

23 February 2017

Dr Nader Mobed, Head
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Dear Nader,

Per the Academic Unit Review policy, I am pleased to provide my response to the external reviewers' report following last year's Academic Unit Review (AUR) of the Department of Physics.

First, I wish to thank you and your colleagues in the Department of Physics for undertaking the work of preparing the self-study, and for hosting the review team. I also want to thank the external reviewers, Dr Charles Gale of McGill University, Dr Gerald Gwinner of the University of Manitoba, and the internal reviewer, Dean Esam Hussein of the Faculty of Engineering and Applied Science, for their very clear, helpful, contextualized, and succinct external review document. I will respond to that document under five headings: general, undergraduate, graduate, research, and staffing.

General

The review depicts a small department with an international reputation for high-quality, high-impact research. The Department of Physics, the Faculty and the University should be proud of the research accomplishments of this unit, and its continuing ability to "punch above its weight" in theoretical research. The review lauds the Department's recent move into applied physics via the Fedoruk Chair and Dr Teymurazyan's developing research program in nuclear imaging.

The review points to the need to bolster enrolments at both the undergraduate and graduate levels. Generally, it depicts a department that functions collegially, that provides its students with a high-quality education at both undergraduate and graduate levels, and that – via a careful focus on a subdiscipline of physics – has over the years produced a quantity and quality of research that is the envy of sister units elsewhere in Canada. The reviewers' recommendations regarding more visible alignment with the University's Strategic Plan, especially in the areas of Indigenization and sustainability, are appropriate and helpful.

Undergraduate

The reviewers present no serious concerns with the quality or currency of undergraduate education now provided by the Department. They praise the Department's efforts to involve senior undergraduates in research. They strongly support the undergraduate curriculum review, and suggest a limited range of innovations including flipped classrooms, joint degrees with Mathematics and Computer Science, and a concerted effort to attract majors and minors to the Department with curricular innovation in areas like imaging and applied or industrial physics.

I'd like to offer a few thoughts on possible innovation. Kevin Carey (2015) notes the arbitrariness of degree curricula that shoehorn extremely diverse subjects (ranging from cultural anthropology through piano performance to zoology) into a standard 120-credit-hour frame. Now, there are reasons for doing so. Degrees derive their value, in part, from their place in a larger academic economy, and need to have some standardization. But Carey's observation might be useful to the Department as it reviews its curricula and seeks ways to innovate, whether in the interdisciplinary direction suggested by the review or in still other ways.

Can Regina take the lead in rethinking the contemporary physics major and minor, thereby producing something that will (1) attract and retain more students, and a more diverse body of students (2) prepare them better for next stages, whether academic or industrial or policy-making (3) take advantage of the collaborative possibilities on our campus (other departments in Science, the Faculty of Engineering and Applied Science, and (4) align more closely – again as suggested by the reviewers – with central aspects of the Strategic Plan, especially Indigenization and sustainability?

I think the possibilities here are exciting and potentially nation-leading.

The reviewers express a firm belief that there is a need to address enrolments and attrition in the BSc major. I agree. The Department does very substantial and highly-valued service teaching to students in various Science disciplines, students in the Faculty of Engineering and Applied Science, and students elsewhere on campus. Yet the Department's own major count (just over 40, a number roughly constant in recent years) should be boosted and diversified. (Again, curricular innovation may be key here – the reviewers ask the Department to consider, as a possibility, an accelerated BSc/MSc in an area such as medical imaging, in partnership with other academic units).

The reviewers note that the average annual count of graduating BScs in Physics is 4. Assuming that there is a roughly even distribution of majors across the 4 years of the program, this suggests a completion rate well below 50%.

This is extremely low and, as the reviewers highlight, urgently needs to be addressed. The current institutional retention rate from years 1 to 2 is 84%; I would ask that the Department consider this as a short-term goal for itself, with additional strategies to ensure progress in years 3 and 4 to timely completion, and a much higher overall completion rate for majors.

Finally, given the dramatic shift in campus demographics over the last decade, can Physics develop strategies that will ensure its offerings are attractive to a student body that is now 61% female, 14% self-declared Indigenous, and 14% international?

Graduate

It is gratifying to see the reviews speak of the Department's graduate students as being "of the highest calibre." The reviewers offer a number of solutions (all of which I find reasonable and indeed helpful) to the challenge of boosting graduate enrolments from their current level of roughly 10 to 15 or 20 in the next few years. Among the reviewers' suggestions are a concerted effort to locate scholarship funding and support, both internally and via other avenues like MITACS; do away with comprehensive examinations that are, in their eyes, "inefficient"; consider more applied and industrial offerings or emphases at the MSc level; and, as with the undergraduate curriculum, seek out interdisciplinary possibilities and draw on the resources of other academic units on campus.

Research

Again, the Department is to be congratulated on its sterling work in this area. Productivity, impact, funding, visibility, and reputational factors are all high. For a small department on the prairies to build this profile and reputation nationally and internationally – and in the context of prestigious collaborations such as that with Jefferson Labs – is to be celebrated, and those involved are to be congratulated. The recently inaugurated research stream in nuclear imaging via the Fedoruk Chair is, in the reviewers' eyes, off to a very good start.

I note the reviewers' suggestion that current work in paleo-physics at the CLS "needs to be more firmly established to have impact, and student involvement needs to be clearer" (10).

Staffing

Like a number of University of Regina departments, the Department of Physics is smaller than some of its counterparts at similarly-sized Canadian universities. Conscious of the resources available to this institution, the reviewers do not call for additional tenure-stream appointments, but make clear their view that the Department cannot be reduced without damage to its teaching and research.

As the Department and Faculty know, a search to replace the most recent retirement in Physics was indeed authorized and is currently nearing conclusion, bringing promise of a new faculty member joining in summer 2018. That authorization was made essentially on the strength of the Department's internationally-reputed research, but also in recognition of the Department's considerable efforts in the last few years to seek significant external funding (e.g., Fedoruk Institute) for its complement and its research.

Though the Faculty of Science has, per normal procedure, "mortgaged" a faculty line to be vacated by an upcoming retirement so that the Fedoruk Chair incumbent will have a base-budgeted line on the expiration of the Fedoruk funding, I concur with the reviewers that the Department and Faculty should be proactive and strategic in seeking out new sources of external funding for appointments, postdocs, and indeed scholarships (its reputation in the research community gives the Department an edge here).

I also concur strongly with the reviewers' advice regarding adjunct faculty appointments (from employers such as RQHR and industry) as a way to strengthen and diversify its profile, especially in areas such as medical physics, and with their pointed advice to us regarding the unnecessarily complex and burdensome protocols we have created around adjunct accreditation and appointments. I invite the Department to follow up with the Faculty of Graduate Studies and Research, seeking a more effective and streamlined process.

I hope you find these comments on the external reviewers' report helpful, and would be happy to discuss them with you and your colleagues at any time that is convenient.

Sincerely yours,



Thomas Chase
Provost and Vice-President (Academic)

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