range of activities in research, teaching and outreach more generally which the Review Group suggests are not sufficiently visible within and without UCD. These include initiatives in teaching such as the Mathematics Support Centre (MSC) and the Mathematics Ambassador programme and a wide range of research contributions to research institutes such as, for example, INSIGHT, CASL and the Earth Institute. The Review Group recommends that the School actively pursue a programme of promotion and advocacy that strengthens the profile of mathematical sciences in research, teaching and outreach. This should include a review of the School's website to ensure that, for example, the School's contribution to research institutes is more evident and to improve navigation for key external players, including potential industry and other non-academic collaborators, media, and the international academic community. It should also include a more strategic engagement with advocates in industry and among peers in the discipline to support the School's mission in enhancing the quality of mathematics research and education in Ireland.

1. Introduction and Overview of UCD School of Mathematics & Statistics¹

Introduction

- 1.1 This report presents the findings of a quality review of the School of Mathematics & Statistics (formerly the School of Mathematical Sciences), University College Dublin, which was undertaken from 13-17 April 2015. The School response to the Review Group Report is attached as Appendix 2.

The Review Process

- 1.2 Irish Universities have collectively agreed a framework for their quality review and quality improvement systems, which is consistent with both the legislative requirements of the Qualifications and Quality Assurance (Education and Training) Act 2012, and international good practice (e.g. Standards and Guidelines for Quality Assurance in the European Higher Education Area, 2007). Quality reviews are carried out in academic, administrative and support service units.
- 1.3 The purpose of periodic review is to assist the University to assure itself of the quality of each of its constituent units, and to utilise learning from this developmental process in order to effect improvement, including:
- To monitor the quality of the student experience, and of teaching and learning.
 - To monitor research activity, including: management of research activity; assessing the research performance with regard to: research productivity, research income, and recruiting and supporting doctoral students.
 - To identify, encourage and disseminate good practice, and to identify challenges and how to address these.
 - To provide an opportunity for units to test the effectiveness of their systems and procedures for monitoring and enhancing quality and standards.
 - To encourage the development and enhancement of these systems, in the context of current and emerging provision.
 - To inform the University's strategic planning process.
 - The output report provides robust evidence for external accreditation bodies.
 - The process provides an external benchmark on practice and curriculum.

¹ The University structures were re-organised in September 2015 and the UCD School of Mathematical Sciences was re-named as the UCD School of Mathematics & Statistics.

- To provide public information on the University's capacity to assure the quality and standards of its awards. The University's implementation of its quality procedures enables it to demonstrate how it discharges its responsibilities for assuring the quality and standards of its awards, as required by the Universities Act 1997 and the Qualifications and Quality Assurance (Education and Training) Act 2012.

1.4 Typically, the review model comprises four major elements:

- Preparation of a self-assessment report (SAR)
- A visit by a review group (RG) that includes UCD staff and external experts, both national and international. The site visit normally will take place over a two or three day period
- Preparation of a review group report that is made public
- Agreement of an action plan for improvement (quality improvement plan) based on the RG report's recommendations. The University will also monitor progress against the improvement plan

Full details of the review process can be found on the UCD Quality Office website: www.ucd.ie/quality.

1.5 The composition of the Review Group for the UCD School of Mathematics & Statistics was as follows:

- Professor Ciarán Ó hOgartaigh, UCD College of Business and Law (Chair)
- Dr Síofra Píerse, UCD School of Languages & Literatures (Deputy Chair)
- Professor Ivan Netuka, Charles University Prague, Czech Republic (Extern)
- Professor Colin Sparrow, University of Warwick, UK (Extern)
- Professor Peter Green, University of Bristol, UK (Extern)

1.6 The Review Group visited the School from 13-17 April 2015 and held meetings with School staff; undergraduate and postgraduate students; the SAR Co-ordinating Committee; other University staff, including the College Principal. The site visit schedule is included as Appendix 2.

1.7 In addition to the Self-assessment Report, the Review Group considered documentation provided by the School and the University during the site visit.

Preparation of the Self-assessment Report (SAR)

1.8 Following a briefing from the UCD Quality Officer in March 2014, a Self-assessment Report Co-ordinating Committee (SARCC) was put in place. Members of the committee, in consultation with staff members and students, drafted sections of the Self-assessment Report. Committee membership is set out below:

- Chair and Head of School: Prof. Gary McGuire
- Head of Teaching and Learning: Dr Chris Boyd
- Head of Staffing and Finance: Prof. Stephen Gardiner
- Head of Research: Dr Eimear Byrne
- Head of Mathematics subject: Dr Kevin Hutchinson
- Head of Statistics and Actuarial Science subject: Prof. Brendan Murphy
- Head of Applied and Computational Mathematics subject: Prof. Adrian Ottewill
- Technical Staff: Dr Michael Mackey
- Technical Staff: Dr Codrin Andrei
- School Office Manager: Dr Nuria Garcia
- Postgraduate student member: Mr Aidan Boland

1.9 The SARCC met on 8 occasions between April 2014 and March 2015. A meeting of all School members took place on 6 October to discuss the review and drafts of the SAR were circulated for feedback. UCD Teaching & Learning facilitated a workshop to develop the Schools SWOT Analysis for the quality review in September 2014. Dedicated School meetings, to consider and provide input to the SAR, took place in October 2014 and February 2015. The draft SAR was submitted to the UCDQO for feedback in February 2015 and the final SAR was submitted to the UCDQO in March 2015.

The University

1.10 University College Dublin (UCD) is a large and diverse university whose origins date back to 1854. The University is situated on a large modern campus about 4 km to the south of the centre of Dublin.

1.11 The University Strategic Plan (to 2020) states that the University's mission is: "to contribute to the flourishing of Dublin, Ireland, Europe and the world through the excellence and

impact of our research and scholarship, the quality of our graduates and our global engagement; providing a supportive community in which every member of the University is enabled to achieve their full potential”.

