

Periodic Subject Review (PSR)

Review of School of Physics and Astronomy held on 15 February 2018

Report Summary

The following is a brief summary of the full report of the review carried out in the School of Physics and Astronomy. *Periodic Subject Review* (PSR) is an internal subject review focused on the quality of provision as experienced by students. The review looks at the range of programmes, course content, the teaching methods employed, assessment, facilities and much more.

The full report of the review is available publicly at:

https://www.gla.ac.uk/media/media_613792_en.pdf

Further information about the PSR process can be found at:

<http://www.gla.ac.uk/services/senateoffice/qea/periodicsubjectreview/>

Italicised words are explained in a glossary below.

Conclusions

The Review Panel welcomed an open and constructive engagement with the School of Physics and Astronomy. While facing considerable pressures, the School maintains a strong collegial approach to providing a student experience which is stimulating and well supported.

The Review Panel, guided by the views of the External Subject Specialist confirmed that, at the time of the Review, programmes offered by the School of Physics and Astronomy were current and valid in light of developing knowledge in the discipline and of practice in its application.

Commendations, Key Strengths and Good Practice¹

Commendations are practices identified as innovative and exemplary activities for potentially wider dissemination.
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Strategic Approach to Enhancing Learning and Teaching

- One of the most prominent themes throughout the Review was the increasing pressure on staffing in the School caused by a high *staff:student ratio* (1:16.1 in Session 2015-16)

¹ Numbers refer to the paragraphs in the full report that contain the relevant discussion.

which, as noted in the *Self Evaluation Report (SER)*, did not compare well to other *Russell Group* institutions. The Review Panel concluded that within the School there remained a shared commitment to delivering the best possible student experience, and a sense that colleagues were facing the difficulties in a collegial manner. [Paragraph 2.4.3]

Enhancing the Student Experience: *Widening Access*

- The SER described the well established and extensive work undertaken by the School in engagement with schools and teachers (for example, over the last two years more than 100 Advanced Higher Physics pupils had come to the School to undertake experiments for their projects). Efforts to target priority schools had had impressive results, with the SER noting that for the student cohorts registering in 2013, 2014 and 2015 more than 25% had a *widening participation* status. The Review Panel was pleased to note that monitoring by the School found that progression rates for these students were very similar to those for the overall cohorts. This achievement was commended. [Paragraph 3.1.2]

Enhancing the Student Experience: *Equality and Diversity*

- The Review Panel noted the School's excellent work, described in the SER, in promoting equality and diversity. In relation to gender equality, this was recognised in the award of *Juno Champion* and *Athena Swan* Silver status. This achievement was commended. [Paragraph 3.1.5]

Enhancement in Learning and Teaching: *Project Work*

- The SER articulated the value placed by the School on Undergraduate Project work in their final year of study. Staff were committed to ensuring that students had a high quality research experience. Despite the pressure from increasing student numbers, the School's view was that it was important to offer an individual project. Students who met with the Panel spoke of the desirability of the opportunity to participate in renowned research groups. For some, awareness of this feature of the School's provision had been significant in their decision to come to study at Glasgow.

In discussion with *Postgraduate Taught (PGT)* students, it was noted that students were notified of the available projects and were invited to express their preferences. In addition, they were encouraged to approach staff with their own proposals, which the students regarded very positively. The Panel commended the School for its continuing commitment to providing opportunities to undertake individual project offering a high quality research experience. [Paragraph 4.1.13]

The Review Panel identified the following key strengths and areas of good practice.

Enhancement in Learning and Teaching: *dissemination of innovation and good practice*

- The valuable role played by Class Heads in supporting staff involved in teaching in their respective years. This included the oversight of *Moodle*, and the dissemination of information to staff about programme level issues. [Paragraph 4.1.6]

Enhancement in Learning and Teaching: Early Career Support

- The Review Panel met with a number of staff who were either participating in the *early career programme* or had recently completed it. Staff felt on the whole well supported in their roles and that there had been careful management of their workload with staged increases in their teaching commitments. All staff had a mentor who was available to provide support particularly in relation to their progression through the early career structure, but more broadly they found colleagues willing to provide information and support as required and the value of these informal networks was acknowledged. [Paragraph 4.3.5]

Areas to be improved or enhanced

The Review Panel made a number of recommendations where it identified opportunities for further enhancement. The Head of Subject commented that the review had been timely given the Subject's recent transition and that the recommendations would enable the Subject's strategic objectives.

