UNIVERSITY OF GLASGOW

Academic Standards Committee – Friday 24th May 2013

Periodic Subject Review: Report of the Review of School of Engineering

Monday 28th and Tuesday 29th January 2013

Mrs Jackie McCluskey, Clerk to the Review Panel

Review Panel:

Professor John Briggs (Convener)	Clerk of Senate
Dr Charles Augarde	University of Durham, External Subject Specialist
Professor Martyn Hill	University of Southampton, External Subject Specialist
Mr Fraser Grier	Student Representative
Professor Trevor Hoey	School of Geographical and Earth Sciences, Cognate Member
Professor Christine Forde	Senate Assessor on Court
Dr Cathy Bovill	Learning and Teaching Centre
Mrs Jackie McCluskey	Senate Office, Clerk to the Review Panel
Dr Geraldine Perriam, Mrs Janet Fleming	Senate Office, Observers

1. Introduction

1.1 Following University restructuring in 2010, the four Departments of the Faculty of Engineering (Aerospace Engineering, Civil Engineering, Electronics and Electrical Engineering and Mechanical Engineering) were combined to form the School of Engineering, the largest School in the College of Science and Engineering.

1.2 The School of Engineering has separate structures for research, five Research Divisions, and teaching with five Teaching Disciplines that largely reflect the previous Departments. The Teaching Divisions are each led by a Head of Discipline (HoD) and are: Aerospace Engineering; Biomedical Engineering; Civil Engineering; Electronics and Electrical Engineering; and Mechanical Engineering.

1.3 The School provides taught courses at both undergraduate (UG) and postgraduate (PGT) level, including undergraduate programmes provided in

Singapore[1], and is home to world leading research groups and an active PhD programme. The Research areas cover a broad range of Engineering subjects which interface with biology, chemistry, computer science, medicine, earth and environmental sciences and physics. The five cross-disciplinary Research Divisions are:

- Aerospace Sciences
- Biomedical Engineering;
- Electronics and Nanoscale Engineering;
- Infrastructure and Environment
- Systems, Power and Energy

The Research Divisions define the line management for all Research and Teaching staff, while University Teachers form a separate Teaching Division. Each Research Division is led by a Head of Research Division (HoRD) and the Teaching Division is led by the Convener of Learning and Teaching. In the 2008 RAE, Engineering returned 90% of its staff, and 88% of its research activities were assessed to be of international standard. As of October 2012, the School's active grant income was £28.2M which compares favourably in terms of annual income (£115K per FTE) to other Russell Group institutions. The School is also an integral part of the Glasgow Research Partnership in Engineering (GRPE), a major programme of investment in collaborative research involving the Scottish Funding Council and the four universities in the West of Scotland.

1.4   In 2012-13, the School has approximately 1560 students on 17 UG and 19 PGT taught degree programmes in Glasgow, together with approximately 300 students in Singapore. School-level teaching related activities are organised through the School's Teaching Office, while other issues are devolved to HoDs.

1.5   The School of Engineering is based in two buildings on the Main Campus, the James Watt (South) and Rankine Buildings. In other locations, specifically the Thomson Building and Acre Road, there are also wind tunnel facilities available for teaching, and a number of other resources used for research. Lectures are generally held in centrally managed lecture theatres although some of the School's teaching rooms are used when alternative space is not available centrally.   There are a number of meeting and teaching rooms (18 across James Watt South and Rankine Buildings) which are used for small group teaching, tutorials, design activity and occasionally for lectures.   In addition, laboratories in both the James Watt South and Rankine Buildings are used for teaching; the main ones are; 4 in James Watt South including the new Tuck laboratory; and 5 in the Rankine Building. There are 5 workshops across both buildings (2 Electronics; 2 Mechanical and 1 Concrete) which are generally only available to students with technical supervision. There are 9 Computing Laboratories – 4 in James Watt South and 5 in the Rankine Buildings.   As part of the review, the Panel was shown a selection of the facilities in both buildings.

1.6   As part of the University's ongoing system of periodic review, the

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[1] Effective 2011 the University entered into a TNE (Transnational Education) arrangement with Singapore Institute of Technology (SIT) to deliver years 3 and 4 of undergraduate programmes on the campuses of Ngee Ann Polytechnic (NP) and Singapore Polytechnic (SP) (the latter from September 2012). A University of Glasgow subsidiary, University of Glasgow Singapore (UGS), has been set up to employ staff to run the delivery of these degree programmes.

Departments of Aerospace; Electronic and Electrical; Mechanical; and Civil Engineering were subject to Departmental Review of Teaching, Learning and Assessment (DPTLA) in 10 May 2007; 24 February 2009; 25 and 26 February 2009; and 11 and 12 March 2010, respectively.

1.7   The Self Evaluation Report (SER) was prepared by Dr Donald Ballance, Convener of Learning and Teaching. Assistance with the consultation process was provided by Mrs Debbie Goldie, Head of Academic and Student Administration and Dr Karen McIlvaney, Head of Teaching Office.

1.8   The Head of School and Convener of Learning and Teaching outlined to the Review Panel that the SER had evolved as a result of on-going discussion with the Head of School, the School Management Board and the Heads of the five Teaching Disciplines. The use of SharePoint had been adopted to allow staff to view the document on an ongoing basis and a final draft was emailed to all staff for comment. Student consultation took place after the December exam diet when a draft of the SER document was emailed to the Staff Student Liaison Committees (SSLC) student representatives. The School had hoped to consult with students using the new Student Voice website, unfortunately the delay in its implementation meant that this was not possible. Student input had resulted in a number of changes, particularly to Section 6 which highlighted good practice and areas for improvement. The Review Panel found the SER to be very informative but felt that, from the feedback it received, particularly from the staff and students in Singapore, the shared ownership was not as extensive as the Panel would have hoped. None of the UG students interviewed (5 of whom were members of SSLCs); PGT students; Graduate Teaching Assistants (GTAs); or UGS students or staff had seen the SER. The Panel acknowledged that in the case of the groups in Glasgow, this may have been more reflective of the relatively low number of students and GTAs who attended the review rather than the consultation process itself.

1.9   The Panel met with Professor David Fearn, Dean of Learning & Teaching for the College of Science and Engineering; Professor John Marsh; Dr Donald Ballance, Convener of Learning and Teaching and Dr Marco Vezza, School Quality Officer; 24 other members of academic staff, including 9 probationary members and 7 UGS staff; 6 support staff[2]; 4 Graduate Teaching Assistants; 16 undergraduate students[3] and 3 postgraduate taught students. Half of the Panel met with the probationary members of staff whilst the remainder of the Panel met simultaneously with the Graduate Teaching Assistants.