The University is currently organised into six colleges and 37 schools²:

- UCD College of Arts and Humanities
- UCD College of Business
- UCD College of Engineering and Architecture
- UCD College of Health and Agricultural Sciences
- UCD College of Social Sciences and Law
- UCD College of Science

1.12 As one of the largest universities on the island of Ireland, UCD supports a broad, deep and rich academic community in Science, Business, Engineering, Health Sciences, Agriculture, Veterinary Medicine, Arts, Law, Celtic Studies and Human Sciences. There are currently more than 26,000 students in our UCD campus (approximately 16,300 undergraduates, 7,800 postgraduates and 2,200 Occasional and Adult Education students) registered on over 70 University degree programmes, including over 6,300 international students from more than 121 countries. The University also has over 5,400 students studying UCD degree courses on campuses overseas.

UCD School of Mathematics & Statistics

1.13 The UCD School of Mathematics & Statistics is one of seven schools in the UCD College of Science. The University modularised, semesterised and updated its academic structures in 2004-2005. As part of this restructuring, the School of Mathematics & Statistics in UCD was formed in 2005 from three departments: the Department of Mathematics, the Department of Mathematical Physics, and the Department of Statistics and Actuarial Sciences.

1.14 The UCD School of Mathematics & Statistics offers a wide range of modules in programmes at undergraduate, masters and PhD level, across three subject areas: Applied and Computational Mathematics, Mathematics, Statistics and Actuarial Sciences. As a result, students have a wide range of modules to choose from within the School.

² During the review site visit, and prior to the University re-structuring in September 2015, UCD was organised into 38 schools in seven colleges: UCD College of Arts and Celtic Studies; UCD College of Human Sciences; UCD College of Science; UCD College of Engineering and Architecture; UCD College of Health Sciences; UCD College of Business and Law; and UCD College of Agriculture, Food Science and Veterinary Medicine.

- 1.15 The School of Mathematics & Statistics teaches on average 161 modules per year across the University and has over 10,000 registered students in its modules. All faculty in the School are actively engaged in research and have a strong record of publications in top international journals. The core of the School's strategic research plan is to maintain a commitment to basic research in the mathematical sciences whilst aggressively pursuing collaborations with other subjects, institutions and industry.

2. Organisation and Management

- 2.1 The School has developed a straightforward organisational structure, with clear reporting lines, as well as formal processes and procedures. The Head of School is advised by an Executive Committee which meets at least once per month, minutes are made available to the School, and key issues are communicated at regular School meetings. There are also regular meetings for each subject (Mathematics, Applied and Computational Mathematics, Statistics and Actuarial Science), which the Head of School attends.
- 2.2 In addition, the School has a number of committees: Public Relations; Research Demonstratorship; Graduate Studies; Teaching and Learning; and a new Research, Innovation and Impact committee. The School took the opportunity to review and update their committee structure while preparing the Self-assessment Report.
- 2.3 The Head of School delegates responsibilities to members of staff, taking into consideration the School workload model and makes an effort to spread the workload and expertise evenly, to avoid an over-reliance on individuals who may carry an extra burden. The School has also recently developed a succession plan for all members of the School Executive Committee, including the Head of School, by assigning deputies to the roles.
- 2.4 Notwithstanding the dispersal of staff across a number of campus locations until Spring 2015 (see section 3) these structures, along with regular meetings between the Head of School and School administrative staff, clear administrative procedures, exemplary organisation and good communication systems (with both staff and students) have resulted in a School that functions well at an operational level.
- 2.5 Given the difficulties associated with operating across a number of locations, including one off-campus facility, it is understandable that the School focused on operations in recent times, however, there is now significant scope to develop a longer-term strategic approach – see recommendations below.

Commendations

- 2.6 The School is organised around three subjects: Applied & Computational Mathematics, Mathematics, and Statistics and Actuarial Science, each of which appear to have a strong sense of identity and tradition.

- 2.7 Leadership in the School appears to be strong and provides robust representation of the School at both College- and University- level.

Recommendations

- 2.8 The School should seek to establish a longer-term strategic approach in several areas, based around a firm expectation that in due course all members of the School will be co-located. Much of the School's current thinking, reflected in the SAR and in meetings with the Review Group, is perhaps tied too tightly to features of organisation and motivation that are historical, and/or responsive to more recent real or perceived economic and institutional difficulties, and/or reactive to shorter-term considerations. The School must plan and look forward to better times ahead.
- 2.9 In particular, the School should be organised to allow: (a) strategic thinking about research priorities across all the School's current and potential interests; (b) to allow structures to develop that support individual staff in the long-term development of their careers; (c) to allow longer-term and overview thinking about curriculum and approach to teaching.
- 2.10 The School needs to move beyond its current resistance to change in evidence in certain subject areas and adopt a collective, pro-active and positive approach. There appears to be a great deal of good will towards the School in the College of Science and more widely in UCD, together with an appreciation that the School has had some difficult challenges to face. These attitudes should be leveraged to the advantage of the School and its staff.

3. Staff and Facilities

Staff

- 3.1 There are 48.5 full-time equivalent (FTE) members of staff employed directly by the School, with a further 15 postdoctoral fellows and 3 research administrators employed on research contracts within the School. Faculty comprises 4 professors, 2 associate professors, 12 senior lecturers and 24 lecturers. Technical staff members include an IT technician and a laboratory co-ordinator. The School administrative team includes the School Office Manager, an Administrative Officer, 1.5 Senior Executive Assistants (SEAs), and an Executive Assistant (EA).
- 3.2 The School experienced a high staff turnover in the past 8 years, with a significant number of retirements taking place. Seven professors retired in that period which has had an impact on the research profile of the School. Replacements have, in the main, been at a less senior level, and/or on temporary contracts. The average age of school staff members has been reduced as a result of the above changes, and no retirements are expected before 2020.
- 3.3 The School has increased the gender representation among its staff – currently 26% of faculty and 57% of support staff are female. This is above average when benchmarked against data provided for corresponding schools/departments in other Irish universities. The

School is aware of the need to improve its gender representation especially as the University is in the process of applying for membership of the Athena SWAN Charter, which involves a commitment to advancing women's careers in science, technology, engineering, mathematics and medicine employment in higher education and research.

