

QUALITY ENHANCEMENT UNIT



QUALITY REVIEW

PEER REVIEW PANEL REPORT

DEPARTMENT OF PHYSICS

Date: November 2020

“By embedding a strong quality-enhancement ethos, we will use our quality processes to ensure a culture and experience of best practice in the delivery of our academic mission, demonstrating our commitment to continuous evolution and improvement”

(UCC’s Strategic Plan 2017 – 2022, p.23)

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List of Panel Members

Refer to Appendix A for detailed panel profiles.

Name	Position/Discipline	Institution
Mr Ben Dunlea	BSc (Computer Science)	University College Cork
Dr Helen Heath	School of Physics	University of Bristol
Professor Paul McSweeney [Chair]	Vice-President for Learning & Teaching	University College Cork
Ms Kathryn Neville	College Manager, College of Medicine and Health	University College Cork
Professor Fulvio Parmigiani	Former Head of Physics, Emeritus Professor, International Faculty, University of Cologne, Germany	University of Trieste University of Cologne
Review Coordinator		
Ms Deirdre O'Brien	Administrative Officer, Quality Enhancement Unit	University College Cork

Part 1 - Overall Analysis

1.1 Context

The Department of Physics is a department within the College of Science, Engineering and Food Science (SEFS) in UCC. The Department has 9 full-time and 2 half-time permanent academic staff and 1 temporary member of academic staff. It has 8 adjunct academic and research staff based at the Tyndall National Institute. There are 5 full-time technical staff and 2 full-time and 2 half-time administrative staff. In terms of academic staff number, the UCC Department of Physics is the smallest university Physics department in Ireland.

The Department currently has 200 FTE students in its undergraduate programmes. This number is comprised of 125 FTE in service courses and 75 FTE in the Physics Degree Programmes. Approximately 30 students graduate with Honours Degrees involving Physics (some jointly with other subjects) each year. 40 PhD and 3 research MSc students were registered in the Department for the 2019/20 academic year. This is typical of the numbers of PhD and MSc students in the Department over the past several years.

From a governance point of view, the Department follows the traditional model: many management and planning decisions are formally the prerogative of the statutory Professor, although in practice

decisions are made by an array of committees. While this model was common in the past, the Department of Physics is the last academic unit in UCC operating under a statutory professorship.

Within the College of SEFS, smaller departments were amalgamated into larger schools as part of a restructuring process during the period preceding the last Quality Review in 2010. The Department of Physics is now the smallest academic unit within the College of SEFS; while it is formally a department with different headship rules, the Department of Physics interacts with the College of SEFS in the same way as the other eight schools in the college.

In parallel with the reorganization into schools referred to above, the academic management of SEFS has evolved towards a model in which a large proportion of functions that would traditionally have been carried out at Faculty level are devolved to schools. Although the Department of Physics is not formally a school within the College of SEFS, in practice it has been required to fulfil these functions in the same manner as schools, placing an appreciable additional administrative burden upon its staff.

The relationship between the Department of Physics and the Tyndall National Institute, a large research institute, is extremely important to the Department, although there is no formal institutional linkage at management level between the two units. Approximately half of the permanent academic staff of the Department have wholly or partly based their research within the Institute. Two of the five centre heads within the Institute are affiliated with the Department of Physics and a large fraction of the Institute's postgraduate students are registered in Physics. Physics research groups played an important role in the formation of the Tyndall Institute and the size, visibility and quality of the infrastructure of the Institute has been of enormous benefit to certain research areas within the Department, particularly photonics and condensed matter. In this regard, the Department has followed the UCC institutional policy of concentrating its major research facilities within interdisciplinary institutes, which has produced benefits and challenges.

1.2 Methodology and Site Visit

Due to the onset of the Covid-19 pandemic, the original review site visit had to be deferred. To enable completion of Quality Reviews under the prevailing public health restrictions, a model for conducting site visits virtually was developed. This model ensures continuity in the operation and delivery of quality review and enhancement activities. Development of the revised model was informed by emerging practices for quality review nationally and internationally under Covid-19 arrangements. Core principles which guided the redesign were the need to:

- Achieve completion of the review process whilst recognising the significant impact of Covid-19 adaptations for teaching, learning and assessment for academic units;
- Uphold the overall integrity of the review process and maintain comparability by ensuring that the objectives for review could be achieved under adapted circumstances;
- Coordinate the sequence of the site visit to ensure coherence and retain all the relevant meetings with staff, students and stakeholders;
- Manage the process of Review Team establishment and working ethos.