2.   Background Information

2.1   Engineering has a total of 223 staff (213.5 FTE), of which 85 (82.2 FTE) are academic staff (there are an additional 60 RAs) and include 19.2 Professors; 6 Readers; 4 Senior University Teachers; 21.4 Senior Lecturers; 20.2 Lecturers and 4.6 University Teachers.

Staffing	Headcount
Research and Teaching Staff	72

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[2] Includes 2 UGS support staff.
[3] Includes 7 UGS students.

Teaching Staff	9
Research Staff	64
Technical Staff	53
Administrative Staff	20
IT staff	5
Total Staff	**223**

2.2 The SER outlined that the School's Staff: Student Ratio (SSR) for session 2012-13 for taught students in Glasgow is 20.7 based upon headcount for both academic staff and students. However, the SSR ranges from approximately 10 in Electronics and Electrical Engineering to approximately 24 in Aerospace and Mechanical Engineering. (The institution-level average for the University of Glasgow is 16.4[4]).

2.3 Student Numbers for 2012-13 are as follows:

Students	**Headcount**
Level 1	316
Level 2	357
Level 3 – including UGS students	601
Level 4 – including UGS students	354
Level 5 (if applicable)	130
Exchange Students	102
Undergraduate (Part Time)	17
Undergraduate Total	**1860**
Postgraduate Taught	116
Postgraduate Research[5] (Years 1-3 Full Time)	165
Postgraduate Research (Year 4/Writing up Full Time)	34
Postgraduate Research (Part-Time)	5

2.4 The Review Panel considered the following range of provision offered by the School at undergraduate level:

Degree Programme	Discipline	Accreditation	Notes
Aeronautical Engineering	Aerospace Engineering	IMechE, RAeS	Also offered in Singapore (SP)[6]

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[4] This figure relates to session 2011-12. Official HESA figures for 2012-13 are not yet available.
[5] For information only - research is not covered by the Review.

[6] Singapore Polytechnic (SP) - from September 2012.

Aerospace Systems	Aerospace Engineering	IET, RAeS	First students in year 4 also offered in Singapore (SP)
Audio and Video Engineering	Electronics and Electrical Engineering	IET	Last students in year 1
Avionics	Aerospace Engineering	RAeS	Last students in year 5
Civil Engineering	Civil Engineering	JBM: ICE, IStructE, CIHT, IHE	
Electronics and Electrical Engineering	Electronics and Electrical Engineering	IET	
Mechanical Design Engineering	Mechanical Engineering	IED, IMechE	also offered in Singapore (NP)[7]
Mechanical Engineering	Mechanical Engineering	IMechE	
Mechanical Engineering (European Curriculum)	Mechanical Engineering	IMechE	Withdraw from 2014 entry
Mechanical Engineering with Aeronautics	Mechanical Engineering	IMechE, RAeS	
Mechatronics	Mechanical Engineering	Pending	First students in year 1, also offered in Singapore (NP)
Microcomputer Systems Engineering	Electronics and Electrical Engineering	IET	Last students in year 3

The School also contributes to the following degree programmes offered by other Schools or institutions

Degree Programme	Discipline	Accreditation	Notes
Biomedical Engineering	Biomedical Engineering	Pending	First students in year 3 In conjunction with MVLS
Civil Engineering with Architecture	Civil Engineering	JBM: ICE, IStructE, CIHT, IHE	In conjunction with The Glasgow School of Art (Mackintosh School of Architecture)

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[7] Ngee Ann Polytechnic (NP)

Electronic and Software Engineering	Electronics and Electrical Engineering	IET	In conjunction with Computing Science
Electronics with Music	Electronics and Electrical Engineering	IET	In conjunction with Music
Product Design Engineering	Mechanical Engineering	IED, IMechE	In conjunction with the Glasgow School of Art

2.5 The Review Panel considered the following range of provision offered by the School at postgraduate level:

Degree Programme	Discipline	Accreditation	Notes
Aeronautical Engineering	Aerospace Engineering	RAeS, IMechE	
Aerospace Engineering and Management	Aerospace Engineering		
Aerospace Systems	Aerospace Engineering	RAeS	
Automotive Engineering	Mechanical Engineering		Suspended 2012
Civil Engineering	Civil Engineering		Starts 2014
Civil Engineering and Management	Civil Engineering		
Computer Systems Engineering	Electronics and Electrical Engineering		
Electronic Design	Electronics and Electrical Engineering		
Electronics and Electrical Engineering	Electronics and Electrical Engineering		
Electronics and Electrical Engineering with Management	Electronics and Electrical Engineering		
Embedded Electronic Systems	Electronics and Electrical Engineering		
Mechanical Engineering	Mechanical Engineering		

Mechanical Engineering and Management	Mechanical Engineering		
Mechatronics	Mechanical Engineering	IMechE	
Nanoscience and Nanotechnology	Electronics and Electrical Engineering		Started 2012
Product Design Engineering	Mechanical Engineering		Started 2012 In conjunction with Glasgow School of Art
Structural Engineering & Mechanics	Civil Engineering	ICE, IStructE	In conjunction with University of Edinburgh
Sustainable Energy	Electronics and Electrical Engineering		
Telecommunication Electronics	Electronics and Electrical Engineering		

2.6   In addition 40 credits of the Electronics UG programme are available to other students in the College.

3.   Overall aims of the School's provision and how it supports the University Strategic Plan

3.1   The SER sets out the aims of the School - to be recognised as one of the world's leading Engineering Schools, delivering a high quality education underpinned by core and interdisciplinary research across the main engineering disciplines and to produce graduates with high academic capabilities and necessary skills to be effective engineers in industry or research.   The School also aims to deliver both UG and PGT degree programmes in the five Disciplines; across the disciplines and in collaboration with other bodies both internal and external to the University. With the exception of those programmes where there have been no graduates to date, all UG degrees programmes are accredited by professional bodies and judged against the UK Standard for Professional Engineering Competence (UK-SPEC). The School also aims to pursue accreditation for its PGT provision which has historically not been accredited in the same way. The Review Panel agreed that these aims were evidenced within the SER and throughout the review and were in line with the University's Strategic Plan – '*Glasgow 2020 – A Global Vision*' – to deliver an excellent student experience, research and to enhance its global reach and reputation.

4.   An Evaluation of the Student Learning Experience

4.1   Aims

4.1.1   The Review Panel noted from the SER that the aims of the School of Engineering's programmes take account of the SCQF level descriptors; the

requirements of the standards laid down by UK-SPEC; professional bodies and the expertise of the School's staff as researchers in the relevant field. The aims are outlined in the 33 distinct programme specifications which, although they were in existence prior to the formation of a single School and vary in the way in which they state the aims of the programmes, the Panel was assured that they were consistent in their aims at the appropriate level. It was also noted from the SER that the School planned to review their programme specifications as part of the on-going harmonisation of its procedures following restructuring described in more detail in paragraph 4.7.2.

