University College Dublin

Quality Improvement Plan

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UCD School of Mechanical and Materials Engineering

June 2023

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1. Introduction

The Periodic Quality Review for the School of Mechanical & Materials Engineering took place (in person) from 11th-13th October 2022. The School received the Review Group Report from UCD Quality Office on 19th December 2022.

The Report was reviewed by the School Executive and the School's initial response to the prioritised recommendations was submitted to the Quality Office on 16th January 2023. The Quality Office provided a briefing for the Head of School in relation to the development of the Quality Improvement Plan (QIP). Following this briefing, the School established the Quality Improvement Committee in February 2023, chaired by Associate Professor Vincent Hargaden. The lead authors of each of the chapters of the School's Self-Assessment Report (SAR) agreed to serve on the Quality Improvement Committee and to address the Review Group Report recommendations in their respective chapters. The Review Group Report was circulated to all staff in the School and was discussed at the School Council meeting in February.

All School staff were invited to provide quality improvement actions/plans to the committee chair and individual chapter writers. The Quality Improvement Committee met in March 2023 to review each of the Review Group Report recommendations in detail and to identify planned actions. Committee members prepared a draft of the QIP which was then reviewed by the Head of School and chair of the Quality Improvement Committee prior to submission to UCD Quality Office on 24th April 2023 and following feedback, finalised submission in June 2023.

Quality Improvement Committee members:
Associate Professor Vincent Hargaden (Chair & Management of Quality and Enhancement)
Professor Michael Gilchrist (Organisation and Management)
Mr. Michael Donoghue & Professor Donal Finn (Staff and Facilities)
Dr. William Smith (Teaching, Learning and Assessment)
Professor Donal Finn (Curriculum Development and Review)
Associate Professor Eoin O'Cearbhaill (Research Activity)
Dr. Rachel Wang (Support Services)
Dr. Nan Zhang (Collaborative Educational Provision)
Associate Professor James O'Donnell (External Relations)
Professor Kenneth Stanton (Head of School)

2. Recommendations for Improvements - Follow-Up Action Taken and/or Planned

Categories

1. Recommendations concerning academic, organisational and other matters which are <u>entirely under the control of the unit</u>
2. Recommendations concerning shortcomings in services, procedures and facilities which are <u>outside the control of the unit</u>
3. Recommendations concerning inadequate staffing, and/or facilities <u>which require additional recurrent or capital funding</u>

1. PRIORITISED RECOMMENDATIONS

s	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead* (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
2.15	Given the growth in size and complexity of the School since the last Periodic Quality Review, the RG recommend the School revises its management and organisational structure to reflect the growth and increase effectiveness and efficiency.	1	The existing management and organisational structure served the School well for most of the past decade and remained largely unchanged while the School coped with and came through the Covid-19 pandemic. The School fully recognises that its sustained growth since 2010 means that we now require more streamlined and effective structures and processes, characteristic of a larger, more complex entity. Following the completion of the term of office of the current Head of School, a new Head of School has been appointed from 1st August 2023, with the handover process underway. In order for the School to be managed more efficiently, it is envisaged that the following changes will occur: 1. Changes to the management structures in the School, 2. Appointment of a Deputy Head of School,	Head of School with School Executive	May 2023	April 2024

1.PRIORITISED RECOMMENDATIONS

s	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead* (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
			3. Each School Committee will have clearly documented terms of reference to enable efficient operations and maximise the impact of the work of each committee. In relation to changes in management structures, where permissible within University regulations, the Head of School will seek to delegate certain day to day operational matters to individuals holding leadership roles in the School (e.g. communication and impact, promotions, staff development and mentoring, space management, procurement and expenses approvals), freeing them up to focus more fully on strategic matters.			
2.16	The RG recommend that the School prepares a school plan that covers a 3-to-5-year cycle. The plan should concisely consider strategic aims and operational approaches. This plan should then be monitored and progressed in the context of the annual university strategy and planning cycle.	1,2	The School recognises the value in having the whole staff School input into the development of a 3-5 year strategic plan for the School through a "strategy away day" in Autumn 2023. The resulting strategic plan will be monitored annually by the School Executive.	Head of School & School Executive	September 2023	December 2023, with annual monitoring by School Executive.
3.18	The RG recommend the School develop an internal mentoring scheme to support early career academic staff with mentors, ideally allocated from	1	The School is currently establishing a mentoring scheme for new and existing academic and postdoctoral staff. This initiative is being led by a senior member of the School's academic staff and	Senior academic staff member.	April 2023	December 2023, with annual review thereafter