- 3.4 New staff members are given guidance through formal UCD induction courses and informal advice from a mentor within the School. There is scope for strengthening this induction and mentoring within the School.
- 3.5 Staff members are encouraged to avail of opportunities for professional development, for example through the training programmes, qualifications and fellowships offered through UCD Teaching and Learning.
- 3.6 Administrative and technical support within the School is highly valued by faculty. The administrative team is led by an experienced Administrator who allocates duties to four new staff members. It was noted that currently there is no administrative and secretarial support available for senior faculty (including, but not limited to, the Head of School).

Facilities

- 3.7 School staff have been dispersed over a number of locations since its inception. From Autumn 2011 to Spring 2015, a majority of faculty were housed off-campus to facilitate the redevelopment of the Science Centre. This resulted in significant inconvenience as all lectures and the majority of meetings took place on campus. Staff are now accommodated in a range of offices dispersed around the Science Centre. While this is a significant improvement and the facilities in the Science Centre are world-class, the School does not have an identifiable core space which affects the School's ability to build relationships with colleagues and students, to provide a "home" for students, to take meaningful advantage of informal cross-disciplinary networking and to promote the School's subjects and activities.
- 3.8 Graduate students reported relief at vacating Belfield Office Park and noted a convivial atmosphere with lunches between students and lecturers. They also had an increased sense of identity within research groups or teams.
- 3.9 The majority of the School's teaching activities take place in centrally-timetabled lecture theatres and classrooms. Many of these have been upgraded to include modern IT and projection facilities, however, there has been a widespread replacement of blackboards with whiteboards which are often smaller and unsuitable for teaching mathematics. Removal of large-sized blackboards (or whiteboards) or indeed failure to provide any blackboard at all within teaching spaces in the new Science complex is considered deeply problematic by many mathematicians. The failure of designers to appreciate or to respond to this concern is deeply regrettable.
- 3.10 In addition to the University's central IT facilities the School has some IT infrastructure of its own, including linux-based machines suitable for classes of up to 22 students and a School computer cluster. The School maintains its own servers, its own Examination Upload Server,

a cloud storage service, a Webwork site to support the delivery of a range of undergraduate modules and, as a supplement to the University's virtual learning environment (VLE) Blackboard, the School maintains its own Teaching and Learning website.

Commendations

- 3.11 In general, the staff who met with the Review Group appeared to be highly committed to their subject and to the teaching and dissemination of mathematical sciences at both undergraduate and graduate levels.
- 3.12 The administrative infrastructure and support in the School is very positive and student-centred. There appears to be a high level of collaboration and flexibility within and across the administrative function.
- 3.13 While the location of the School and the associated provision of facilities has been challenging, the School and its leadership appear to be active in their efforts to improve the physical location of the School in the College of Science.
- 3.14 Staff who have moved office on multiple occasions are to be applauded for their patience, resilience and flexibility.
- 3.15 Members of the School Office and Technical support are to be commended for their efficiency and collegiality. Their dedication and good humour is apparent and appreciated by colleagues and students alike.

Recommendations

- 3.16 The School should continue to lobby constructively, energetically and imaginatively for co-location, including co-operation with the Science Centre Project Team and other schools in the College of Science, pressing for appropriate facilities to be planned and delivered (including any possible / necessary interim steps). The aspiration for a dedicated Computer Lab for Mathematics students should also be pursued as part of future renovations/improvements.
- 3.17 The Science Centre Project Team and UCD Buildings and Services should take into consideration the requirements of different disciplines and restore the provision of large blackboards in classrooms, where appropriate.
- 3.18 Temporary contracts should be replaced with permanent ones as a matter of urgency.
- 3.19 The School should encourage (and allow) postdocs to do a limited amount of teaching (consistent with funding restrictions). It would be good for their careers, and would help the School in sustaining delivery of a wide range of modules.

- 3.20 The School should consider expanding the School Office so that it is able to provide administrative and secretarial support to senior faculty (including, but not limited to, the Head of School).

4. Teaching, Learning and Assessment

- 4.1 In 2013/14 the School of Mathematics & Statistics taught 162 modules with 9,565 registered students across 5 colleges. Of these 162 modules, 160 are core to degree programmes across the University, so modules taught by the School form a part of many undergraduate and postgraduate programmes.
- 4.2 The School is responsible for the teaching of eight undergraduate majors in the BSc and BA programmes. The School also collaborates with other schools to jointly deliver the following programmes: BSc in Theoretical Physics; BSc in Biology & Mathematics Education; BSc in Chemistry & Mathematics Education; BSc in Physics & Mathematics Education; BSc in Applied Mathematics & Mathematics Education. In addition to the programmes in Arts and Science, the School contributes 14 modules to the BSc in Economics and Finance. The School also teaches core modules for undergraduate programmes in three other colleges: five modules to Engineering students, two modules to Agriculture students and two modules to Business students.
- 4.3 The School offers four Masters degrees in Science, two Masters in Arts and three one-year Higher Diplomas. The School also offers a Graduate Diploma in Actuarial Science. In addition to these programmes, the School contributes two modules to the MSc in Business Analytics and 1.5 modules to the TCD Masters in High Performance Computing. The School is introducing an MSc in Climate Change: Science and Impacts in 2015/16 to replace the MSc in Meteorology which the School offered up to 2013/14.
- 4.4 The School delivers two fully online programmes (Professional Diploma in Data Analytics and Masters in Data Analytics). These offerings use Blackboard as the virtual learning environment for lectures, notes and communications with students.
- 4.5 Since 2012, UCD has been involved in delivering remote (via video-link) and online lectures in the Professional Diploma in Mathematics for Teachers. This is a collaboration between several Irish higher education institutions (HEI's) in response to a government initiative for upskilling teachers of mathematics to Leaving Certificate level.
- 4.6 Excluding tutorials given by lecturers, the School runs an average of 130 labs/tutorials per week. In addition to the academic support offered to students in labs and tutorials, students can make use of the Mathematics Support Centre (MSC). The Centre offers one-to-one support to students who are experiencing difficulties with a particular topic in a module or who may have gaps in the background material (usually from second level) needed to understand lectures. While the Centre is not part of the School, its direction and academic oversight is undertaken by the School. (See also section 9).