4.1.2 The Review Panel, guided by the views of the External Subject Specialists, confirms that the programmes offered by the School remain current and valid in light of developing knowledge in the discipline, and practice in its application.

4.2   Intended Learning Outcomes

4.2.1 The Review Panel was keen to explore the availability and clarity of the Intended Learning Outcomes (ILOs), particularly how the students accessed them and whether or not they found them to be clear. The ILOs, which are influenced by regular accreditation visits, are closely linked to the assessment criteria and are described on MyCampus and explained clearly to students throughout the year. The feedback from the student groups, including UGS, substantiated this. The Panel is confident that students are able to access and understand the ILOs and supports the School in its plans to review the need for programme level ILOs in discussion with the SSLCs. At present, due to the modular nature of the degree programmes the emphasis has been on course level ILOs.

4.3   Assessment, Feedback and Achievement

Assessment Methods

4.3.1 It was stated in the SER that the assessment methods of each course have been chosen to reflect the ILOs being assessed and that they varied across the courses and programmes. The Review Panel explored this further with the Head of School, academic staff and student groups. The Head of School advised the Panel that the School was currently undertaking a review of the examination format across the School with a view to reducing the variety - currently there are in excess of 300 courses with more than 70 different combinations of examinations. Historically examinations were department based and the intention is to develop a School position with little variation in practice. One difficulty has been to maintain academic independence recognising that academics are best placed to know how their courses should be assessed. However, staff are conscious that the processes need to be simplified. The intention is for the review to take account of the School's plans to introduce a common first year programme in 2013 as well as the move to a single degree classification examination board. The common first year programme will include a compulsory course – Engineering Skills 1 - which will help to facilitate the transition from more exam based assessment in years 1 and 2 to the project based assessment of later years. The Dean of Learning and Teaching confirmed that he was reviewing the assessment of projects at College level with Project Co-ordinators from each School with a view to reducing the number of templates for the assessment of projects. The Panel noted that following restructuring,

common procedures for the administration of assessment had already been introduced and were working well including the development of a key role for the Teaching Office which acts as the main point of contact for the administration of all assessments. UGS staff reported that, to date, they have not been involved in the discussions regarding the review of the examination format. The Review Panel suggests therefore that the School ensures the views of the staff at UGS are taken into account.

4.3.2 The Review Panel learned from the UG students that the School was successfully using peer assessment. The process, which is mediated by academic staff, is standard in the later years of the Mechanical Engineering UG programmes and forms 10% of the fourth year project assessment in the BEng Electronics and Music programme.

4.3.3 The Review Panel was keen to explore the balance between formative and summative assessment. The SER states that there is little formative assessment but the Convener of Learning and Teaching clarified that the School was referring to the number of purely formative assessments - a number of formative assessments had become summative over time. The balance of the two was influenced to some extent by professional body expectations. In the main, the UG and PGT students in Glasgow were clear on the levels of formative and summative feedback they were provided with.

4.3.4 The Review Panel noted the feedback from the External Examiner for Civil Engineering regarding the short duration of examinations – it was felt that students were not given enough time to correct mistakes. The Panel had no concerns regarding the content of examinations but noted from the SER that the School had used discretion to lengthen the examinations in response to such feedback. As no discretion is possible in relation to the duration of examinations, the Review Panel **recommends** that the School liaise with the Senate Office on any proposed changes to the duration to ensure that they comply with the regulations set down by Senate.

4.3.5 The Review Panel noted from the SER that External Examiners did not attend the Examination Boards held in January. It was assured to hear that the role was discharged through a procedure agreed with the examiners whereby they are provided with a copy of the papers and resulting minute and are available for consultation should any issues arise.

4.3.6 Staff in UGS confirmed that the same format of assessment and papers are used for the programmes in Singapore.

Feedback

4.3.7 Given the negative response on assessment feedback in the National Student Survey (NSS) for Civil Engineering, the Review Panel investigated this further. The students agreed that in the case of Civil Engineering the negative feedback may have been as a result of frustration over other issues, mainly organisational, which had occurred in years 4 and 5 and had not been resolved prior to the NSS. The Panel felt that there was a general issue relating to students' misperceptions of what constituted feedback. Although UGS staff were clear about the assessment process and the level of feedback provided, the students in Singapore seemed not able to recognise what constituted feedback. Culturally the focus in Singapore is on grades. The Review Panel **recommends** that the School considers providing further

guidance to students, in particular the students in Singapore, on what constitutes assessment feedback. The School should also consider adopting the procedure used in the School of Law whereby they outline clearly in writing when feedback is being provided.

4.3.8 It was noted from the SER that the School's policy is to return all assessed work to students within three weeks of submission. This process was supported by the introduction, this session, of a consistent feedback form across the School. The Review Panel acknowledged that the feedback form was a new development and there was yet to be a formal review of both the form and the three week turnaround time. However, both Glasgow and Singapore staff responded that the three week period was very demanding. PGT students studying a joint programme with management were aware of a 6-8 week turnaround in the Adam Smith Business School but were not aware of the three week turnaround policy in Engineering. UGS students were not aware of the three week policy. The Panel views the feedback form as an example of good practice and supports the School's plans to closely monitor the feedback procedure including the level of student awareness.

4.4 Curriculum Design, Development and Content

4.4.1 The Head of School and academic staff explained the rationale for the current UG and PGT provision as well as the process for reviewing and discontinuing programmes. Within the UG provision there are programmes for the core disciplines including collaboration within the College: collaborative programmes with other Colleges and other external providers, for example, the joint programme in Product Design Engineering with the Glasgow School of Art. In addition, other programmes have been developed for the SIT collaboration e.g. BEng Mechatronics. However, some concern was raised by staff that the SIT collaboration will prevent future withdrawal of some programmes in Glasgow - the Memorandum of Agreement stipulates that the same programmes must be available in both locations. The decision to introduce or withdraw programmes is made by the School Management Board after consultation across the School. The Panel was advised that, from September 2013, the School would be introducing a common structure for the first year and that the intention was to review this in the short term. With its PGT provision the School is aiming to develop a grouping of courses by a) discipline; b) links with management and c) specialist MScs and with an eye on CDT (Centre for Doctoral Training) developments in the future. The PGT students agreed that the School was meeting the market demands particularly through the management element of its programmes.

4.4.2 Students were asked for their views on whether their programme was meeting their expectations. From the feedback received the Review Panel noted a high level of satisfaction from both UG and PGT students, with both the programme and the staff of the School of Engineering. One of the PGT students had experience of working in industry and confirmed the views of the external panel members of the relevance of the programme to industry. However, they advised that their choice of subjects for Aerospace Engineering, in particular, could be greater. Undergraduate students agreed that the programmes were coherent and they had had no difficulties in identifying pathways.

4.4.3   Staff advised that the recent accreditation visit to Singapore had been successful and to date only minor adjustments have had to be made to the provision to reflect local requirements and available equipment and facilities in Singapore.