The Self-Evaluation Report and Case Study of Good Practice submitted by the Department was supplemented by a short Covid-19 SER Addendum. The purpose of the Addendum was to outline and reflect on the Department's response to the Covid-19 pandemic, including challenges, learnings and

unforeseen opportunities faced by the Department, as a result of the sudden adaptation to remote Teaching, Learning and Assessment. This addition served to make the context of the unit as current as possible for the Peer Review Panel.

In place of the usual physical site visit at the University over a 2.5-day period, the virtual visit was configured to take place over a 5-day period spread over two weeks in November 2020. Microsoft Teams was used as the virtual platform for all meetings. The longer timeframe of the site visit provided for increased flexibility, whilst retaining all the relevant meetings with staff, students and stakeholders and so ensuring that the objectives of quality review would be fulfilled.

The timetable was comprehensive and enabled consultation with key stakeholders, including the Head of College, senior management of the University, students and internal and external stakeholders. There was engagement with the Head of Department, the Department Manager, Programme Directors and staff from the School. The sequencing of meetings was organised so as to ensure coherence and progression in the conduct of the site visit. The timetable for the site visit is included in Appendix B.

To support the Peer Review Panel and facilitate effective engagement throughout the site visit, additional guidance and support was provided by staff of the Quality Enhancement Unit. This included technical support, as well as briefing and advisory support prior to and throughout the site visit. On the rare occasion when, due to prior commitment a Panel member was unable to attend a scheduled meeting, the online meeting was recorded to ensure that all Panel members had access to the full proceedings of the review. When this occurred, permission for recording was sought from all involved and the recording was deleted immediately after the review.

The Panel brought together national and international peer reviewers. Internal reviewers provided knowledge of institutional and organisational structures within UCC, with the external Panel members contributing their peer expertise in the area of Physics. All review panels at UCC also include a student representative as a full Panel member. The student representative brought valuable insights and perspectives on student issues. Despite the remote modalities of the site visit, the Panel reached positive synergy and engaged constructively with all participants in the site visit meetings. At the end of the site visit, the Panel presented its initial findings, both commendations and recommendations, to the Department.

Review coordination was provided throughout by a Review Co-ordinator from the Quality Enhancement Unit (QEU) to facilitate the review process and to support the Peer Review Panel in formulating and agreeing the final Panel Report. The Report was compiled collaboratively, and the entire Panel contributed to the production of the final Report.

1.3 Objectives of the Quality Review

The overarching objectives of academic quality review at UCC are to enable Schools, through evidence-based self-evaluation, to:

1. Reflect on and promote the strategic enhancement of their academic activities to ensure an outstanding learning experience for all students (enhancement dimension);
2. Evaluate the effectiveness of their processes for assuring academic standards and provision, in line with the University's academic mission and strategy (assurance dimension).

Thus, peer review goes beyond quality assurance to also embrace continuous quality enhancement. The Peer Review Panel Report reflects these objectives in the recommendations and commendations outlined to support the Department of Physics in further refining its priorities and optimising its activities in the pursuit of its ambitious drive for excellence within the international and national arena of higher education.

1.4 Overall Analysis of Self-Evaluation Process

1.4.1 Self-Evaluation Report (SER)

The Panel found the Self-Evaluation Report to be concise and honest although it was more descriptive than analytical and self-reflective. The Panel also received a separate Strategic Plan from the Department, which was very instructive, and the Panel commended the aims identified in this Strategic Plan.

The Panel noted that there was little indication of how, or to what extent, the recommendations of the previous review (2010/11) had been implemented.

1.4.2 SWOT

The Department of Physics SWOT exercise was facilitated by Dr Anne Gannon of UCC Human Resources. The Departmental staff felt the exercise was a positive experience, conducted in a mutually respectful atmosphere.