- 4.7 The Review Group observed that the quality of the School's teaching is widely applauded. It contributes mathematical modules to many programmes, and its responsiveness in designing and teaching bespoke modules in both BSc and BA programmes is hugely appreciated. The School takes teaching very seriously, and all staff members contribute (under normal circumstances, four modules each per year).

Commendations

- 4.8 The quality and breadth of the teaching offered by the School is commendable. The variety of teaching methods, tutorials, labs is also to be applauded. This is a School where the teaching of mathematical sciences both to students of the discipline and more widely in the University is valued.
- 4.9 The Mathematics Support Centre is hugely successful and valued by students. The support for the Centre from within the School, and by the University (via the Registrar), is to be commended and should continue.
- 4.10 The well-established Actuarial & Financial Sciences degree (BAFS) has a strong reputation among students and employers.

Recommendations

- 4.11 The School may like to consider whether, notwithstanding their dedication to the principle that mathematics in all or most UCD courses should, wherever possible, be taught by the School, there is scope to refocus some part of their teaching effort towards higher priority teaching and research. The quantity and quality of the current teaching is clearly highly valued by colleagues in other parts of UCD, but the current load of 160+ taught modules seems to be considered to be "above and beyond the call of duty" by most of the non-School colleagues that met with the Review Group.
- 4.12 Though financial considerations will militate against any sudden moves, the School should carefully examine whether there are any opportunities for efficiencies, and in the longer-run should not reject out-of-hand the possibility that in some cases other schools which wish to take over some teaching in mathematical areas should be "allowed" to do so. Time saved could be used, for example: to support research through supporting requests for semesters of sabbatical leave within the School, and to reduce the teaching load of new staff; to allow time for the development of new courses; and to invest in steps designed to increase the attractiveness of the core School degree courses.

5. Curriculum Development and Review

- 5.1 Programmes at UCD are based on a semesterised modular system. Each semester students usually take six 5-credit modules. These modules are divided into three types: core, which are compulsory and must be taken by all students in the programme; options, which are considered as desirable and are selected from a list of modules; electives, which are

designed to broaden a student's knowledge and may be selected from modules offered across the University.

- 5.2 The School's programmes are reviewed annually. During this process particular attention is paid to the prior learning needed to take a module, the year and semester in which modules are offered and the skills students will acquire from taking a module. In the design and offering of modules to students in programmes outside the BA and BSc, the School maintains a balance between ensuring that it does not offer several modules which have large overlaps in their content and offering modules that illustrate to students the particular relevance of the topic to their field of study through the examples covered.
- 5.3 Structures for different programmes are submitted at different times of the year: BSc in November, BA in March. Structures are revised every year at a subject level first, and then at School level. The Review Group noted that a single University date for the fixing of the structures of all programmes would allow for a more co-ordinated approach to the structures of the School's programmes and a more detailed examination of modules offered at School level.
- 5.4 Concerns over the teaching of science and mathematics at secondary level have led to the setting up of the new BSc degrees in Science and Mathematics Education. These degrees are a result of an initiative taken by the School in 2011, and are a significant innovation in that secondary level science teachers in Ireland were previously required to graduate with a primary degree in science and then obtain a separate postgraduate teaching diploma. With these degrees students now undertake a three year BSc in Science directly followed by a two year Masters in Mathematics/Science Education.
- 5.5 The School's Masters programmes generally consist of two semesters of taught modules followed by a one-semester minor thesis. Modules offered are intended to give students an idea of both the scope and depth of the subject. Some of these modules are also taken by the School's PhD students as part of a structured PhD.
- 5.6 The School also delivers an online Professional Diploma in Data Analytics and a three-year online Masters in Data Analytics. The School has also engaged with the development of interdisciplinary programmes at Masters level, such as the MSc in Climate Change.

Commendations

- 5.7 The School reviews and updates the content and structures of its programmes and modules on an annual basis. When doing so, it takes into consideration advances and progress in research and new challenges that its graduates are likely to meet in employment. The curriculum as taught by the School is broad, diverse, and covers all main areas very well.
- 5.8 Current efforts to increase numbers on the single honours science BSc degrees are welcome and are already bearing some fruit.

- 5.9 The Developing Science and Mathematics Education Programme appears to have started positively.
- 5.10 The development of the online MSc in Data Analytics (and the Professional Diploma) is exemplary and should be pursued further, along with other models of online education in the College.
- 5.11 The MSc in Climate Change is an excellent example of an interdisciplinary programme which builds on the complementary expertise represented in UCD.

Recommendations

- 5.12 The School should continue its efforts to increase numbers on the science single honours degree programmes, and should consider carefully whether any further changes of structure/regulations might lead to increased take up. For example, the School should consider whether it makes sense that the historical division into three groups is reflected in the existence of separate degrees?
- 5.13 The School should consider the complications that arise from teaching on both BA and BSc programmes, and whether there are any steps that can be taken to alleviate them. The Review Group noted that the view of the University was that the mismatch in timings between Arts and Sciences procedures was a College rather than a central problem.
- 5.14 The Review Group suggests synchronisation of Programme Structures deadlines for BSc (November) and BA (April) to avoid duplication, which may ultimately constrain productive programme review and module sharing.
- 5.15 The School will wish to continue to take opportunities to develop new MSc programmes as opportunities arise and should do so in the context of the wider curriculum review under way in the University.
- 5.16 In response to industry partners, recent graduates and undergraduate feedback, it is suggested that more coding be introduced in the final year at undergraduate level.