Student Input

4.4.4   The UG and PGT students confirmed that there were mechanisms in place for them to feed into curriculum development. Civil Engineering students in Year 4 had proposed an elective course for Year 5 and they were consulted on course structure.

Project and Practical Work

4.4.5   The Review Panel explored the procedures relating to project work with the PGT students, specifically the Integrated Design Project which represents 20% of the final assessment. The students enjoyed this element of the programme, however, there were slight concerns regarding the process for the allocation of project teams as well as the monitoring of the operation of the teams.   An example was given of a team which consisted of 2 EU and 6 Chinese students led by a Chinese mentor. The Review Panel **recommends** that the School reviews its process for the allocation of project teams with a view to ensuring, as far as possible, diversity and balance and that the School considers introducing a structure of greater monitoring of how the teams are operating.

4.4.6   UGS students confirmed that they had opportunities for projects outwith the institution, however, there was some divergence in the views of the staff and students regarding the number and nature available. The students were content with the standard of the lab facilities in the polytechnics but felt that the level of access to the labs was better in Glasgow.

Placements

4.4.7   Some undergraduate students in Glasgow reported that a key factor in selecting their particular programme was the 6 month placement in Year 5. Student feedback confirmed that staff in Electronics and Electrical Engineering, in particular, had an effective process for identifying placements and liaising with students effectively, however, Mechanical Engineering staff were felt to be less proactive - only a small number of Mechanical Engineering students are successful in obtaining an external placement, whereas only two Electronic and Electrical Engineering students did not complete an external placement. The Review Panel noted from staff that a working group was currently looking at ways to facilitate more placements in industry in liaison with the Industrial Liaison Committee. Within Mechanical Engineering there has also been an earlier move this year to identify placements. The Review Panel welcomes the establishment of a Working Group to review the issue of placements and **recommends** that, taking cognisance of the University's new Work Based and Placement Learning Code of Practice due to be approved by the Learning and Teaching Committee in May 2013, the Working Group should consider the introduction of a similar structure across the School to that within Electronic and Electrical Engineering. The Panel also **recommends** that the Working Group liaises with Mr Jonathan Culley, the University's Work Related Learning Development Adviser based in the Careers Service.

Research-led teaching

4.4.8 The SER states that research directly imbues UG and PGT degrees with an interdisciplinary flavour, facilitates final year student placements in a broad range of international industrial and academic laboratories, supports the development of interdisciplinary degrees (such as Biomedical Engineering) and allows PGT students access to unique laboratory provision and a broad range of projects. The Review Panel was keen to explore this further with staff and students in Glasgow and Singapore. UoG staff confirmed that the content of Years 4 and 5 has been modified over time to reflect research interests of staff. The same members of staff also teach in the early years so they can introduce examples of research to students. The PGT students were aware of the research-led teaching within the School. One student confirmed that this was what had attracted him to the programme.

4.4.9 The Head of School confirmed that the level of research in UGS differed slightly from the provision in Glasgow partly due to the lower levels of research activity of UGS staff. The move to the new SIT buildings as well as SIT having recently obtained University status should mean that students will have increased levels of exposure to research. In the meantime, UGS staff confirmed that students are introduced to A*STAR - Singapore's agency for promoting research.

Opportunities for increasing international profile

4.4.10 The School engages in a large number of exchange arrangements. However, staff reported difficulties with capacity and reciprocity of numbers similar to other areas within the University - the number of incoming students was in excess of outgoing students which created workload issues. This is discussed further in paragraph 4.7.3. Staff interviewed were of the opinion that even if it was possible to achieve a balance of students it would still involve increased responsibilities for staff based in Glasgow.

4.5   Student Recruitment

4.5.1 The UG students reported that the numbers of women in the School continued to remain low. It was acknowledged that this reflected the position nationally for Engineering. However, the Review Panel felt that the School should continue with the promotion of Women in Science with a view to focussing on schools liaison. Two of the female UG students who met with the panel were STEM ambassadors for the University and had previously spoken to schools on the subject and would be happy to do so again. The Review Panel **recommends** that the School increases its schools liaison activity by utilising the services of female students to speak to school pupils about their experiences with a view to encouraging more women to take up the study of Engineering.

4.5.2 UGS staff reported that recruitment into the programmes in Singapore is healthy. The programmes in Glasgow are well established and the model of direct entry for students into Year 3 of a degree programme is well established in Singapore so students are familiar with it. The UGS students confirmed that the University of Glasgow has a good reputation in Singapore, in particular its position as a Russell Group University. In addition, they

welcomed the arrangement which allowed them to progress to high quality degree level study without having to travel overseas.

4.6   Student Progression, Retention and Support

4.6.1   The Review Panel met with groups of UG students both in Glasgow and Singapore and PGT students (a total of 9; 7 and 3 respectively). There was a high degree of contentment evident about the level of support provided by staff.

4.6.2   The Review Panel was keen to explore further the School's provision for support in mathematics and physics for new entrants. The Head of School outlined that entrants, particularly those from further education, continued to display a low level of ability. As a result the School had developed effective pre-sessional engagement procedures as well as a number of initiatives in Year 1 mathematics. These include extra tutorials and assessment in the early stages enabling staff to identify students who are struggling.

4.6.3   Undergraduate students in UGS and PGT students in Glasgow highlighted a need for additional induction. In the main, the male UGS students enter the programme following national service so were less familiar with the requirements for degree study and more in need of refresher sessions in mathematics and physics. The issue raised by the PGT students related to the variety of backgrounds and nationalities in the class. They would have welcomed an opportunity to meet the class group beforehand. The Review Panel **recommends** that the School reviews its induction arrangements, in particular for UGS and PGT students, to ensure that they are fulfilling the requirements of the different student cohorts.

Advisory System

4.6.4   The Review Panel noted from the staff interviewed that the School had an effective advising system.   A review of the system had been necessary due to the number of available advisers - ideally there should be 25 students per adviser but the 20 advisers available previously had resulted in a ratio of approximately 100:1.   The revised structure has resulted in additional advisers – currently 51 giving a student adviser ratio of about 40:1, still considerably short of the 25:1 target. A Senior Adviser has been appointed in each Discipline. The Chief Adviser of Studies developed the system and manages it and also provides regular training sessions for all advisers. Critical support in the maintenance of the records on MyCampus is provided by the Teaching Office. The Review Panel **commends** the School for the effective use of the Teaching Office in supporting the advisory system.

4.7   The Quality of Learning Opportunities

4.7.1   The Review Panel was assured that the quality of the learning opportunities available to students in Engineering was high. The UG and PGT students interviewed expressed satisfaction with the quality and commitment of the teaching staff. Communication within the School is usually effective and expectations were made clear by staff both in lectures and on Moodle.