The Department identified their main strengths, many of which were centred around the students, both undergraduate and postgraduate, with a key focus on high quality education and student supports. The collegiate nature of the Department was also considered a key strength.

The weaknesses identified by the Department centred around lack of critical staff mass in the Department, high teaching loads and insufficient staff to plan and implement strategy; there is also an extreme gender imbalance in the Department. The viability of the Department is under threat due to insufficient staff numbers. Poor facilities in the Kane Building and an inadequate budget were also identified as weaknesses.

The opportunities identified by the Department included: the development of existing and new programmes, potential collaborations with other disciplines and the potential opportunity presented by the retirement of a large proportion of staff in the next few years - though non-replacement of these senior staff is also viewed as a threat. The threats to the Department are felt keenly and centre on the size of the Department and its ability to continue to attract students.

The Panel concurred with the strengths, weaknesses, opportunities and threats identified by the Department.

1.4.3 Benchmarking

The Department of Physics benchmarked against the University of Hertfordshire (UH) School of Physics, Astronomy and Mathematics. The Department chose UH as it has MPhys programmes in both Physics and Astrophysics, broadly similar to the Department's BSc programmes in Single-

Honours Physics and Single-Honours Astrophysics. In addition, the number of teaching staff in Physics and Astronomy at UH (23 FTE) is not very dissimilar to the current number of teaching staff in the Department of Physics (10 FTE). The Department felt that making a comparison with another small department could provide more insight than comparing with a much larger institution.

The student/staff ratio for UCC Physics is approximately 50% larger than UH and despite its considerably smaller number of teaching staff, UCC provides a wider range of undergraduate degree programmes.

Although the two institutions have almost identical amounts of service teaching in terms of FTE students, the UCC service-teaching students are mostly 1st and 2nd year undergraduates, whereas the UH service-teaching students are MSc students. Although UH has considerably more Physics and Astronomy postdocs than UCC, UCC has more PhD students, while the two institutions have comparable numbers of master's students.

The Department felt that this benchmarking underscores a strength of UCC Physics programmes – they provide an extremely strong theoretical basis for programmes that are essentially experimental in nature, while also providing a strong laboratory component. This makes it possible for the UCC Single-Honours Physics programmes to train their students to be well-rounded physicists.

1.4.4 Good Practice Case Study

The Department of Physics presented its good practice case study which outlined the teaching and research possibilities for students in the Department; 3rd and 4th year students can assist in demonstrating and tutoring 1st year modules. Students can also engage with PAL (Peer Assisted Learning) and those acting as a PAL leader receive a certificate.

The possibility of engaging in research, probably for the first time, can greatly enrich the experience of undergraduate science students, fostering creative thinking, communication skills and the ability to work independently. Such experience can also inform students future career decisions. For this reason, the Department of Physics ensures that there are opportunities for students to become involved in research projects through 4th year research projects or funded summer research projects.

The Panel commended the participation of undergraduates in both teaching, research and in the PAL scheme.

1.5 Facilities

The Panel did not have an opportunity to conduct a tour of the Department's facilities in the Kane Building due to the remote format of the site visit. The external Panel members got a strong sense of the state of the building and facilities from the discussion with staff and this impression was confirmed by the internal panel members.

The Panel has made a strong observation to the College of SEFS regarding the need for immediate upgrading of the facilities in the Kane Building.

Part 2 – Findings of the Panel

2.1 Departmental Overview

The Panel was impressed with the staff of the Department of Physics, their dedication to both their discipline and their students in a particularly difficult environment is to be commended. It was clear to the Panel that staff are overstretched and overworked in a Department that lacks the critical mass required to grow and develop. The UCC Physics Department is the smallest university Physics department in Ireland.

The Strategic Plan presented by the Department outlines a clear set of priorities, but a roadmap is now required to get the Department to where it wants to be and needs to be, particularly in regard to staff numbers. In this report the Panel has particularly focused on recommendations to help the Department in that regard.

The Department's relationship with the Tyndall Institute is to be both celebrated and carefully managed. The Tyndall Institute is an asset to the Department but its sheer size and its focus on engineering applications and postgraduate education has the potential to compromise the Department's focus on basic science research and undergraduate teaching. There are a number of Schools in UCC navigating similar relationships with the Tyndall Institute and there could be some benefit to collaborating on a common approach.