6. Research Activity

- 6.1 The UCD School of Mathematics & Statistics has a diverse array of research groups within the broad subjects of Mathematics, Applied & Computational Mathematics and Statistics & Actuarial Science. These are:
- Actuarial Science, Bayesian Statistics, Statistical Modelling (12 members)
 - Applied Algebra, Functional Analysis, Mathematics Education, Matrix Theory, Number Theory, Potential Theory, Real Algebra, (22 members)
 - Mathematical Physics, Meteorology & Climate, Waves & Turbulence (8 members)

- 6.2 This division into subjects is inherited from the origins of the School as 3 separate departments, and its perpetuation has been encouraged by the accommodation provided to the School, as well as by shared ownership of the principal degree programmes.
- 6.3 The approaches to original scholarship within the School range from basic research to applied and inter-disciplinary research – all of which are eligible for recognition as delivering impact according to UCD’s definition. The School aims to balance these goals. It maintains an impressive range of collaborations with other subjects, institutions and industry. Subjects in the mathematical sciences are now globally recognised as fundamental to many areas of science.
- 6.4 Arrangements for organising and fostering research activities are largely devolved to subject level, and differ in detail from subject to subject. These arrangements include external and internal seminar organisation, reading and working groups, and mentoring of junior researchers.
- 6.5 The Review Group notes that uptake for official year-long sabbaticals is extremely low in the School and across the College of Science more generally.
- 6.6 Both School faculty and colleagues from the College of Science accept that mathematics is poorly served by benchmarking and metric measurements because quantity and impact factors for mathematics journals subsequently appear quite low by comparison with other Schools in the College of Science. The Review Group identified issues with the metrics used by the University in the summary “Research Statement for Schools” used in decision-making, and in other places. While the metrics in use may be appropriate to other disciplines in the University, the Review Group believes that they are not useful for many disciplines, including mathematics. These problems include:
- problems of scope – discipline boundaries used in benchmarking do not correspond to School boundaries. It is too crude to “map subject areas to schools”.
 - grossly different need for, and availability of, research funding between different disciplines, and even sub-disciplines.
 - counting of publications without regard to quality, size, or publication culture in the sub-discipline.
 - definition of “research active” that pays no regard to intrinsic difference between sub-disciplines.
 - lack of specification of “world average” time intervals for citation counts.
 - lack of consideration of different distributions of citation times in different sub-disciplines, as measured for example by “citation half-life”.

Commendations

- 6.7 UCD is the leading university in Ireland in the disciplines spanned by the School, according to the QS subject rankings (2014), one of the few objective international cross-discipline metrics available. Because of similar problems of scope as with other metrics used within UCD, the QS rankings may actually disadvantage the School.

- 6.8 For its size, the School has about the right degree of granularity into research groups, spanning a wide range of mathematical and statistical sciences, and (just) achieving critical mass in most of the research groups. By usual international standards virtually all faculty are active in research.
- 6.9 There are individual researchers of high international reputation in many areas of the School's research portfolio, many of whom have won high external honours and have been published in leading international journals. Even according to a University research-grant attribution system that disadvantages all but the lead members of cross-discipline research consortia, the School wins competitive research funding at a very healthy level.
- 6.10 The partnership with members of the School in valuable and high-profile cross-discipline activities such as INSIGHT, CASL, the Conway Institute (and, formerly, the Shannon Institute) is highly valued by the other schools involved.
- 6.11 The Review Group strongly welcomes the recent formation of the School Research Innovation & Impact Committee (see also section 2), and is impressed by the early thoughts emerging from the Committee. Work has already been done by this Committee in identifying and encouraging applicants for European Research Council (ERC) grants. The committee's remit should include a wide range of research areas including developmental areas such as research mentoring.

Recommendations

- 6.12 Many of the most exciting developments in Mathematics and Statistics, internationally, are taking place at the interfaces between traditional sub-disciplines. Aspects of the environment for research in the School, including both the dispersed accommodation and the organisation into subjects following the lines of the three departments from which the School was formed, serve to inhibit the spontaneous discussions that foster the taking root of such interface research in the School. It is recommended that every step be taken to remove such obstacles.
- 6.13 The Review Group suggests that the new Research Committee address the absence of metrics to adequately measure quality of mathematics research output across UCD. It suggests that the School actively seek out channels for informing and reminding the University Committee for Academic Appointments, Tenure and Promotions (UCAATP) of the nature of mathematical research. It is also recommended that schools and the University work together to produce a range of metrics that are robust and fit-for-purpose in comparing research activity and achievement in different disciplines.
- 6.14 To ensure equal access to "unofficial" semestrial sabbaticals, the Review Group recommends that either the School or Heads of Sections develop their own internal sabbatical rota so staff may be released from teaching for one semester every four years in line with other schools. In addition, School-funded sabbaticals and year-long sabbaticals should be promoted.

- 6.15 The School should aspire to increase the number of staff published in internationally front-ranked journals. The School is strongly encouraged to promote a culture in which research quality, although admittedly difficult to measure, is more strongly valued over quantity.
- 6.16 It is important for the health of the discipline that a balanced portfolio of basic, applied and interdisciplinary research would all be pursued within a research unit. This is true of many disciplines, and is definitely true of the mathematical sciences, and it is recommended that the School manages its activities to maintain this (and is allowed to do so).
- 6.17 The Review Group understands that the University is reviewing its methodology for the academic promotions process: this is welcomed. The Review Group recommends that in this review attention be paid to equal opportunities issues among faculty with different profiles of basic, applied and interdisciplinary research, and in different disciplines, particularly with regard to the differential availability of external research funding.
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- 6.21 The School should develop (probably through the UCD Research, Innovation and Impact Group - RII) a systematic approach to identifying, encouraging and supporting faculty at all levels who have a reasonable chance of making successful grant applications of all types.

7. Management of Quality and Enhancement

- 7.1 The School engaged very well with the periodic quality review and the Review Group was impressed with the quality of its Self-assessment Report and associated documentation.
- 7.2 The School uses a broad variety of approaches to evaluate the quality of the School's outputs, including student feedback, statistics on student choices and results, external examiner reports, and international research metrics.