1.PRIORITISED RECOMMENDATIONS						
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	the same research area. Mentoring for postdoctoral students should also be considered.		implementation will commence in September 2023 (The leader for this initiative has already been identified and work has already commenced on the design of the programme). The proposed scheme will complement that offered by UCD HR for Newly Appointed Assistant Professors (NAAP). The effectiveness of the mentoring scheme will be reviewed on an annual basis by the School Executive.	School Executive		
3.23	The RG recommend the School, supported by the College and the University, should develop a sustainable capital programme for procurement or upgrade of undergraduate laboratory equipment.	1,2,3	The School recognises the need to upgrade its teaching laboratory equipment in order to provide the best learning environment for its students. However, the School's limited discretionary annual budget is insufficient be able to commit to a "sustainable capital programme" on its own. The School has, through its Teaching Laboratory Working Group, developed a prioritised list of teaching laboratory equipment to be upgraded or replaced, and has been able to do some of this where its budget has allowed and will continue to do so on an annual basis, where financially feasible.	Head of School, College Principal, Registrar, Bursar.	September 2023	September 2024

1.PRIORITISED RECOMMENDATIONS						
s	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead* (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
			A funding model whereby the three main stakeholders, University, College and School would share this cost does not yet exist in the University. In conjunction with other teaching laboratory- based schools, the School will argue strongly to the Bursar, for the establishment of a funding programme similar to the annual Research Equip Fund scheme, however focused solely on teaching laboratory equipment.			
5.13	The RG recommend the School engage in greater review and oversight of student workload, assignment weightings and deadlines across all modules. As part of this regular review, the RG recommend that where adjustments to assessments are made, this is communicated back to the student body. All module assessment timelines and assignments should also be made available to students as early as possible through the Brightspace VLE to allow them to plan their workload.	1,2	The Engineering Programme Board carried out a comprehensive review of student workload activities in March and September 2020 as part of the Covid-19 response. A key finding was that given the diversity of engineering programmes that share similar modules, coupled with the dispersed nature of laboratory activities, it was very challenging to create balanced workload models that address the needs of all students across the range of programmes. All School modules use Brightspace for submission of assignments, with the deadline visible on the module page. Any changes in assessment deadlines are communicated to students through Brightspace.	School Head T&L School T&L Committee	September 2023	ongoing

1.PRIORITISED RECOMMENDATIONS						
s	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead* (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
			At the start of Autumn and Spring trimesters, the School Head of T&L will remind module coordinator to create and publish assessment deadlines on Brightspace and notify students when changes occur. In addition, from September 2023, students will be encouraged by respective programme directors to be proactive in the management of their personal commitments and academic deadlines. This will allow each student to engage in the active management of addressing conflicting deadlines, (i.e., possibly by early preparation or submission of reports). In practice, this is highly reflective of the day-to-day reality of a professional engineer.			

2. Organisation and Management

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
2.15	Given the growth in size and complexity of the School since the last Periodic Quality Review, the RG recommend the School revises its management and organisational structure to reflect the growth and increase effectiveness and efficiency.	1	The existing management and organisational structure served the School well for most of the past decade and remained largely unchanged while the School coped with and came through the Covid-19 pandemic. The School fully recognises that its sustained growth since 2010 means that we now require more streamlined and effective structures and processes, characteristic of a larger, more complex entity. Following the completion of the term of office of the current Head of School, a new Head of School has been appointed from 1st August 2023, with the handover process underway. In order for the School to be managed more efficiently, it is envisaged that the following changes will occur: 1. Changes to the management structures in the School, 2. Appointment of a Deputy Head of School, 3. Each School Committee will have clearly documented terms of reference to enable efficient operations and maximise the impact of the work of each committee. In relation to changes in management structures, where permissible within University regulations,	Head of School with School Executive	May 2023	April 2024

2. Organisation and Management

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
			the Head of School will seek to delegate certain day to day operational matters to individuals holding leadership roles in the School (e.g. communication and impact, promotions, staff development and mentoring, space management, expenses approval), freeing them up to focus more fully on strategic matters.			
2.16	The RG recommend the School prepares a school plan that covers a 3-to-5-year cycle. The plan should concisely consider strategic aims and operational approaches. This plan should then be monitored and progressed in the context of the annual university strategy and planning cycle.	1,2	The School recognises the value in having the whole staff School input into the development of a 3-5 year strategic plan for the School through a "strategy away day" in Autumn 2023. The resulting strategic plan will be monitored annually by the School Executive	Head of School & School Executive	September 2023	December 2023, with annual monitoring by School Executive
2.17	The RG recommend that the School reconsider the membership of the School Executive to comprise members with posts of responsibility (mainly directors) and elected members (one representing each of the faculty, technical and professional staff). Members with posts	1	See response to 2.15 above regarding planned changes to the management structures in the School. School Executive already consists of representatives from the roles listed in the recommendation (T&L, Research Innovation & Impact, EDI, H&S), in	Head of School School Executive	May 2023	April 2024