The Panel welcomed the Department's approach to the critical feedback received in student focus groups; the Panel commended the efforts made in the months following the focus groups to address the issues raised, particularly in regard to student workload. The Panel also welcomed the open and honest engagement from the students during the virtual site visit. The student feedback was mainly positive on the quality of the academic programmes, however, student workload remains a concern for the majority of students. The Panel strongly urged the Department to redouble its efforts to tackle this issue which is impacting on the work-life balance of students and is at odds with the otherwise positive feedback received from the students.

Overall, the Panel concluded that Physics is an academically strong and collegiate department which is at a crossroads in its existence. The Department is aware that strategic planning is required to address the staffing shortfall it will face in the next five years as a result of retirements, and yet, due to the lack of critical mass in the Department there is little capacity for such planning. The Panel recommended that the Department work in conjunction with its biggest potential ally, the College of SEFS, to develop the business plans required in today's financial and strategic environment to enable the Department to grow financially and thus grow in staff numbers. The Panel was of the opinion that there is much potential for Physics to fulfil its aim to evolve into a larger Department/School.

2.2 Collaborative partnerships

The Department of Physics runs a joint Industrial Physics degree in collaboration with CIT. Following informative discussions with both partners, the Panel was satisfied with how the partnership is operating and evolving. The student numbers for the degree appear to have stabilised, notwithstanding one particularly bad year. The CAO points appear to be at an appropriate level and the Panel heard that graduates are in demand from industry in the Cork region in particular.

The partners have a formal meeting once per semester and are preparing to constitute an Industry Advisory Board; the Panel commended this particular initiative.

In order to ensure compliance with quality assurance principles set out in the IHEQN Guidelines for Collaborative Provision¹, the Panel recommended that a Programme Annual Report is produced and that a Programme Review is undertaken when the programme has produced its first cohort of graduates.

2.3 Commendations

In an ethos of quality enhancement, whereby good practice is acknowledged and disseminated, the Panel notes the following areas for commendation:

- Excellent collegiality among all staff and a strong common identity;
- Committed academics delivering high quality education; academics are dedicated to their discipline and the research output is good for the size of the Department;
- Enthusiastic and dedicated technical staff; of vital importance to the academic mission of the Department; delivering on the laboratory aspect of teaching and skilfully maintaining aging equipment;
- Flexible, engaged and progressive administrative staff who have kept pace with new technology as evidenced by their strong social media presence; they are a high functioning team, well connected with both staff and students;
- The degree programmes promote, and naturally include, strong transferrable skills (digital fluency, independent thinking, creative problem solving, team working);
- Student feedback evidenced excellent examples of pastoral care by individual staff members;
- Very positive and engaged alumni;
- Strong engagement with SALI (Strategic Academic Leadership Initiative);
- Initiatives undertaken to date on spreading the student workload;
- Strong participation in the PALS scheme.

2.4 Recommendations

Observations to the College of Science, Engineering and Food Science (SEFS)

- The Panel strongly concurs with the Department's assessment of the Kane Building and is in agreement that facilities within the Kane Building require modernisation as a matter of urgency.

Recommendations to the Department

Strategy and Governance

- The Panel commended and endorsed the ambitions stated in the Department's 2018 Strategic Plan. The Panel is cognisant of the fact that it will be necessary to develop business plans to drive the ambitions and initiatives identified in the Department's Strategic Plan. The Panel

¹ Irish Higher Education Quality Network (IHEQN) 2013, Guidelines for the Approval, Monitoring and Review of Collaborative and Transnational Provision

recommended engagement with the supports available in the College of SEFS to both test the feasibility of initiatives and develop business plans, in conjunction with the Department. Such supports within the College of SEFS include the expertise of a Financial Analyst, HR Business Partner, and Internationalisation Manager.