- 7.3 The School provides a wide variety of support services for students at undergraduate and postgraduate level both online and in person, including an orientation week and a welcoming School Office.
- 7.4 The School has benefited from the requirement for higher Leaving Certificate points for entry to the College of Science in recent years and the increase in the mathematical degree numbers reflects this change.
- 7.5 Faculty work extraordinarily hard on their teaching and are proud of their dedication and commitment to a heavy service-teaching load across the University as well as to their specialist modules.
- 7.6 The School exams process includes scrutiny of exam papers by colleagues, and dual checking of exam results at School and at Programme board levels. The School responds to the advice of extern examiners and implements changes as a result.
- 7.7 Undergraduate modules are centrally evaluated through a variety of formal and informal channels for student feedback, including UCD's online system and mid- and end-of-semester feedback sessions, office hours and staff/student fora. Undergraduate students testify that faculty are extremely dedicated and approachable and that communication channels are open. Both in person and on feedback forms students appear generally very satisfied with their experience of taught modules on the undergraduate Mathematics programmes.
- 7.8 Postgraduate students generally expressed a high level of satisfaction with their chosen MSc or PhD courses. Doctoral students are monitored through Doctoral Studies Panel meetings and transfer assessments in line with recommended University procedures, as outlined on the School and UCD graduate websites. Regret was expressed that the placements for MSc in Actuarial Science students as initially promised to top students did not materialise for all high-achieving students.
- 7.9 Postdoc research fellows appear mostly to identify with their Research Institutes (CASL; Earth; Insight) than with the School. Some requested that they be offered the option of an opportunity to design and deliver a taught module for experience purposes.
- 7.10 The School's laboratory and tutorial system manages vast numbers of lab and tutorial hours, while overseeing tutor recruitment, management, trouble-shooting and fixing broken lab equipment. The Review Group notes that the School intends to remunerate the Laboratory & Tutorial Co-ordinator according to a more appropriate scale to reflect the job more accurately.
- 7.11 The Review Group detected limited internal induction or mentoring support and direction for new tutors or lecturers. Particular issues were identified regarding inadequate provision of minimum facilities (e.g. lockers/desk-space) for non-student tutors.

Commendations

- 7.12 The School is to be commended for the quality of its SAR and for its efficiency in provision of detailed statistics, minutes, records and other materials, in particular the Appendix material on the USB key and the well-organised ancillary material provided for perusal in the Review Group meeting room.
- 7.13 Members of the School created, and give great support to, the University-wide Mathematics Support Centre (MSC), which is clearly a great success story and of immense value, both to individuals and groups of students, at all levels across the University.
- 7.14 Feedback from industry members on the quality of graduates is noteworthy.

Recommendations

- 7.15 The School is applauded for, and encouraged to pursue, its proposal to introduce a student mentoring scheme which will benefit individual specialist mathematics students at levels 3 & 4, and might even help recruit future Mathematics PhD candidates.
- 7.16 The MSc in Actuarial Science should change its online promises of placements if it is unable to deliver them in reality.
- 7.17 The Review Group recommends that attendance at University-wide Teaching & Learning induction/seminars/short courses might be suggested in the context of strengthening future Teaching Portfolios as part of Senior Lecturer promotions applications. Where current in-house offerings are deemed unsuitable, then appropriate alternative or replacement sessions should be suggested to UCD Teaching & Learning by the School so that School colleagues are not disadvantaged in promotions rounds as a result.
- 7.18 Non-student tutors should be provided with desk space and lockers/storage.

8. Support Services

- 8.1 The School of Mathematics & Statistics avails of a wide variety of support and services provided by UCD services that are external to the School (internal support services are dealt with in section 3 above) including the Library, teaching support, research support services, and general services. The account given within the SAR appears balanced and objective.
- 8.2 The School appreciates Library support in terms of its open access research repository and for its extended opening hours at exam times, but it notes that the Library is typically nowadays perceived to be primarily a source of online journals, with the attendant risk that core journals may be curtailed subject to financial criteria.

- 8.3 Research Support: Staff noted that they interact with the Research Office, but felt that a high turnover of personnel there meant that their interactions were not as helpful as they might be.
- 8.4 Computing service support relies heavily on the in-house School's expert technician, with failures and delays reported from external services providers. The School has particular issues with the current housing of the Big Computer. This is a systemic issue which needs to be addressed at University level.
- 8.5 The shortage of staff parking at UCD is noted as an element that influences staff morale and general wellbeing at work.

Commendations

- 8.6 The School is to be commended for establishing and maintaining good communication channels between the School and University-wide service providers.

Recommendations

- 8.7 The absence of a School Library Liaison (now done at College level) is regrettable and less convenient than the previous model. It is noted that new book purchases and library acquisitions are not immediately apparent to staff. The Library aspires to improve its communication in this regard. The Review Group recommends that the Library contact the School directly when books are purchased and available on the shelves.

9. External Relations

- 9.1 The School has a very wide range of external connections and activities. Within the University, it delivers modules in, and participates in the development of, eight undergraduate majors. The School set up, and now provides, academic oversight for the Mathematics Support Centre (see also section 4) and supports other Access initiatives.
- 9.2 The School has research collaborations with other disciplines through three institutes and centres, and at least six other schools.
- 9.3 Members of the School play a significant role in national and international research collaborations, learned society leadership, journal editing etc.

Commendations

- 9.4 The School has a good record of collaboration in UCD cross-disciplinary institutes, and joint degrees. Members of the School are good citizens in and contributors to Science and Arts undergraduate programmes and, for example, have made a substantive contribution to the apparent dramatic improvement in recruitment to the undergraduate Science programme.

- 9.5 The School has a strong record of outreach at sub-research level (e.g. Mathematics Support Centre and national co-ordination of this kind of activity), to schools (e.g. Mathematical Enrichment) and the public. The Mathematics Support Centre is widely praised and must be considered an outstanding success.
- 9.6 The School's involvement with European Study Groups in Industry (ESGI) is to be commended in terms of impact and engagement with industry. The hosting of an ESGI in UCD in 2014 was particularly noteworthy.
- 9.7 The School's contribution to schools liaison and outreach is outstanding and the faculty undertaking that work are to be commended for their commitment and ingenuity in that regard.

Recommendations

- 9.8 The School website needs to be redesigned to provide a better interface with external stakeholders, including industry, and to better reflect the roles that members of the School play in various research centres and institutes in the University and more widely.
- 9.9 The School, commendably, has a very wide range of commitments to external organisations and individuals; however, care should be taken to protect core School activities, and managing this might require focus and prioritisation. With existing resources, the School cannot satisfy all the demands placed upon it.