Harmonisation

4.7.2 The SER outlined that with the merger of four Departments with four different sets of procedures and practices, the School has been trying to manage a move towards School level policies and procedures. The Review Panel acknowledged that the School was in a transition period in this regard and that the process would take some time, however, it was assured to identify some successes to date. The School has developed a common first year curriculum, as outlined in paragraph 4.4.1, which was supported by staff, as well as a single degree classification examination board which will operate for the first time in Summer 2013 following a successful trial at MSc level. Staff reported that the new structure had resulted in more communication across the disciplines and additional flexibility in terms of teaching support. It was hoped that the School level workload model would also help to provide greater transparency. As described in paragraph 4.1.1, the School also intends to review its programme specifications to ensure consistent descriptions of the programme aims. It was recognised that they could potentially retain some different procedures as it may not be a case of one size fits all and they would hope to learn from the best practices across the School. The Panel **commends** the work the School is undertaking to achieve, as far as possible, consistent School-wide procedures and documentation and **recommends** that it continues to progress this work.

Study Abroad

4.7.3 The Review Panel heard from a Year 4 UG student who had spent time abroad during his third year. The student's perception was that he was the first Mechanical Engineering student to go outside Europe and spoke very highly of the experience. He had taken the initiative in identifying the exchange but would have welcomed more guidance and encouragement from the School. Students reported that they were provided with an introduction to study abroad in Years 1 and 2, however, links were at institutional level and it would have been helpful to have had links more related to Engineering. It was recognised that there are a number of factors why students do not engage in exchanges overseas such as anxiety about missing too much of the provision at home and language and financial concerns. The student interviewed identified that there had been some degree of mismatch in the curriculum but that he had managed to catch up very quickly when he got back. The Panel noted that there were an increasing number of overseas institutions providing programmes in English so this should not automatically be seen as a barrier to study abroad. Similarly, the UGS and University of Electronic, Science and Technology of China (UESTC) developments offered additional opportunities for Glasgow students to study overseas. Although it recognises the difficulties associated with the low number of Glasgow-based students engaging in a student exchange arrangement, the Review Panel **recommends** that the School adopts a more proactive approach in encouraging students to undertake a period of study abroad, particularly in light of the increasing number of Engineering programmes being taught in English at overseas institutions and the already established international collaborations within the School.

Singapore Institute of Technology

4.7.4 The UGS staff and students were asked about the efficacy of their link with the University and University staff. Singapore academic staff have all spent some time in Glasgow and have met with the Glasgow staff. They confirmed

that the interaction with Glasgow staff is generally good. Direct communication between students in Singapore and staff at Glasgow was not encouraged. The Head of School confirmed that it was important that any issues were directed to staff in Singapore initially. When questioned further the UGS students requested additional teaching by UoG staff in Singapore as they felt it would benefit them to have more experience of the Glasgow approach to teaching. In addition, the students felt that Singapore staff, on occasion, had difficulty teaching other lecturer's notes.

4.7.5 The Review Panel was of the view that the UGS students seemed less connected to the programmes than the Glasgow students and that there was no evidence of a strong sense of identity with the University. Although, it was recognised that some of the issues raised by the students would likely be addressed following the completion of the new SIT buildings, the Panel felt that there were ways of addressing this in the short term. The Review Panel **recommends** that the School considers ways to strengthen the sense of identify with the University felt by Singapore students including additional teaching sessions by Glasgow staff in Singapore. One further suggestion from Singapore staff would be to consider providing a University of Glasgow T-shirt with student induction packs. Similarly, the School should consider introducing the opportunity for additional social interaction while the UGS students are in Glasgow for the Overseas Immersion Programme with local Glasgow students or students working in Glasgow during the summer.

4.8   Resources for Learning and Teaching

Staffing

4.8.1 The SER stated that the School's biggest issue in terms of staffing was the increasing reliance on single lecturers in significant areas of the curriculum. Vacancies in certain areas were becoming increasingly difficult to fill. This view was supported by the NSS feedback for Civil Engineering which for the most part had been as result of staff departures. The SER also outlined the School's concerns regarding the high SSR which was impacting on the School's ability to provide certain options. Postgraduate students supported this by describing difficulties with the divergence between the number of options available on application and on arrival.

4.8.2 The Review Panel noted from the SER and the academic staff that the Technical and Administration staff provided the School with a high level of support. The SER outlined how Technical staff support both research within the School and teaching laboratories. Additionally some technicians are actively involved with training students in the practical aspects of engineering. Secretarial staff provide support for teaching through a large number of functions coordinated by the Teaching Office. These include, but are not limited to: maintenance of class lists; collection and assimilation of class test and assignment marks; compilation and dissemination of project descriptions; logistical support to the Discipline examinations officer; secretarial support for Boards of Examiners; and MyCampus support for the School's Advisers. The Panel agreed that one of the main successes of restructuring has been the improved support provided by the central Teaching Office and Technical staff.

4.8.3   The SER outlined that the line management for all Research and Teaching staff rests with the relevant Head of Research Division (HoRD). Staff highlighted a potential risk with this arrangement and the need to maintain regular meetings of teaching staff. An example was given of the recent vacancy in Aerospace required to teach a core course. They identified a need for a mechanism whereby the Heads of Teaching Disciplines can liaise with the groups of Head of Research Divisions to review teaching needs. It was acknowledged however that they do know who to speak to if they need teaching assistance which was recognised as one of the advantages of the new structure. Probationary staff were content with the line management arrangement and did not report any tension between teaching and research. The Head of School and Dean of Learning and Teaching confirmed that there were moves to address any difficulties associated with the line management structure.   The Panel was content that there was enough flexibility and opportunities for negotiation in terms of teaching resources.

4.8.4   The Review Panel was keen to explore whether the SIT and UESTC developments had any impact on staffing.   Concerns were raised by Glasgow staff about additional workload, in particular those staff whose programmes are taught in Singapore. They found the current numbers challenging and there was anxiety about what would happen when numbers increased. It was recognised that there had been additional funding provided by the College for backfill but that this was due to run out. The delivery model for UESTC was not yet known however, despite the lack of an Overseas Immersion Programme for UESTC students, it was anticipated that the development would still impact on staff in Glasgow. Staff were not clear whether the business model for the international collaborations had included for additional resources nor what the benefits were for the School in general. With a view to ensuring high level of student satisfaction and thus avoiding any potential reputational issues, the Review Panel **recommends** that additional resources are identified to support the overseas developments in the short term both to address the concerns about the impact on staff workload in Glasgow and the other operational issues relating to UGS highlighted throughout the report. In addition, the Panel **recommends** that the Head of College should be invited to clearly identify the benefits of the collaboration to the School. [See paragraphs 4.3.7; 4.4.1; 4.6.3; 4.7.5; and 4.8.4]

Staff Development

4.8.5   The Review Panel was keen to explore staff experience of the Postgraduate Certificate in Academic Practice (PgCAP) and Postgraduate Certificate in Learning and Teaching in Higher Education (PgCLTHE) with the Head of School; academic staff including UoG and UGS; and the Probationary staff. Although there was agreement that the programmes are useful and the networking opportunities were invaluable, views were also expressed that the PgCerts are very demanding. This was particularly relevant in the case of UGS staff who were at an early stage of development in the collaboration and had additional pressure on them. Also, UGS staff did not have the support of Graduate Teaching Assistants (GTAs). Some staff thought that particular courses such as 'Introduction to Course Design' were often provided too late and there was no flexibility allowed - if staff miss a class they have to complete assignment self directed learning task. A member of probationary staff in Glasgow had started in June and had been required to prepare a course in advance of the PgCAP session on this topic in October.