To manage this process strategically, the Department should consider assigning staff to drive particular initiatives. Given the lack of critical mass within the Department and the pressure on staff, the Panel has focused on initiatives that, if successful, would generate the resources required to recruit more staff. The Panel strongly recommended consideration of the following potential initiatives, all of which have been stated as aspirations in the Department's Strategic Plan:

- Increasing income through the recruitment of International Students. This income stream would in turn provide the rationale required in a business plan for the recruitment of additional staff. Connections are already in place with the USA (University of California), and the College of SEFS also has strong links with Universities in China.
 - Work with and through the College of SEFS to approach SFI for funding for two further lectureships/professorships in the area of Quantum Physics. SFI have invested heavily in a Quantum Physics Professor and further investment in a supporting team would be a logical next step to ensure the long-term viability of this research area. As retirements will create vacancies there is potentially zero risk to the University should extra income not be generated during the 5 years of the funded posts. Should such income materialise, then there is no additional cost to the University and valuable extra staff will have been secured.
 - Increase EU undergraduate student numbers by creating a business plan for the suggested new programmes (and current programmes).
- The Panel recommended that the Department constitute an External Advisory Board which should include scientific and industry members. An External Advisory Board would be a valuable source of advice to the Department on potential initiatives.
 - The Panel recognised that the Tyndall Institute is an important resource for Physics and welcomed the Department's statement that it wishes 'to broaden and deepen relationships with the Tyndall National Institute at UCC'. The Panel recommended that the Department:
 - Fosters and nurtures the relationship by ensuring continuing dialogue at a high level, with regular meetings;
 - Considers how other Schools manage their interface with Tyndall and whether there is learning that could benefit the Department. The Panel advises that the Heads of Chemistry, Physics and Engineering should collaborate in developing a common approach;
 - Considers using Tyndall as a Unique Selling Point when in a position to market postgraduate programmes abroad.
 - The Panel recommended that the Department focus on marketing their strengths and consider the following:
 - Nurture links with teachers of Physics; work with post-primary school teachers to generate interest in current research which would, in turn, generate a new cohort of potential students;

- Leverage the Department's strong social media presence to capture individual social media posts into an annual bulletin/newsletter;
 - Engage and work with the Department's positive and willing alumni: alumni are a potential source of philanthropy, work placements, presenters for weekly seminars and career advice for students. The Alumni and Development Office in UCC can provide advice and support should the Department wish to develop this further and set up a Physics Alumni group.
- The Panel recommended exploring future synergies with cognate areas/disciplines when the Department is at the point of determining its future within the organisational hierarchy.

Teaching, Learning, Assessment and the Student Experience

- The Panel recommended that student workload be reconsidered in light of the student feedback received both by the Department and the Panel. The current intensive workload has a detrimental impact on the work-life balance of the students and ultimately has an adverse impact on staff workload. The Panel recommended that the Department:
 - Reflects critically on the amount of continuous assessment required per module; the Panel strongly recommended that the number of continuous assessments be reduced;
 - Considers increasing the project weighting to more than 10 credits;
 - Ensures clarity in regard to the coordination of programmes with other Schools, specifically in regard to the adequate spacing of continuous assessment submission dates.
- The Panel recognised that Physics has a very small cohort of staff teaching a broad programme. In order to alleviate some of this workload the Panel recommended that the Department:
 - Considers the learning and adaptations used during Covid-19 to maximise blended learning and lighten workload;
 - Re-evaluates and rationalises modules to reduce staff workload.
- The Panel endorsed the action stipulated in the Department's Strategic Plan to 'consider offering work placement in all Physics degree programmes' and recommended that the Department introduces a work placement module. A work placement module would be a recruitment draw for programmes and would greatly enhance the student experience.
- The Panel recommended that the Department undertakes regular student surveys with a particular focus on workload; the Department should also ensure that students are informed of actions taken as a result of feedback and thereby close the student feedback loop.
- The Panel commended the transferrable skills which are naturally built into the degree programmes. The Panel recommended that the Department:
 - Ensures that students can articulate these skills to potential employers;
 - Broadens these skills by the inclusion of programming skills and presentation skills within current modules.
- The Panel recommended that the Department undertakes further work to ensure that students are aware of employment opportunities in industry and in careers outside academia. The Careers

Office in UCC is a source of advice and support for the Department in this area as are the Department's own alumni.

- The Panel recommended that the Department increases their links with CIRTL and encourages staff to do the PG Certificate in Teaching and Learning in Higher Education. CIRTL also have modest grants available for projects enhancing Teaching and Learning which the Department should access.