2. Organisation and Management

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
	of responsibility should then chair sub-committees of the School Executive.		addition to technical and professional staff. The sub-committees of the School Executive are already chaired by their respective post holders.	Sub-committee chairs		
2.18	The RG recommends that specific Terms of Reference are created for each of the School committees (subcommittees of the School Executive or Programme Board). These need not to be long however they should include both operational and strategic roles.	1	Preparation of Terms of Reference are currently being undertaken by the respective Chairs of the School Teaching & Learning Committee, Research Innovation & Impact, EDI Committees. These will be reviewed by the School Executive and implemented at the start of the 2023-2024 academic year. Terms of reference for the School Health and Safety Committee have already been developed and approved. Sub-committees of the Engineering Programme Board are not within the direct remit of the School.	Chair - School T&L, RII & EDI committees	February 2023	September 2023
2.19	The RG recommend the School reactivate the School Industry Advisory Board with a brief Terms of Reference.	1	At present, the major research elements led by the School (i.e., I-Form SFI Centre and other major research programmes) already have Industry Advisory Boards that engage closely with the academic staff, while the principal teaching programmes led by and that involve the School (i.e., ME programmes in Mechanical Engineering, Materials Science & Engineering, Biomedical Engineering, Energy Systems Engineering, and	Head of School

School Executive | September 2023 | December 2023 |

2. Organisation and Management						
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			Engineering Management) all have direct involvement with industry stakeholders that provides good feedback directly to students, faculty and Programme Directors in respect of the taught activities of the School. In addition, the School benefits directly from access to senior leaders in a number of the university's strategic industry partners which informs both teaching and research activities of the School. Finally, the School has been appointing external industry leaders to Adjunct positions within the School in order to pursue certain elements of our overall strategic ambitions. Given this range of advisory input into the activities of the School, the School is unclear as to the value of creating another advisory forum. However, the Head of School will examine the practices of cognate schools across the university in Q3-Q4 2023 and the School Executive will review whether or not to establish an advisory board by the end of 2023.			

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2. Organisation and Management

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
2.20	The RG recommend the School establish and use a workload model for academic staff.	1	The Head of School has already attended workshops on the development of Workload Allocation Models organised by the Vice President for EDI. Informed by these initiatives, the Head of School and School Executive will seek to develop an appropriate workload model for the range of activities undertaken by academic staff in the School, especially as it relates to EDI issues.	Head of School & School Executive	April 2023	April 2024

3. Staff and Facilities

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
3.18	The RG recommend the School develop an internal mentoring scheme to support early career academic staff with mentors, ideally allocated from the same research area. Mentoring for postdoctoral students should also be considered.	1	The School is currently establishing a mentoring scheme for new and existing academic and postdoctoral staff. This initiative is being led by a senior member of the School's academic staff and implementation will commence in September 2023 (The leader for this initiative has already been identified and work has already commenced on the design of the programme). The proposed scheme will complement that offered by UCD HR for Newly	Senior academic staff member. School Executive	April 2023	December 2023, with annual review thereafter

3. Staff and Facilities						
RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
			Appointed Assistant Professors (NAAP). The effectiveness of the mentoring scheme will be reviewed on an annual basis by the School Executive.			
3.19	The RG encourage the School to work with the College and University to increase the number of technical staff to reflect the recent growth in teaching and research activities following the increased academic staff and student numbers.	1,3	At time of writing, the School has three recruitment competitions open to backfill two Technical staff positions and to recruit a new Technical Officer (Materials Testing). There is an additional Technical Officer post in the 2023/24 School Plan. This will be the third year running that the School has used its reserves to increase the size of the Technical Staff cohort.	Head of School	Jan 2023	September 2023
3.20	The RG recommend that the Schools that are sharing the professional staff urgently increase the number of professional staff to at least their current full complement (i.e. replace those leaving). Their roles and responsibilities should be clearly defined allowing for an appropriate cover during sickness and holiday absences.	1, 3	The School is engaged in discussion with the other School (Electrical and Electronic Engineering) on this issue. The Schools have produced a detailed action plan to recruit one additional professional staff member in the area of research support. The recruitment competition has been completed will see the number of professional staff in the Schools' office increasing from 4.0 FTE to 5.0 FTEs.