Enhancement in Learning and Teaching: Dissemination of innovation and good practice

- The School to reflect on the various mechanisms by which good practice is currently disseminated and develop a more systematic means of sharing innovations and good practice to all staff within the School with a view to delivering a more consistent learning experience across all programmes. The School might also consider defining a set of minimum expectations for staff and students to ensure some consistency in delivery, whilst not restricting pedagogic freedom and innovation. The SER had indicated that a regular staff event would be arranged for this purpose. [Paragraph 4.1.6]
- Training provided to *Demonstrators* to be reviewed including:
 - undergraduate labs, with particular emphasis on promoting problem-solving techniques for the students both in completing the labs and in being assessed by interview. [Paragraph 4.1.9]
 - assessment of undergraduate labs, with particular emphasis on achieving consistency in the amount of feedback provided to students, the provision of feedback that will highlight to students how they can improve their grades (including how to achieve the highest grades), and the delivery of adequate preparation for their conducting of interviews.

Enhancement in Learning and Teaching: Small Group Teaching

- The School to reflect on the small group teaching feedback to minimise inconsistency in delivery and format and to collaborate with the students as to what is included. [Paragraph 4.1.11]

Enhancement in Learning and Teaching: Writing Skills

- The Review Panel learned about a recent change to the fourth year curriculum for integrated Masters students: in response to an identified weakness in the key skills of report writing, the fourth year practical project had been replaced with the Physics Literature Project, which offered students the opportunity to look in-depth at a chosen research topic. The undergraduate students acknowledged that, whilst there was value

in this, they were concerned that the change meant no practical work was undertaken in Year 4 and might be short of experimental practice for the crucial project in Year 5. The School was invited to reflect on the concerns being voiced by students and consider how best to either reassure students that this should not put them at a disadvantage or incorporate some element of advanced practical work into the curriculum. [Paragraph 4.1.14]

Enhancement in Learning and Teaching: Study abroad

- Low student numbers under *study abroad* was noted. In the SER, it was explained that students were encouraged to undertake study abroad during their second year. However, the undergraduate students who met with the Review Panel advised that, in order to go abroad in semester 1 of Year 2, they were required to put themselves forward during their first semester at the University. At that point, they did not feel ready to consider this and suggested that more interest would be generated if study abroad opportunities during Year 3 were promoted. The Review Panel recommended that, with a view to the achieving the University's strategic target for at least 20% of students to experience a period of *international mobility*, the School review its approach to promoting study abroad in Year 2 and investigate the feasibility of promoting opportunities for a year or a semester abroad during Year 3, as is the norm across the University. [Paragraph 4.1.16]

Enhancement in Learning and Teaching: Links with industry

- In the SER it was explained that opportunities for industrial placements were with the School recognising the need to find links with industry. Links with industry offered the potential for alleviating some of the burden on School staff in relation to the supervision of student projects. The students also referred to such links representing valuable work experience relevant to finding employment after graduation. There was currently some activity in this area on PGT programmes through the *External Advisory Board*. There was an aspiration to broaden the work of the Board to encompass undergraduate students and the Head of School expressed the view that there could be value in involving some College-level input as well. In view of the potential benefits to be gained both by staff and students in this area, the Review Panel recommends that the School move forward with this work as a priority. [Paragraph 4.1.17]

Enhancement in Learning and Teaching: Programming

- The School continues to focus efforts on revising the provision of computing teaching in the curriculum. [Paragraph 4.1.15]