Staffing

- The Panel commended the Department's participation in the SALI initiative and recommended that the Department plan to improve gender balance within the staffing body.

Collaborative Provision

Industrial Physics with CIT

- In order to ensure compliance with quality assurance principles set out in the IHEQN Guidelines for Collaborative Provision, the Panel recommended that:
 - A Programme Annual Report is produced;
 - A Programme Review is undertaken when the programme has produced its first cohort of graduates.

Appendix A – Panel Profiles

<p>Mr Ben Dunlea University College Cork</p>	<p>Ben Dunlea is a final year Computer Science Web Systems Engineering student. Ben has been in UCC since 2015, and has taken two sabbatical years to serve on UCC Students' Union as a full time officer. In 2017/18, he was elected to be Entertainments Officer, and in 2019/20 he was elected as President. During Ben's time in UCC, he has had the pleasure of being a part of everything from Societies and Clubs Executives, to various University boards and committees including the Governing Body and UMTS. He hopes that both his time as a student, and working within the University, will bring value to this Quality Review.</p>
<p>Dr Helen Heath University of Bristol</p>	<p>Dr Helen Heath has been an academic in the School of Physics at the University of Bristol for nearly 30 years and was the School Education Director for seven years. She is a high energy particle physicist by training and continue to work on two projects at the CERN accelerator complex outside Geneva although she has been more teaching focussed in recent years. Dr Heath held a fellowship at the Bristol Institute of Teaching and Learning for two years looking into programme level assessment. Currently her time is split between the School of Physics and her role as one of four University Education Directors (Quality). She is secretary to the Higher Education group of the Institute of Physics and a Senior Fellow of the Higher Education Academy. Her application for the latter focussed on work on gender balance in Physics and the introduction of units engaging students with wider community – through work with schools, industry and public engagement. Dr Heath has just set up a Physics Education Group at Bristol to support the teaching focussed academics in the School.</p>
<p>Professor Paul McSweeney [Chair] University College Cork</p>	<p>Professor Paul McSweeney is Vice-President for Learning and Teaching in University College Cork. His office coordinates the activities of the University's Centre for the Integration of Research, Teaching and Learning (CIRTL), Adult Continuing Education (ACE), Centre for Digital Education, Skills Centre, Examinations Appeals and the Language Centre, together with responsibility for delivering aspects of the University's Academic Strategy.</p> <p>As Professor of Food Chemistry and former Head of the School of Food and Nutritional Sciences, he has an active research profile in dairy chemistry and cheese science. He is the co-author or co-editor of 15 books and about 275 research papers and reviews with a h-index of 65 with over 20,600 citations (Google Scholar; July 2020). He was awarded the Marschall Danisco International Dairy Science Award of the American Dairy Science Association in 2004 and in 2009 a higher doctorate (DSc) on published work by the National University of Ireland.</p> <p>Since 2009 he has been a member of Academic Board, the senior university standing committee of Academic Council responsible for</p>