Identification of staff primary roles and back-up roles is currently being carried out. This will be | Heads of Schools and Schools' Office Operations Manager | January 2023 | December 2023 |

3. Staff and Facilities						
RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
			communicated to all School staff by the Operations Manager. The Head of School, Schools' Operations Manager and the Head of School Electrical & Electronic Engineering will monitor the impact of the increased FTE on the effectiveness of the Schools' Office operations during the Autumn trimester 2023/24.			
3.21	Following on from above, the RG recommend that the School might reflect on how it best supports the staff in the School office so that the expectations of faculty are managed and the workload of School office staff balanced. This is particularly important in the context of a rapidly growing school.	1,2,3	The School is implementing a recruitment plan that will see the Schools' Office FTE increase from 4.0 FTE to 5.0 FTE. These efforts have been somewhat hampered by changes in staffing over the same period and some recruitment challenges, however, it is expected that once complete, the planned recruitment will address the acute workload imbalance that arose. Identification of staff primary roles and back-up roles is currently being carried out. This will be communicated to all School staff by the Operations Manager.	Head of School and Schools' Office Operations Manager	January 2023	December 2023

3. Staff and Facilities

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
3.22	The RG understood there are plans for reconfiguration of the School Office space and recommend this be acted upon as soon as it is possible.	1,2, 3	Refurbishment works were completed in January 2023. This involved dividing a large open plan office into two, thereby enabling one to be visitor/staff/student facing and the other to be where quiet focused work can be carried out.	Head of School and Schools' Office Operations Manager	December 2022	January 2023
3.23	The RG recommend the School, supported by the College and University, develop a sustainable capital programme for procurement or upgrade of undergraduate laboratory equipment.	1,2,3	The School recognises the need to upgrade its teaching laboratory equipment in order to provide the best learning environment for its students. However, the School's limited discretionary annual budget is insufficient be able to commit to a "sustainable capital programme" on its own. The School has, through its Teaching Laboratory Working Group, developed a prioritised list of teaching laboratory equipment to be upgraded or replaced, and has been able to do some of this where its budget has allowed and will continue to do so on an annual basis, where financially feasible. A funding model whereby the three main stakeholders, University, College and School would share this cost does not yet exist in the University. In conjunction with other teaching laboratory-	Head of School, College Principal, Registrar, Bursar.	September 2023	September 2024

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3. Staff and Facilities						
RG Report (Paragraph Reference)	**RG Recommendation**	**Category (See above list)**	**Action Taken/Planned**	**Lead (E.g. Name of Faculty/Staff/ Group)**	**Start Date**	**Planned Completion Date**
			based schools, the School will argue strongly to the Bursar, for the establishment of a funding programme similar to the annual Research Equip Fund scheme, however focused solely on teaching laboratory equipment.			
3.24	Given the growth in size, the RG encourage the School to work with the University to address the shortage of lab and office space, potentially ensuring allocation of additional space in the planned new buildings in the medium/long term. In the short term, the use of the currently available space should be further optimised to make better use of centrally available collaborative provision for student group work and centrally timetabled teaching spaces.	1,2,3	The availability of space covering all school activities remains a constant priority and concern for the Head of School, faculty, staff and students. Minor adjustments to the limited allocation of space within the control of the School are made regularly and often at high cost, however, given the growth of the School in the last decade, there is insufficient space available to meet existing needs (both teaching and research). The School is represented on the recently established College of Engineering & Architecture Working Group to determine the future infrastructure needs of Engineering & Architecture. An external firm of architects has been engaged by the College to complete an audit of the available spaces throughout the buildings used by all Schools in the College. It is expected that they will make recommendations to refurbish existing space and identify the amount of new space needed to meet	School Representative on EPB Timetabling Committee	April 2023	ongoing

3. Staff and Facilities

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
			the current and future needs of the School (and wider College). However, without major capital investment in additional teaching and research infrastructure in the College of Engineering & Architecture, the School's teaching and research activities will continue to be significantly constrained. In relation to centrally accessible spaces for students - the School is represented on the Engineering Programme Board Timetabling Committee. School modules are routinely timetabled outside the Engineering & Materials Science Centre in centrally available teaching spaces due to the high numbers of students on stage 2 and stage 3 core MEEN modules and the relatively small size of lecture rooms in the Engineering & Materials Science Centre. Where feasible, project modules (e.g. BE and ME projects) will be timetabled in appropriate locations across the university, commencing 2023-2024 academic year.			

4.Teaching, Learning and Assessment

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
4.13	The School's success in growing student numbers presents challenges and the RG recommend the School continue to adopt innovative ways to extract the most impact from physical and human resources in its delivery of practical work in the laboratories. The challenge here is to innovate in how labs are delivered. The implemented pre-recorded video introductions is a good initial step however the RG recommend the School consider use of more simulation and team-based projects.	1,3	The School is committed to maintaining, and where practicable increasing, student hands-on lab experiences. Many of the learning outcomes associated with these hands-on activities currently are complimented by simulation-based exercises and where appropriate team-based assignments.

The T&L Committee, in conjunction with programme steering committees, has already identified stage 2 and stage 3 modules where additional MATLAB simulations will be introduced (from Sept 2023) to modules to support achievement of learning outcomes.