Their view was that staff with a large teaching load early on in their career should be prioritised for timely provision of the required courses. Probationary staff reported that the staff development unit centrally provided development opportunities were very useful as they were skills based and as a result they were seen as more focussed and relevant. They were also seen to be more accessible as many were held over lunchtime. Probationary staff did highlight a need for more support in supervision; use of Moodle and strategies for assessment. Given the diversity of needs within the School of Engineering for the PgCAP, the mixed feedback about the quality of the teaching within the First Year Student Experience Survey and some misinformation about the PgCAP and PgCLTHE aims, content and requirements, the Review Panel **recommends** that the Head of School meets with a representative from the Learning and Teaching Centre to discuss any possible adaptations that can be made to the University's compulsory PgCert provision to better suit the needs of the School and its overseas provision.

4.8.6 The Review Panel **commends** the School for the success of its mentoring system. There was unanimous support from the Probationary staff for the allocation process; the link to the probationary process; the formal appraisal meetings and the general support provided to them by their mentors. The general view was that the mentoring system allows for effective management of the workload of probationary staff who all agreed that they were assigned tasks appropriate to their skill set.

Graduate Teaching Assistants

4.8.7 The School's budget to cover GTA provision currently sits at approximately £90k per annum so GTAs form a very significant and useful resource. GTA support and allocation of duties is managed by the Teaching Office. As almost all GTAs are PhD students, they spend comparatively little time as GTAs and are managed in their GTA activities by the academic members of staff who they are assisting. The Teaching Office liaises with the GTAs regarding their working hours – normally a maximum of 8 hours per week including preparation – as well as payment. GTAs are available to UGS students while in Glasgow but not in Singapore. However this will differ with the UESTC collaboration in Chengdu as they have a greater pool of available PhD students.

4.8.8 The Review Panel met with a group of 4 GTAs who outlined their role in relation to teaching, particularly in: first year mathematics; tutorial provision; and, assessment, as well as the support provided to them by the School. The GTAs were enthusiastic about the benefits of the role within the School but advised that they had only been provided with minimum support regarding teaching skills and there had been no specific provision related to laboratory and tutorial support or assistance with marking. On an informal basis, and in liaison with the Teaching Office, they had taken it upon themselves as a group to develop registers and a marking system as well as other administration processes related to tutorials. The Panel was of the view from the discussions with the GTAs that they were not being provided with any formal feedback and had tended to rely on informal feedback from students. They reported that they did not feel part of a team as there were no regular group meetings and their ability to feedback to teaching staff depended on who they were working with and how approachable they were.

With a view to increasing the level of support provided to the GTAs, the Review Panel **recommends** that the School promotes the School's GTA management structure and provides further support in the areas of marking and feedback and supporting GTAs to evaluate their teaching; as well as emphasising the GTA statutory training and GTA professional development sessions provided by the Learning and Teaching Centre to support their development. The School should also consider appointing a senior GTA to convene regular meetings of GTAs providing a forum for concerns or suggestions for enhancements to be raised.

Physical accommodation

4.8.9   The Review Panel undertook a tour of the facilities led by Professor Scott Roy. They viewed the laboratories and workshop facilities and proposed social space in the Rankine Building. The Rankine Building had designated laboratories for project work in years 3, 4 and 5. In addition the computer facilities had undergone significant improvement with an impressive system in the Rankine Building for confirming the availability of IT provision, specifically computer screens based in the reception. The Panel agreed that the School was well provided for in terms of accommodation, in particular the Tuck Laboratory in the James Watt South Building, but that some areas of the Rankine Building required minor repair in the short term. Staff and students in Singapore had no major concerns with their accommodation and acknowledged that any issues would likely be dealt with as part of the new SIT buildings based on the site of each Polytechnic which are due to be completed for the start of academic session 2014-2015. The Review Panel **recommends** that the outstanding maintenance issues in the Rankine Building be undertaken as a priority and the system of providing information on computer accessibility currently available in the reception of the Rankine Building should also be established in the James Watt building South.

Moodle

4.8.10 The Panel learned that Moodle is used extensively in the School for the provision of a link to tutors; teaching materials as well as discussion fora and was welcomed by the majority of students.   UGS students were not accessing staff directly but instead going through the UGS tutors. The UGS students were complimentary about the availability of notes on Moodle while some of the Probationary staff felt that the current Moodle programme was out-dated. The Convener confirmed that the next edition of Moodle would soon be available which would hopefully address some of the concerns voiced. It was noted from the students that some Lecturers are using it for a forum for projects. One student reported that previously there had been a stigma associated with students admitting they were struggling with their work however they had been encouraged to use it by PGT students who use it extensively for lecture notes; submitting assignments and peer review.

MyCampus

4.8.11 Students reported that the difficulties experienced with MyCampus last year had significantly reduced.

5.   Maintaining the Standards of Awards

Benchmark statement and other relevant external reference points

5.1   The SER outlined that the School's degree programmes are accredited under the regulations of the Engineering Council, through the UK-SPEC requirements which enabled the School to benchmark its provision against other UK Engineering degrees. However there was no reference in the SER to benchmarking against the standards as laid down by the Quality Assurance Agency (QAA).

5.2   The School engages with a range of external bodies associated with education to ensure awareness of relevant developments. This includes staff attendance at the annual congress of the Engineering Professors' Council (EPC) and representation on the relevant Scottish Qualifications Agency (SQA) committees.

External Examining

5.3   The SER detailed the role of the External Examiners in monitoring the standards of the programmes in the School of Engineering and provided a clear description of the processes in place for assessment. The Review Panel **commends** the School for the high level of positive feedback from its External Examiners in particular feedback regarding the comparable high standard of Glasgow graduates.