UCD School of Mathematics & Statistics – Summary of Commendations and Recommendations

This Appendix contains a summary of all commendations and recommendations made by the Review Group for the UCD School of Mathematics & Statistics and should be read in conjunction with the specific section above. Please note that the paragraph references below refer to the relevant paragraphs in the report text.

A. Organisation and Management

Commendations

- 2.6 The School is organised around three subjects: Applied & Computational Mathematics, Mathematics, and Statistics and Actuarial Science, each of which appear to have a strong sense of identity and tradition.
- 2.7 Leadership in the School appears to be strong and provides robust representation of the School at both College- and University- level.

Recommendations

- 2.8 The School should seek to establish a longer-term strategic approach in several areas, based around a firm expectation that in due course all members of the School will be co-located. Much of the School's current thinking, reflected in the SAR and in meetings with the Review Group, is perhaps tied too tightly to features of organisation and motivation that are historical, and/or responsive to more recent real or perceived economic and institutional difficulties, and/or reactive to shorter-term considerations. The School must plan and look forward to better times ahead.
- 2.9 In particular, the School should be organised to allow: (a) strategic thinking about research priorities across all the School's current and potential interests; (b) to allow structures to develop that support individual staff in the long-term development of their careers; (c) to allow longer-term and overview thinking about curriculum and approach to teaching.
- 2.10 The School needs to move beyond its current resistance to change in evidence in certain subject areas and adopt a collective, pro-active and positive approach. There appears to be a great deal of good will towards the School in the College of Science and more widely in UCD, together with an appreciation that the School has had some difficult challenges to face. These attitudes should be leveraged to the advantage of the School and its staff.

B. Staff and Facilities

Commendations

- 3.11 In general, the staff who met with the Review Group appeared to be highly committed to their subject and to the teaching and dissemination of mathematical sciences at both undergraduate and graduate levels.
- 3.12 The administrative infrastructure and support in the School is very positive and student-centred. There appears to be a high level of collaboration and flexibility within and across the administrative function.
- 3.13 While the location of the School and the associated provision of facilities has been challenging, the School and its leadership appear to be active in their efforts to improve the physical location of the School in the College of Science.
- 3.14 Staff who have moved office on multiple occasions are to be applauded for their patience, resilience and flexibility.
- 3.15 Members of the School Office and Technical support are to be commended for their efficiency and collegiality. Their dedication and good humour is apparent and appreciated by colleagues and students alike.

Recommendations

- 3.16 The School should continue to lobby constructively, energetically and imaginatively for co-location, including co-operation with the Science Centre Project Team and other schools in the College of Science, pressing for appropriate facilities to be planned and delivered (including any possible / necessary interim steps). The aspiration for a dedicated Computer Lab for Mathematics students should also be pursued as part of future renovations/improvements.
- 3.17 The Science Centre Project Team and UCD Buildings and Services should take into consideration the requirements of different disciplines and restore the provision of large blackboards in classrooms, where appropriate.
- 3.18 Temporary contracts should be replaced with permanent ones as a matter of urgency.
- 3.19 The School should encourage (and allow) postdocs to do a limited amount of teaching (consistent with funding restrictions). It would be good for their careers, and would help the School in sustaining delivery of a wide range of modules.
- 3.20 The School should consider expanding the School Office so that it is able to provide administrative and secretarial support to senior faculty (including, but not limited to, the Head of School).

C. Teaching, Learning and Assessment

Commendations

- 4.8 The quality and breadth of the teaching offered by the School is commendable. The variety of teaching methods, tutorials, labs is also to be applauded. This is a School where the teaching of mathematical sciences both to students of the discipline and more widely in the University is valued.
- 4.9 The Mathematics Support Centre is hugely successful and valued by students. The support for the Centre from within the School, and by the University (via the Registrar), is to be commended and should continue.
- 4.10 The well-established Actuarial & Financial Sciences degree (BAFS) has a strong reputation among students and employers.

Recommendations

- 4.11 The School may like to consider whether, notwithstanding their dedication to the principle that mathematics in all or most UCD courses should, wherever possible, be taught by the School, there is scope to refocus some part of their teaching effort towards higher priority teaching and research. The quantity and quality of the current teaching is clearly highly valued by colleagues in other parts of UCD, but the current load of 160+ taught modules seems to be considered to be “above and beyond the call of duty” by most of the non-School colleagues that met with the Review Group.
- 4.12 Though financial considerations will militate against any sudden moves, the School should carefully examine whether there are any opportunities for efficiencies, and in the longer-run should not reject out-of-hand the possibility that in some cases other schools which wish to take over some teaching in mathematical areas should be “allowed” to do so. Time saved could be used, for example: to support research through supporting requests for semesters of sabbatical leave within the School, and to reduce the teaching load of new staff; to allow time for the development of new courses; and to invest in steps designed to increase the attractiveness of the core School degree courses.

D. Curriculum Development and Review

Commendations

- 5.7 The School reviews and updates the content and structures of its programmes and modules on an annual basis. When doing so, it takes into consideration advances and progress in research and new challenges that its graduates are likely to meet in employment. The curriculum as taught by the School is broad, diverse, and covers all main areas very well.
- 5.8 Current efforts to increase numbers on the single honours science BSc degrees are welcome and are already bearing some fruit.

- 5.9 The Developing Science and Mathematics Education Programme appears to have started positively.
- 5.10 The development of the online MSc in Data Analytics (and the Professional Diploma) is exemplary and should be pursued further, along with other models of online education in the College.
- 5.11 The MSc in Climate Change is an excellent example of an interdisciplinary programme which builds on the complementary expertise represented in UCD.

Recommendations

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UCD School of Mathematics & Statistics Response to the Review Group Report

Preparing the Self-assessment Report was a valuable exercise, which helped the School consider the entirety of its work, how the pieces fit together, and how the School will proceed from here. The Review Group did a thorough job and we appreciate the work they did in a short time. This was an exercise that we recognise has been of great benefit in clarifying the activities that we are engaged in, the areas in which we believe we excel, the strengths and weaknesses that we have as a School, and the opportunities and threats which we may encounter in the future.