This recommendation will also be addressed through the School's annual curriculum review and enhancement process, led by School Head T&L, which is informed by module feedback, School Modular Examination Committee (SMEC) actions, subject external examiner feedback and international best practices. | School Head of T&L Committee | April 2023 | Reviewed annually through School's Curriculum Review process. |
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4.Teaching, Learning and Assessment

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
4.14	Increased student numbers may also place strain on communications. The RG recommend the School consider ways it can benefit more strongly from the excellent student body by better capturing their voice and communicating back the outcomes of their engagement. For example, giving students greater representation on formal committees and the establishment of a staff:student liaison committee.	1	The School Teaching & Learning Committee (TLC) will be requested by the Head of School to identify mechanisms by which student perspectives might better be captured, including the possibility of membership of the School T&L Committee. The School Research Committee will be requested by the Head of School to identify mechanisms to engage with research students on a more consistent basis, including the possibility of membership of the School Research Committee. Student representatives are already members of the Engineering Programme Board. A staff-student liaison committee already exists at College level under the auspices of the Engineering Programme Board. The School Executive at its meetings in 2023 Q3 will consider the establishment of a School staff-student liaison committee.	Head of School School T&L Committee School Research Committee School Executive	September 2023	April 2024

4.Teaching, Learning and Assessment

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
4.15	The RG recommend the School consider ways in which female members of academic staff could be more visible to the student body. Recent hires have improved the gender balance in academic staffing however ensuring these role models are visible to students regardless of modules selected is important. Any such activities must be reflected significantly in workload models.	1	As new female academic members of staff have joined the School, their teaching responsibilities have been increasing in line with good practice for on-boarding of new staff. Within the next 1-2 years, four additional female staff will assume their full teaching allocation. These female staff will teach core modules which will ensure their visibility to all undergraduate students. One of the actions that will be delegated to the new School Communications & Impact Committee will be to develop approaches to increase the visibility of female staff through the various communications channels (and other means, such as electronic posters/screens in the Engineering & Materials Science Centre). The School has already been organising guest lectures by leading female industry representatives in its modules, further highlighting female role models to undergraduate students. In addition, the School has supported female staff to participate in the Aurora leadership programme.	Head of School School EDI Committee School Communications & Impact Committee	September 2022	ongoing

4.Teaching, Learning and Assessment

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
4.16	The RG recommend that possible gender gaps in marks and any possible root cause in modes of content delivery and assessment should be assessed on a regular basis. This may also feed into the Athena SWAN action plan.	1,2	This recommendation requires access to, and analysis of, significant amounts of data. UCD Registry has agreed to provide the relevant raw data for the past 10 years, and that will be mined and analysed by the School Teaching & Learning Committee, with results shared with the wider School by end of Q4 2023. This will become an annual exercise for the T&L committee.	School T&L Committee	September 2023	December 2023

5. Curriculum Development

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
5.13	The RG recommend that the School engage in greater review and oversight of student workload, assignment weightings and deadlines across all modules. As part of this regular review, the RG recommend that where adjustments to assessments are made, this is communicated back to the student body. All module assessment timelines and assignments should also be made available to students as early as possible	1,2	The Engineering Programme Board carried out a comprehensive review of student workload activities in March and September 2020 as part of the Covid-19 response. A key finding was that given the diversity of engineering programmes that share similar modules, coupled with the dispersed nature of laboratory activities, it was very challenging to create balanced workload models that address the needs of all students across the range of programmes.	School T&L Committee	September 2023	ongoing

5. Curriculum Development

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
	through the Brightspace VLE to allow them to plan their workload.		All School modules use Brightspace for submission of assignments, with the deadline visible on the module page. Any changes in assessment deadlines are already communicated to students through Brightspace. At the start of Autumn and Spring trimesters, the School Head of T&L will remind module coordinators to create and publish assessment deadlines on Brightspace. In addition, from September 2023, students will be encouraged by respective programme directors to be proactive in the management of their personal commitments and academic deadlines. This will allow each student to engage in the active management of addressing conflicting deadlines, (i.e., possibly by early preparation or submission of reports). In practice, this is highly reflective of the day-to-day reality of a professional engineer.			
5.14	Although the large number of modules available to students provides them flexibility, it also contributes to increased loading on physical and human resources. With growing student	1, 2	Module registration numbers will be reviewed annually by the School Executive in advance of the UCD Curriculum structure editing deadline and rationalised where necessary.	School Executive	February 2024	reviewed annually

5. Curriculum Development

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
	numbers the RG recommend consideration of a school-wide policy on modules with small student numbers so that resources can be concentrated on adding value to core elements, and/or used to enhance research activities.					