	<p>the formulation of strategy and policy to meet the university's education and research objectives. He has chaired the university's Examinations Appeals Committee and for over five years ADSC, the university's main academic policy committee. He is also a member of the board of the National Forum for the Enhancement of Teaching and Learning in Higher Education.</p> <p>Professor McSweeney has considerable leadership and management experience in higher education. He was vice-head of school, vice-head of the College of Science, Engineering and Food Science, interim Head of College, a governor of the university (2015-2018) and member of its Finance Committee and head of the School of Food and Nutritional Sciences. He was appointed Vice-President for Learning and Teaching in 2018 and acted as Vice-President for External Relations for five months in 2020.</p>
<p>Ms Kathryn Neville University College Cork</p>	<p>Kathryn Neville BA, Dip Comp Sc, MBA, Cert Corp Gov, Lean Sigma Green Belt.</p> <p>Kathryn Neville is the senior manager in the College of Medicine & Health, a role covering strategic development, project management, governance, academic administration, external liaison, capital projects and systems development. Kathryn has a background in research and has managed both EU and National research grants. She worked for many years in the dental area including as manager of the Cork Dental School & Hospital and served on Dental Council and on a number of national committees including the Orthodontic Policy Review Group. Kathryn was a member of the project team that led and delivered the report on the Establishment of Hospital Groups which was adopted as government policy and implemented in 2013. She has worked regionally with the Head of College and colleagues in the Hospital Group to deliver an academic health model, a central plank of the College and University strategy. More recently, she served on the Oral Health Policy Academic Reference Group which informed the report, Smile agus Slainte. This became government policy in 2019 and is currently being implemented.</p>
<p>Professor Fulvio Parmigiani University of Cologne</p>	<p>Professor Emeritus of Physics at the University of Trieste and former director of the Physics Department. Professor at the International Faculty of the University of Cologne from 2014 to present.</p> <p>Visiting Scientist at the IBM Almaden Research Center, CA., 1984-85 and 1989-90. Affiliate at LBNL, Berkeley, CA, from 2001 to 2017. Science Director of the FERMI seeded FEL (Elettra Sincrotrone Trieste) from 2004 to 2015. Awarded with the Zernike Chair at the Zernike Institute of the University of Groningen (NL) in 2012. Appointed professor of Condensed Matter at the International Faculty of the University of Cologne (Germany) from 2013 to present. Visiting professor from 2018 to present at the Radboud University (Nijmegen - NL) with a fellowship of the Royal Academy of Science of Netherlands.</p> <p>Member of the scientific advisory board of prestigious large-scale facilities [SLAC (USA), SLS (CH), Photon Factory–KEK Tsukuba, (J)].</p>

	<p>Reviewer of large international projects for European and USA funding agencies. Reviewer for several prestigious journals of physics and referee of more than 120 manuscripts for PRL and PRB. PI of several National and International research projects.</p> <p>The main scientific interests span from the non-equilibrium physics and spectroscopies of strongly correlated electron systems, low dimensional materials, and high temperature superconductors.</p> <p>Research leader in topics such as core level photoemission mechanisms in solids, time resolved ARPES of quantum materials and time resolved optical spectroscopy of quantum materials and superconductors.</p> <p>Co-author of several articles published in the most prestigious scientific journals and magazines, such as, Science, Nature Materials, Nature Photonics, Nature Communications, Nano-Letters, Science Advances, PRL, APL and PRB.</p> <p>Editor of Nuclear Instruments and Methods in Physics Research (A) from 2006 to present and from 2012 editor of Physics Reports.</p>
<p>Ms Deirdre O'Brien University College Cork (Review Co-ordinator)</p>	<p>Deirdre O'Brien works as Administrative Officer in the Quality Enhancement Unit where she manages projects such as the institutional Research Quality Review and the Annual Quality Report to QQI. Deirdre started her in career in third level in the Faculty of Arts Office in University College Dublin, progressing to Programme Manager for the BA Degree before moving to work in UCC. She graduated with a BA from UCC in 1997 and then completed a Postgraduate Diploma in Heritage Management in UCC.</p>

Appendix B – Peer Review Panel Site Visit Timetable

Wednesday 21 October 2020	
15.00 – 16.00	Chair Briefing with Director of Quality and Review Co-ordinator
Tuesday 3 November 2020	
12.00 – 14.00	Briefing of the Panel with Director of Quality and Review Co-ordinator

Wednesday 18 November 2020	
09.30 – 10.30	Convening of Panel members – preparation for day ahead
10.30 – 11.30	Meeting with Head of Department <i>(to be joined by Department Manager at 11.15) Focus on:</i> - <i>SER: how the Department undertook its SER; what it learned from the process; what it hopes to gain from the review; Covid19 Addendum to the SER.</i> - <i>Department developments to date, strategic priorities of the Department and overview of educational provision.</i>
11.30 – 12.00	Break for Panel members
12.00 – 12.45	Meeting with Head of College <i>(to be joined by the College Financial Analyst at 12.30)</i> <i>Panel discuss College strategy and priorities. The links between College/ Department, financial resource allocations process, staffing resources and infrastructure.</i>
12.45 – 14.00	Break for Panel members
14.00 – 15.00	Wrap-up meeting

Thursday 19 November 2020	
09.30 – 10.00	Convening of the Panel – preparation for the day ahead