Academic Standards: Student Feedback

- The Review Panel was disturbed to hear from staff that some of the feedback given through course evaluation surveys was inappropriate and personally offensive, which undoubtedly was the very undesirable result of anonymity. The Panel recommends a review of the wording of the University's message inviting students to complete course evaluation surveys, to include a clear direction on the unacceptability of such comments. [Paragraph 5.1.3]
- The undergraduate students told the Review Panel that they were unclear as to how the teaching of labs was evaluated. The students had responded to a survey being carried out by 3rd/4th year students but did not know what had been done with the information that had been gathered. At the meeting with staff it was noted that the lab survey carried

out by students was not complete by the end of the labs and this meant that the feedback loop was not being closed with the cohort who had provided the responses. It was acknowledged that this would be straightforward to address and the Panel recommends that this is taken forward. [Paragraph 5.1.5]

Resources for Learning and Teaching: Administrative Support

- Continue to review possible means of alleviating the administrative burden currently carried by academic staff. The Panel is not able to recommend resource investments per se, but would stress the need for this aspect of administrative support to be considered from a strategic perspective so as to create capacity for the learning and teaching developments identified elsewhere in this report. The Panel also notes that the College is currently conducting a comprehensive review of support services, and this may impact on the School's response to this recommendation. [Paragraph 4.3.2]

Glossary

Athena SWAN Awards

Athena SWAN Awards recognise success in developing employment practices to further and support the careers of women in science, technology, engineering, maths and medicine in higher education.

Early Career Development Programme (ECDP)

The Early Career Development Programme is a development framework to support career progression for staff, which focuses on core developmental activities aligned to relevant promotion criteria. The framework includes Learning Themes developed through analysis of the relevant promotion criteria and in consultation with a range of stakeholders and a range of development activities.

External Advisory Board (EAB)

An EAB normally comprises distinguished alumni and successful industrial, academic, and business leaders, who have an interest in the discipline. It provides advice and counsel to the School/Subject Area regarding industry's and other constituents' needs and trends, and therefore support the School/Subject in the achievement of its strategic goals.

Juno (Project)

The aim of Project Juno is to recognise and reward physics departments, schools, institutes and organisations that can demonstrate they have taken action to address gender equality in physics and to encourage better practice for all staff.

Laboratory Demonstrators

To demonstrate use of practical equipment (including where relevant, software packages), experiments, exercises, techniques and/or processes that may form an element of an undergraduate course of study in line with specific learning objectives, set by others. To oversee students carrying out such experiments, exercises etc and offer assistance as appropriate.

Mobility Strategy

The University has introduced a Student Mobility Strategy, which is intended to raise student awareness of study abroad opportunities, and to encourage staff to promote the benefits offered by these.

Moodle

Moodle is the University's supported Virtual Learning Environment (VLE).

Periodic Subject Review or PSR

The University has a six yearly cycle of review of the Subjects/Schools within it. The PSR is one of the main ways by which the University assures itself of the quality of the provision delivered by Subjects/Schools.

Postgraduate Taught or PGT

Postgraduate Taught refers to taught programmes at postgraduate level, usually Masters.

Russell Group

The Russell Group represents 24 leading UK universities which are committed to maintaining the very best research, an outstanding teaching and learning experience and links with business and the public sector.

Self Evaluation Report (SER)

A Self Evaluation Report is a document prepared by the Subject(s)/School in advance of a PSR Review. Its purpose is to provide the Review Panel with an insight into the Subject(s)/School's view of itself, its strengths and areas it would wish to develop. It is normally prepared by the Head of School in conjunction with other staff but students should also be offered the opportunity to comment on whether or not it reflects the Subject(s)/School they know.

Staff:Student Ratios (SSRs)

The Staff:Student Ratio describes the number of students to each member of staff, either in the Subject/School, College or University.

Study abroad

Study abroad is a term that is often used to refer to several programmes that offer opportunities for students to study in a European University, or one further afield, for a term, semester or year as part of their undergraduate degree programme. (The University's "Study Abroad Programme" is specifically designed for visiting students who elect to come to the University of Glasgow.)

Widening Participation

The objective of widening participation is to develop, implement, co-ordinate and monitor initiatives which further: the increased recruitment of students to Higher Education from those areas and groups where there is low participation; the provision of educational support for all students once they have entered the University in order to improve student retention and to facilitate the successful completion of students' programmes of study; and the flexible provision of learning opportunities. More information can be found at the Widening Participation at <http://www.gla.ac.uk/wideningparticipation/>.