6.Research Activity

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
6.18	The RG recommend the School continue developing their vision for research and the future and the development of a strategic plan to achieve that vision.	1	The role of the School Research committee is being formalised to define its role and terms of reference to incorporate school strategic planning initiatives. As mentioned in 2.16, the School will hold a strategy development day, part of which will focus on the School's research strategy.	School Head of Research & School Research Committee	January 2023	December 2023
6.19	The visibility of the School's research activities needs to be improved to further strengthen the School's academic reputation. The RG recommend an increase in staff participation and	1	Communication of research activities will be enhanced to ensure that the School strengthens its position as an active hub of internationally recognised impactful research. This will be an action	School Head of Research, School Research	September 2023	ongoing

6.Research Activity

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Sta ff/ Group)	Start Date	Planned Completion Date
	organisation of significant international scientific conferences as well as enhanced publication strategy should be considered.		item for the new School Communication & Impact Committee. School staff have ongoing involvement in the organisation of prestigious international scientific conferences, e.g. World Congress on Biomechanics 2019, CIRP General Assembly 2023 (It should be noted that an emerging challenge to address this part of the recommendation, which is outside the control of the School, is the high cost of hosting scientific conferences in Dublin, both for the local organising committee and international visiting delegates). Strategies for increasing publication KPIs such as Field Weighted Citation Impact, publications with international or industry-based co-authors will be communicated through information sessions at School Council meetings or other fora. The School will establish a Communications and Impact committee with clear Terms of Reference to better highlight the impact of the School activities through a redesigned website, social media channels and through other university communication instruments (e.g. UCD Today, UCD Alumni Newsletters).	Committe e New School Communi cation and Impact Committe e		

6.Research Activity

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
6.20	The RG recommend the School continue focussing on the impact of their research activities including ensuring the successful development of recently established spin-off companies.	2	TOR for the School Research committee is focused on improving communication of research impact. The School Research Committee will work with relevant stakeholders (e.g. NovaUCD, planning initiatives) to ensure the infrastructure is in place for spin-out companies and industry collaborations. To encourage newly hired academic staff in particular to consider commercialising the results from their research, they will be encouraged to participate in relevant NovaUCD programmes such as "Customer Discovery Programme" and "Venture Launch Accelerator" programme as part of the School's new mentorship programme for academic staff and in the annual P4G process.	School Head of Research, School Research Committee	January 2023	ongoing

7. Management of Quality and Enhancement

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
7.12	The RG noted that the School is clearly compliant with university processes and the programmes are producing excellent graduates and researchers. However, the RG recommend the School consider how its internal management could be structured to maintain and enhance these high standards in the context of the increased size and operational complexity of the School since the last Quality Review.	1	The action planned links to prioritised recommendation 2.15 in relation to structures to support the growth and size of the school. The existing management and organisational structure served the School well for most of the past decade and remained largely unchanged while the School coped with and came through the Covid-19 pandemic. The School fully recognises that its sustained growth since 2010 means that we now require more streamlined and effective structures and processes, characteristic of a larger, more complex entity. The 5-year term of the current Head of School is due to conclude at the end of August 2023, and they, along with incoming Head of School and the School Executive, are starting the process of reviewing the structures and processes with the goal of more efficient school operations.	Head of School School Executive	May 2023	December 2023
7.13	The RG recommend a review of the current remit of both the Teaching & Learning Committee and the Research Committee in maintaining, driving standards and communicating approaches, needs to be further considered and better defined. In turn	1	As outlined in 2.18 above, the Chairs of the School's T&L Committee and the Chair of the School's Research Committee are currently developing terms of reference for their respective committees, which will include both operational and strategic perspectives.	Chair of T&L Committee and Chair of Research Committee	February 2023	June 2023

7. Management of Quality and Enhancement						
RG Report (Paragraph Reference)	**RG Recommendation**	**Category (See above list)**	**Action Taken/Planned**	**Lead (E.g. Name of Faculty/Staff/ Group)**	**Start Date**	**Planned Completion Date**
	the role of these committees and their heads/directors in supporting the Head of School, and the School's decision-making process, could usefully be reflected upon.					
7.14	There is a well-established university process for monitoring grade entry and reflecting upon grade distribution, that is well followed by the School. However, the RG recommend that the School reflect on how it establishes whether the feedback to students and workload (load and timing), is sufficiently consistent that it enhances the student experience. This could be reviewed through the Teaching and Learning Committee.	1, 2	As outlined in 5.13, the complex structure of engineering programmes, with shared modules between programmes and modules delivered by other Schools in the College of Engineering & Architecture and other Colleges makes analysis of student workload and timing highly complex. The School argues that if such activity was to be carried out, it would be more appropriate at an Engineering Programme Board level, led by the College Vice Principal for Teaching & Learning and College T&L Committee (of which the School's Head of T&L is a member). For the School's modules, The School T&L Committee will disseminate best practices to academic staff in relation to timeliness and quality of student feedback.	School Teaching & Learning Committee	September 2023	Start of each trimester

7. Management of Quality and Enhancement

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
7.15	The School has done an excellent job of enhancing Health & Safety awareness and policy as noted in the above commendations. The RG recommends the School to continue reflecting on these very positive improvements. In particular as the School is rapidly growing to make sure that the awareness of the policies and procedures is disseminated to everyone in the School.	1	The School is committed to creating a culture that is both collaborative and proactive in supporting the health and safety of all its members.