With specific reference to the prioritised recommendations identified by the Review Group, the School's initial proposals/comments are outlined below:

(i) Recommendation B: Location

Proposal/Comment: This recommendation has the strongest language in the whole report: the current situation is untenable. The School would like to proceed immediately with the consolidation of academic staff from Science South to Science North. We look forward to working with the College and University on this project.

(ii) Recommendation A: Strategy

Proposal/Comment: In 2015-16 the School started an undergraduate programme in Financial Mathematics within Science, which utilises all subjects in the School and plays to our strength in having the different subjects. We plan to hire in Financial Mathematics and Applied Probability, areas which cross the subjects in the School and will enhance the new programme. We have just hired a new permanent member of staff in Actuarial Science, and we intend to expand that programme and link to the new Financial Mathematics programme. Co-location will greatly help unify the School. We look forward to engaging with the University and using up some of the goodwill!

(iii) Recommendations C: Support for individual career development

Proposal/Comment: We will put in place an official mentoring procedure for early-career staff members, and we will assign mentors. For promotions see (vi).

(iv) Recommendations D: Teaching efficiency

Proposal/Comment: It is a long-standing University principle that modules in a subject should be taught by the School that contains the subject, for reasons of research-led teaching, among others. We plan to discuss this matter with other Schools, including the

possibility of jointly teaching some modules in Mathematics and Statistics and also in other subjects such as Business and Engineering. We will review our teaching to find new efficiencies, although we have already achieved some efficiencies in recent years. We also plan to consult within the School regarding their opinion about sabbaticals, because of the implications for all concerned.

(v) Recommendations E: Metrics

Proposal/Comment: We did some initial work on metrics with appropriate University staff while preparing for the SAR, and we will continue this work to develop suitable metrics.

(vi) Recommendations F: Promotions

Proposal/Comment: We do feel that the University applied metrics across the whole University in the last promotions round, such as research funding and number of PhD students supervised, which disadvantaged certain subjects including Mathematics and Statistics. We will hold a promotions workshop in the coming months to advise on promotion applications.

(vii) Recommendations G: Visibility

Proposal/Comment: We agree that our visibility could be greater, and that some of our activities are not publicised. We will make further efforts in this regard, such as starting our own School twitter feed, and regularly updating our website. We await the new University templates before going further, including making the website responsive to mobile telephones. In addition, we will make a greater effort in print and in video to publicise our activities.



UCD School of Mathematics & Statistics

Site Visit – 14-17 April 2015

Timetable

Pre-Visit Briefing Prior to Site Visit – Tuesday, 14 April 2015

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|-------------|--|
| 17.00-19.00 | RG meet in the hotel to review preliminary issues and to confirm work schedule and assignment of tasks for the site visit – RG and UCD Quality Office only |
| 19.30 | Dinner hosted for the RG by the UCD Registrar and Deputy President - RG, UCD Deputy President and UCD Quality Office only |

Day 1: Wednesday, 15 April 2015

Venue: Committee Room, Health Sciences Centre

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|---------------|--|
| 08.45 – 09.00 | Private meeting of Review Group (RG) |
| 09.00 – 09.30 | RG meet with College Principal |
| 09.30 – 09.45 | Break |
| 09.45 – 10.45 | RG meet with Head of School |
| 10.45 – 11.30 | Tour of facilities |
| 11.30 – 11.45 | Tea/coffee break |
| 11.45– 12.30 | RG meet with SAR Co-ordinating Committee |
| 12.30-13.00 | Break – RG review key observations and prepare for lunch time meeting |
| 13.00-14.00 | Working lunch (buffet) – meeting with employers (and/or other external stakeholders) |
| 14.00-14.15 | RG review key observations |

14.15-15.30	RG meet with representative group of faculty – primary focus on Teaching and Learning, and Curriculum issues.
15.30-15.45	RG tea/coffee break
15.45-16.30	RG meet with support staff representatives
16.30-16.35	Break
16.35 -17.15	RG meet with UCD stakeholders
17.15-17.25	Break
17.25-18.15	RG meet with UCD Science Programme Dean
18.15	RG depart

Day 2: Thursday, 16 April 2015

Venue: Committee Room, Health Sciences Centre

08.30-08.45	Private meeting of the RG
08.45-09.30	RG meet with representatives from the following UCD support units: Buildings & Services; International Office; Registry; Human Resources; Library; Room Allocations; Arts Programme Office and Science Outreach
09.30-09.40	Break
09.40-10.25	RG meet with a representative group of postgraduate students (taught and research) and recent graduates (PG and UG)
10.25-10.40	RG tea/coffee break
10.40-11.25	RG meet with the School Research, Innovation and Impact Committee (and other staff members nominated by the HoS)
11.25 -11.50	RG meet with School postdoctoral Research Fellows
11.50 – 12.00	Break
12.00-12.30	RG private meeting - review key observations
12.30-13.15	Lunch – Review Group only
13.15-14.00	RG meet with representative group of undergraduate students

14.00-14.15	RG private meeting - review key observations
14.15-14.45	RG meet with College Finance Manager and Head of School to outline School's financial situation
14.45-15.00	Break
15.00-15.45	RG meet with recently appointed members of staff
15.45-16.00	RG private meeting – review key observations/findings
16.00 – 16.30	RG meet with current tutors
16.30 -16.45	Break
16.45 – 17.30	RG available for private individual meetings with staff
18.00	RG depart

Day 3: Friday, 17 April 2015

Venue: Committee Room, Health Sciences Centre

09.00-10.30	Private meeting of RG
10.30-10.45	Break
10.45-12.30	RG prepare draft RG Report and exit presentation
12.30-13.15	Lunch
13.15-15.15	RG finalise first draft of RG Report and feedback commendations/recommendations
15.15-15.30	RG meet with College Principal to feedback initial outline commendations and recommendations
15.30-15.45	Break
15.45-16.00	RG meet with Head of School to feedback initial outline commendations and recommendations
16.15	Exit presentation to <u>all available staff of the unit</u>
16.45	Review Group depart