Professional Bodies

5.4   The School's provision is accredited by 11 different professional bodies. They are:

CIHT	Chartered Institution of Highways and Transportation
ICE	Institution of Civil Engineers
IED	Institution of Engineering Designers
IET	Institution of Engineering and Technology
IHE	Institute of Highway Engineers
IMechE	Institution of Mechanical Engineers
IStructE	Institution of Structural Engineers
RAeS	Royal Aeronautical Society

The professional bodies monitor all aspects of academic standards including the distribution of final degree classifications. Accreditation panels meet with students during visits and highlight issues raised to be raised by the School. One example cited in the SER was the School's revision of the MSc Mechatronics curriculum due to feedback from the IMechE accreditation panel that some courses were not at an appropriate level.

5.5   The Review Panel was keen to explore how the School managed the different requirements of the professional bodies.   The Head of School and academic staff confirmed that this was an on-going challenge; particularly with regard to responding to the high number of accreditation visits (the next one is due in 18 months). The Panel was advised that the accreditation process had been the subject of detailed discussion in the School, specifically whether to consider a single visit or continue with the individual

accreditation events. A number of academic staff within the School have had experience of being a member of an accreditation panel and the School recognised difficulties of a single event for the accreditation bodies. Although they had not yet reached a conclusion, the Panel learned that the likelihood was that they would pursue the route of a single visit. The external panel member suggested that the common first year would help support this view. The Review Panel supports the School's position to proceed on the basis of a single accreditation event noting that the Teaching Office was positioned to provide the necessary support either way.

5.6   The Review Panel **commends** the School on the level of its consultation with industry through the Industrial Liaison Committee (ILC) which it felt was an effective and productive forum which helped to ensure the relevance of the School's programmes and MEng projects.

Annual Monitoring

5.7   Quality assurance within the School is managed by one Quality Assurance Officer. The College Quality Officer, currently the Convener of the Quality Officer Forum, is also based in the School of Engineering.

5.8   The Head of School, Dean of Learning and Teaching and the School Quality Officer described the annual monitoring process adopted by the School. With a view to streamlining the procedure and increasing staff engagement with the process, the School has moved from the completion of course level reports to five discipline based reports effectively resulting in programme level review. The reports are discussed at twice yearly School level meetings where attendance is strongly encouraged. When attendance is not possible, staff are required to complete a course level report. The Heads of Discipline report feeds into the School report which feeds into the College report. The Panel **commends** the annual monitoring process in the School and is assured that the streamlined process now results in genuine participation from the staff. The Panel suggests that a record of the useful discussions is maintained that goes beyond benchmarking and averaging grades.

5.9   UGS staff were asked how they input into the annual monitoring process. The Panel was advised that the Programme Director completes an annual monitoring report which is submitted to Glasgow. The report currently covers the Mechanical programmes but will shortly be expanded to include the Aerospace provision. Staff in Singapore also input into discussions via Video-conferencing.

6.   Assuring and Enhancing the Quality of the Students' Learning Experience

Student Engagement with feedback processes

6.1   The SER outlined that the School employs a number of methods of obtaining student feedback which include issuing student feedback questionnaires at the end of all courses. Although project based courses are not currently assessed in this way the pilot of the EvaSys software is helping to facilitate this. EvaSys is run by the Teaching Office and has previously been used to obtain feedback from students in Singapore. In addition to questionnaires, discipline-based Staff and Student Liaison Committees (SSLCs) discuss all

problems encountered with the provision. Students assured the Panel that they felt they were able to raise concerns with staff and that in general staff were receptive and dealt with issues quickly. Moodle was also identified as a particularly helpful aid for feedback to staff and general communication. It was acknowledged that some students were more comfortable with the Moodle and engaging with blogs. The Panel was keen to explore the School's plans for the use of the Student Voice website. Undergraduate students confirmed that they were only made aware of it by email through the Teaching Office immediately prior to its release in mid January. However, Year 1 students were given an introduction to Student Voice in October. The Dean of Learning and Teaching and Head of School advised that there were plans to promote it further and use it for the next School-level consultation although the method of promotion had still to be discussed.

6.2   The UG students assured the Panel that the School's Staff Student Liaison Committees (SSLC) were particularly effective and they provided with a number of examples of issues which had been addressed. To date the PGT students only had experience of the SSLCs for management but had also found them to be a helpful forum for addressing any concerns.

National Student Survey

6.3   The Review Panel was keen to explore how the School had responded to the negative feedback from the recent National Student Survey (NSS) for Civil Engineering. The academic staff advised that they undertook further telephone and email surveys to confirm the feedback and noted that the issues, as outlined in the NSS, related in the main to staff departures and resultant reduction in the choice of courses. It was also acknowledged that changes they had implemented had not been done in a coherent way. In Environmental Engineering students had previously had an introduction in Year 1 but nothing further until Year 4. The School has since made minor changes to the course and further changes will be introduced in 2013/14 to provide a more gradual exposure over the years. The School Management Board and Learning and Teaching Committee were meeting every two weeks to discuss the NSS results and the introduction of a common first year. The Panel **commends** the way the School is addressing the issues highlighted by the NSS feedback.

Singapore Institute of Technology Collaboration

6.4   The Head of School and staff and students at UGS assured the Panel that similar structures for obtaining student feedback were in place in Singapore to ensure that, as far as possible, the students had a comparable experience. This applies to the Mechanical programmes offered in liaison with Ngee Ann Polytechnic and the Aerospace programmes offered in liaison with Singapore Polytechnic. There have been a few teething problems with the SIT collaboration, however these had been addressed effectively. UGS students were also supportive of the efficacy of the SSLCS although they felt that they could address issues with staff at any time. Examples of issues resolved were provided, for example, there had been issues with the assessment of the management course which were addressed by staff from the School of Management travelling to Singapore in November 2012. In addition students had raised concerns with the lecture hall which had been addressed effectively. The UGS students and staff confirmed that an open door policy operated in Singapore.

7. Summary of Perceived Strengths and Areas for Improvement in Learning and Teaching

Key Strengths

- The enthusiasm and support provided by staff [**commended**].
- The way the School approaches issues in a professional manner, particularly the response to the NSS feedback in Civil Engineering [**commended**].
- The students' strong belief in the efficacy of the SSLCs.
- Teaching Office [**commended**].
- Excellent facilities, in particular the new Tuck laboratory.
- Engagement with the University's internationalisation agenda.
- Satisfaction of the probationary staff and the support they are provided by the School.
- The management of the workload of all staff.
- External Examiner feedback [**commended**].
- Annual Monitoring Process [**commended**].
- Range of provision, particularly the School's PGT portfolio
- Industrial Liaison Committee (ILC) [**commended**] and the School's consideration of a single professional body accreditation event.
- Harmonisation - the School's progress in achieving, as far as possible, consistent School-wide procedures, in particular the common first year curriculum [**commended**].
- Mentoring system [**commended**].