To help circulate the School's health and safety policies and procedures, Health & Safety is a line item on the School Council agenda each month. The dissemination of information is also provided through the Health & Safety committee, which has recently expanded from four to seven people and now includes representation from each of the different subject areas. To ensure new staff are aware of the School's safety management system, the induction pack that new staff receive upon commencing employment has been updated to include information on the School's health and safety policies and procedures and links to the School Induction video.

The School's safety intranet provides quick and easy access to the School's safety policies, procedures and video tutorials. The intranet provides detailed information, policies and procedures (safe systems of work) relating to each laboratory and offers tutorials on completing risk assessments. This site | Health & Safety Committee | ongoing | ongoing |

7. Management of Quality and Enhancement						
RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
			can be accessed via the School's website or by scanning the QR codes that are located on the entrance doors to each laboratory. The annual internal auditing programme of each workspace ensures compliance with the School's safety policies and procedures. This programme has also helped raise awareness and has identified areas of improvement for the processes and practices leading to a safer working environment. The School's health and safety management system is based on the Plan-Do-Check-Act (PDCA) cycle. The School's safety committee is responsible for developing, reviewing and evaluating the safety management system to ensure that it is fit for purpose and promotes continuous improvement. The data collated through the annual internal health and safety audits is used to determine whether the control measures in place are sufficient and helps identify processes that could be improved. The safety committee is then responsible for developing an action plan to implement improvements based on industry best practice.			

8. Support Services

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/Group)	Start Date	Planned Completion Date
8.9	The RG noted both in the SAR and in meetings with the School concerns that some aspects of University service provision have become anonymous in recent years. For example, while the need for generic email contacts and digital support hubs is understood, knowing who is responding can help to reintroduce the human element into the system. Some services do respond with a name, others do not. The RG recommend some reflection on this by the University.	2	The Head of School will raise this with the College Principal for consideration by UMT, particularly in the context of the Programme for Operations and Services Transformation (POST).	Head of School CP UMT	September 2023	December 2023
8.10	For research recruitment, the RG recommend a workflow rather than unit-based approach to avoid siloing of responsibility and unnecessary repetition of input by the Principal Investigator. It is acknowledged that the University is in the process of reviewing these issues and the RG would strongly support these approaches at a university level.	2	To address this recommendation, the Head of School will communicate this to UCD HR and UCD Research, particularly in the context of POST.	UCD HR/UCD Research, Innovation & Impact	September 2023	December 2023

8. Support Services

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
8.11	The RG noted the School's request for the re-introduction of the buildings facilities manager role. Given that this role was removed from buildings some while ago, the RG recommend a review of this decision by the University and UCD Estates would be timely, especially in the context of the planned new building and campus transformation plans.	2	To address this recommendation, the Head of School will raise this with UCD Estates, the College Principal and the College of Engineering & Architecture Vice Principal for Development	College Principal, VP Development & UCD Estates	September 2023	December 2023
8.12	The RG noted the suggestion of an "Opportunities Register" by UCD Estates, and others that might complement the "Asset Register" and "Risk Register". The RG recommend this idea would be worth exploring and could be something that is considered in preparing a multi-year School Plan.	2	In addressing this recommendation, the School will liaise with UCD Estates and will be considered in preparing the School Plan.	UCD Estates	September 2023	September 2023

9. Collaborative Educational Provision

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
9.10	Expanding the list of offerings through multiple new initiatives immediately after Covid is impressive, however the RG recommend the School continue to monitor staff and student workloads as these programmes run through a complete cycle and bed in.	1,2	Staff workloads will be monitored through a newly developed Workload Allocation Model. The growth in the newly offered programmes has required the recruitment of new members of staff, both academic, technical and professional, in order to ensure that workloads of faculty remain reasonably balanced and equitable. In respect of student workloads on new programmes, all Programme Directors work closely with Module Coordinators, Heads of Subject, Programme Steering Committee, and the Engineering Programme Board in order to ensure that each module taken by students has a workload that is commensurate with the associated credits.	Staff workloads: monitored by Head of School Student workloads: monitored by Programme Steering Committees	Ongoing	Ongoing
9.11	In addressing the reduction in fee level per student the RG recommend the School consider steps to increase the percentage of non-EU students, for example, could the presence at CDIC be used to further advantage.	2, 3	Student tuition fees are set centrally by the university. There is growth anticipated in the number of non-EU students taking the School's programme in Automotive Engineering at CDIC, and this is already factored into the School's development plans. Growing the percentage of non-EU students on other programmes led by our School is limited largely by the physical space and infrastructural constraints facing the School due to the experimental and laboratory aspects of those	Head of School and Programme Directors with support from College Principal, College	Ongoing	Ongoing