10.00 – 10.30	Meeting with Senior Officers and key internal stakeholders of the University Vice President for Research & Innovation Deputising for Vice President for Learning & Teaching
10.30 – 11.00	Break for Panel members
11.00 – 11.45	Meeting with undergraduate students 1 st year Physics and Astrophysics 2 nd year Single Honours – 2 x student representatives 2 nd year Chemical Physics 3 rd year student 3 rd year Joint Honours – 2 x student representatives 3 rd year Astrophysics 4 th year student 4 th year Joint Honours 4 th year Chemical Physics
11.45 – 12.00	Break for Panel members
12.00 – 12.45	Meeting with postgraduate students 1st year PhD student – 2 x student representatives 2 nd year PhD student
12.45 – 13.45	Meeting with external stakeholders Representatives from PhD studies, University of Nottingham Representatives from Salary Finance, London Representatives from Riot Games Representatives from Apple, MSc NUIG Representatives from DESY Postdoctoral Researcher Representatives from MPA - Plasma Accelerators
13.45 – 14.30	Break for Panel members
14.30 – 15.00	Meeting with Professor of Quantum Physics, UCC
15.00 – 15.30	Wrap-up meeting

Tuesday 24 November 2020	
10.00 – 10.30	Convening of the Panel – preparation for the day ahead
10.30 – 11.30	<p>Meetings with Department staff</p> <p>Academic Staff Administrative Staff Technical Staff</p> <p><i>Group discussion (in max of 3 break-out rooms in MS Teams):</i></p> <ul style="list-style-type: none"> - <i>What is working well in the Department?</i> - <i>What has potential? What should be improving?</i> - <i>What is the one thing that needs to change?</i>
11.30 – 11.45	Feedback to Department staff
11.45 – 12.15	Break for Panel members
12.15 – 13.15	<p>Meeting with Programme Directors/Chairs of Boards of Studies</p> <p><i>Discussion on monitoring and review of programmes to include indicatively, programme & module approval processes, student progression, External Examiner reports, external accreditation/recognition (where appropriate), supports for learners, placement (where appropriate) and, implementation of the Academic Strategy (2018-22).</i></p>
13.15 – 14.15	Break for Panel members
14.15 – 15.00	<p>Enhancing Student Learning Experience</p> <p><i>Presentation: ‘Enhancing the Physics Undergraduate Student Experience through Involvement in Research and Teaching’</i></p> <p><i>Opportunity for the Department to showcase good practice and enhancements to the student learning experience.</i></p>
15.00 – 15.30	<p>Meeting with Interim Registrar</p> <p>Discussion of UCC’s Strategic Plan (2017-2022) and Academic Strategy (2018-2022)</p> <p><i>Please note: this meeting will be recorded due to the absence of one of the Panel members.</i></p>
15.30 – 15.50	Wrap up Meeting

Wednesday 25 November 2020	
09.45 – 10.15	Convening of the Panel
10.15 – 10.45	Meeting with staff from Tyndall
10.45 – 11.15	Meeting with staff from Cork Institute of Technology (C.I.T.) re. Industrial Physics Acting Head of Department of Physical Sciences
11.15 – 12.00	Break for Panel members
12.00 – 13.45	Panel meeting to draft the report (including recommendations and commendations) <i>To be joined by Director of Quality</i>
13.45 – 14.30	Break for Panel members
14.30 – 15.30	Panel meeting to draft the report (including recommendations and commendations)

Thursday 26 November 2020	
10.00 – 10.30	Convening of the Panel – preparation for day ahead
10.30 – 11.15	Meeting with Head of Department <i>Clarification and discussions of main findings by Panel</i>
11.15 – 11.45	Break for Panel members
11.45 – 13.30	Panel meeting to formulate closing presentation / drafting report
13.30 – 14.30	Break for Panel members
14.30 – 15.00	Reconvene - final Panel meeting to formulate closing presentation
15.00 – 15.30	Closing Presentation <i>Closing presentation to all staff, to be made by the Chair or other member(s) of Panel as agreed, summarising the principal findings of the Panel. This presentation is <u>not</u> for discussion at this time.</i>
15.30 – 15.45	Final meeting / wrap-up