Areas to be improved or enhanced

- The process for allocating and monitoring PGT project teams.
- Support for GTAs
- Student engagement with opportunities for study abroad.
- SIT Collaboration – in particular:
  - More transparency for UoG staff on the benefits of the collaboration
  - Address Impact on UoG staff workload
  - Clarify students' understanding of assessment feedback
  - Improve students' sense of identity with Glasgow
  - Consider additional teaching sessions by UoG staff in Singapore
  - Consider additional refresher sessions for students who may have just completed national service.

7.1 Conclusions

The Review Panel concluded that the School of Engineering's provision was of a high quality overall.

The students who met with the Panel were articulate and their satisfaction with the quality of their educational experience, the support of the staff and with the standard of programmes and courses offered by the School was evident. The School has an integrated team of staff, fully committed to the provision of high quality research-informed programmes and courses.

The Panel was particularly impressed by the standard of its facilities, student support of the feedback systems, particularly the SSLCs; the Industrial

Liaison Committee and the use of the Teaching Office which it felt had not been demonstrated fully in the SER.

7.2   Commendations

7.2.1   The Review Panel **commends** the School for the effective use of the Teaching Office in supporting the advisory system. [Paragraph 4.6.4]

7.2.2   The Review Panel **commends** the School for the progress, to date, in achieving School-wide procedures. [Paragraph 4.7.2]

7.2.3   The Review Panel **commends** the School for the success of its mentoring system [Paragraph 4.8.6]

7.2.4   The Review Panel **commends** the School for the positive External Examiner feedback, particularly in relation to the quality of the Glasgow graduates. [Paragraph 5.3]

7.2.5   The Review Panel **commends** the School for the level of its consultation with industry through the Industrial Liaison Committee. [Paragraph 5.6]

7.2.6   The Review Panel **commends** the School for its streamlined annual monitoring process. [Paragraph 5.7]

7.2.7   The Review Panel **commends** the school for the way it is addressing the NSS feedback. [Paragraph 6.3]

7.3   Recommendations

The recommendations interspersed in the preceding report are summarised below. The recommendations have been cross-referenced to the corresponding sections of the report and are ranked in order of priority.

Recommendation 1
With a view to ensuring high level of student satisfaction and thus avoiding any potential reputational issues, the Review Panel **recommends** that additional resources are identified to support the overseas developments in the short term both to address the concerns about the impact on staff workload in Glasgow and the other operational issues relating to UGS highlighted throughout the report. In addition, the Panel recommends that the Head of College be invited to clearly identify the benefits of the collaboration to the School. (Paragraph 4.8.4)
(See also Recommendations 2 – 4)
                                                                  Action: Head of College

Recommendation 2

The Review Panel **recommends** that the School considers ways to strengthen the sense of identify with the University felt by Singapore students, including additional teaching sessions by UoG staff in Singapore. One further suggestion from Singapore staff would be to consider providing a University of Glasgow T-shirt with student induction packs. Similarly, the School should consider introducing the opportunity for additional social interaction while the UGS students are in Glasgow for the Overseas Immersion Programme with local Glasgow students or students working in Glasgow during the summer. *(*Paragraph 4.7.5)

Recommendation 3

The Review Panel **recommends** that the School considers providing further guidance to students, in particular the students in Singapore, on what constitutes assessment feedback. The School should also consider adopting the procedure used in the School of Law whereby they outline clearly in writing when feedback is being provided. (Paragraph 4.3.7)

Action: Head of School

Recommendation 4

The Review Panel **recommends** that the School reviews its induction arrangements, in particular for UGS and PGT students, to ensure that they are fulfilling the requirements of the different student bodies. (Paragraph 4.6.3)

Action: Head of School

Recommendation 5

Given the diversity of needs within the School of Engineering for the PgCAP, the mixed feedback about the quality of the teaching within the First Year Student Experience Survey and some misinformation about the PgCAP and PgCLTHE aims, content and requirements, the Review Panel **recommends** that the Head of School meets with a representative from the Learning and Teaching Centre to discuss any possible adaptations that can be made to the University's compulsory PgCert provision to better suit the needs of the School and its overseas provision. (Paragraph 4.8.5)

Action: Head of School

For the Attention of the Learning and Teaching Centre

Recommendation 6

With a view to increasing the level of support provided to the GTAs, the Review Panel **recommends** that the School promotes the School's GTA management structure and provides further support in the areas of marking and feedback and supporting GTAs to evaluate their teaching; as well as emphasising the GTA statutory training and GTA professional development sessions provided by the Learning and Teaching Centre to support their development. The School should also consider appointing a senior GTA to convene regular meetings of GTAs providing a forum for concerns or suggestions for enhancements to be raised. (Paragraph 4.8.8)

Action: Head of School

For the Attention of the Learning and Teaching Centre

Recommendation 7

The Review Panel **recommends** that the School reviews its process for the allocation of project teams with a view to ensuring, as far as possible, diversity and balance and that the School considers introducing a structure of greater monitoring of how the teams are operating (Paragraph 4.4.5)

Action: Head of School

Recommendation 8

As no discretion is possible in relation to the duration of examinations, the Review Panel **recommends** that the School liaise with the Senate Office on

any proposed changes to the duration to ensure that they comply with the regulations set down by Senate. (Paragraph 4.3.4)

Action: Head of School

Recommendation 9

The Panel **commends** the work the School is undertaking to achieve, as far as possible, consistent School-wide procedures and documentation and **recommends** that it continues to progress this work. (Paragraph 4.7.2)

Action: Head of School

Recommendation 10

The Review Panel welcomes the establishment of a Working Group to review the issue of placements and **recommends** that, taking cognisance of the University's new Work Based and Placement Learning Code of Practice due to be approved by the Learning and Teaching Committee in May 2013, the Working Group should consider the introduction of a similar structure across the School to that within Electronic and Electrical Engineering. The Panel also **recommends** that the Working Group liaises with Mr Jonathan Culley, the University's Work Related Learning Development Adviser based in the Careers Service. (Paragraph 4.4.7)

Action: Head of School

Recommendation 11

Although it recognises the difficulties associated with the low number of Glasgow-based students engaging in a student exchange arrangement, the Review Panel **recommends** that the School adopts a more proactive approach in encouraging students to undertake a period of study abroad, particularly in light of the increasing number of Engineering programmes being taught in English at overseas institutions and the already established international collaborations within the School. (Paragraph 4.7.3)

Action: Head of School

Recommendation 12

The Review Panel **recommends** that the outstanding maintenance issues in the Rankine Building be undertaken as a priority and the system of providing information on computer accessibility currently available in the reception of the Rankine Building should also be established in the James Watt Building (South). (Paragraph 4.8.9)

Action: Head of Estates and Buildings and Head of School

Recommendation 13

The Review Panel **recommends** that the School increases its schools liaison activity by utilising the services of female students to speak to school pupils about their experiences with a view to encouraging more females to take up the study of Engineering. (Paragraph 4.5.1)

Action: Head of School