9. Collaborative Educational Provision

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
			programmes. Doing so by displacing indigenous or EU students is not desirable. Should the university provide adequate additional resources (faculty, technical and administrative staff, space and equipment), the School would be in a position to increase its non-EU student numbers in a more proactive manner.	Marketing team, Registrar and Bursar		
9.12	The RG noted interactions with industrial stakeholders tend to come in the later stages of most programmes. The RG recommend the School consider earlier engagement in Stage 1 or 2 through guest lecturers (recent alumni) showing where foundational aspects are brought to bear in real applications. These might be chosen with a view to making role models visible early to students.	1,2	With the increased use of virtual meeting technology (i.e. Zoom etc), the School expects it to be more feasible to be able to have industry based virtual guest lectures in a module and that student Q&A could be facilitated through applications such as Poll Everywhere. The School delivers two core modules to Stage 1 Engineering students. The relevant module coordinators will explore the possibility of including industry based guest lectures. The Stage 1 Steering Committee is a sub-committee of the Engineering Programme Board and is chaired by a member of the School's academic staff. This recommendation will be shared with the Steering Committee to encourage all Stage 1 module	Module coordinators of "Mechanics for Engineers" and "Energy Engineering" Stage 1 Programme Director. School T&L Committee	June 2023	August 2024

9. Collaborative Educational Provision

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Staff/ Group)	Start Date	Planned Completion Date
			coordinators from the four other Schools to consider including guest lectures. Examples of recent industry guest speakers include Intel (stage 1), Kuka Robotics (stage 2), DePuy Synthes (stage 3), ASML (stage 4), Medtronic (stage 5).			

10. External Relations

RG Report (Paragraph Reference)	RG Recommendation	Category (See above list)	Action Taken/Planned	Lead (E.g. Name of Faculty/Sta ff/ Group)	Start Date	Planned Completion Date
10.9	Once reactivated (see 2.19 above), the RG recommends the School develop and make more use of the potential of the Industry Advisory Board.		See response to 2.19 in relation to advisory board reactivation.			
10.10	The wide network of industrial partners currently providing internship opportunities for ME students could be further utilised to enhance research collaboration with industry leading to development of impactful research projects.	1	A member of academic staff visits each ME student during their internship. This visit also includes a meeting with the student's line manager. ME students are encouraged, where feasible, to identify a research topic in their internship company to provide the basis for their ME thesis on their return to UCD. This is one of the points that is emphasised by the academic staff member during the internship visit. Prior experience	All academic staff	Ongoing	Ongoing

10. External Relations						
RG Report (Paragraph Reference)	**RG Recommendation**	**Category (See above list)**	**Action Taken/Planned**	**Lead (E.g. Name of Faculty/Sta ff/ Group)**	**Start Date**	**Planned Completion Date**
			has found that such ME thesis research projects are highly impactful, both for the company and the supervising academic. The School always seeks to leverage these collaborations for higher impact research such as DTIF, SFI Challenge Fund, I-Form etc.			

3.   Prioritised Resource Requirements

This section should only contain a list, prioritised by the Quality Improvement Committee, of recommendations outlined in the Review Group Report, which require additional resources. The planned action to address each recommendation with an estimate of the cost involved should also be included:

1. The School expects that the current review of space by an external firm of architects in the College of Engineering & Architecture, overseen by the College Working Group, will confirm that the space currently allocated to the School is significantly less (both in amount and quality) than that which is needed by the School to deliver on its teaching and research ambitions. Based on figures from UCD Science Centre Phase III, the cost to refurbish existing space is €5,000 per m^2 and the cost to construct new space is €10,000 per m^2. Data in the SAR indicate that the School has control of 2,551m^2. The refurbishment cost of this (at €5,000 per m^2) is €12.8m.

2. Capital Investment for offices for newly hired academic staff: €90,000

3. Additional Technical Officer in 2023-2024 budget: €80,000 per annum

4. Capital upgrade of teaching laboratories:
   a. Service enhancements to enable greater flexibility and use of 012: €35,000
   b. Laptop storage/charging cart plus laptops to support laboratory teaching and enable increased use of ALE 321: €20,000,
   c. Digital design and manufacturing laboratory: €300,000.

5. Capital upgrade of research laboratories:
   a. Establishment of a fit for purpose fluid dynamics laboratory: €20,000
   b. Redevelopment of materials science & engineering laboratory with fume hoods: €80,000

Note: The Quality Improvement Plan should be used to inform Unit and College level academic, support service and resource planning activities.