November 20, 2015

Professor Karpus
Dean, Graduate School
via email

Dear Professor Karpus,

On behalf of the Physics Department I would like to thank the Graduate Faculty Executive Committee (GFEC) and the College of Letters and Science for their thorough and thoughtful review of our academic programs. We were extremely pleased to read in your letter dated October 14, 2014 that the assessment team found so many positive aspects to our graduate program. We are proud of our program, but constantly strive to make improvements. In the report attached to this letter I respond to the concerns and recommendations expressed by the GFEC and inform you of the steps taken in the Physics Department to address these issues. Here are a few highlights:

**Insufficient number of graduate courses**: Closely tied to our faculty numbers, course offerings are only slowly increasing to the necessary level. We have established a curriculum committee to better manage our present limited resources.

**Graduate student diversity**: The Physics Board of Visitors is fundraising a diversity fellowship. Our proposal to host the American Physical Society Conference for Undergraduate Women in Physics has been approved for 2017. Continue to improve recruiting strategy.

**TA workloads**: A difficult balance between TA time and undergraduate education, we are moving toward a blended learning model, and moving some work to additional grader positions. Low TA stipends are also an issue.

**Post graduate tracking**: Challenging without an additional staff position, we are working with the Wisconsin Foundation and our Physics Board of Visitors.

**Appropriate program size**: Our research program can support a larger graduate class moving from TA to RA, and this would also reduce our dependence on TA’s from outside the department.

See the complete report attached below.
This has been an excellent opportunity for us to reflect on the aspects of our program raised by the GFEC. We used the findings and recommendations to review our performance in these areas and take actions in those areas in which we must seek to improve.

Sincerely,

Albrecht Karle
Chair, Department of Physics

CC:
Karl Scholz, College of Letters and Science
Eric Wilcots, College of Letters and Science
Renee Lefkow, Physics
Aimee Lefkow, Physics
Daniel Kleinman, Graduate School
Kelly Haslam, Graduate School
Jennifer Martin, Graduate School
Jocelyn Milner, Office of the Provost
Physics Department Response to recommendations by the GFEC.

Concern: Reduction in graduate level courses
Recommendation: Establish a curriculum committee
Response:
A review of graduate courses offered over the last 10 years shows that the decrease in graduate course offerings is correlated with a decrease in the number of Physics faculty. This, combined with steadily increasing undergraduate enrollment requiring more lecture sections, has also led to reduced undergraduate course offerings. We were only partially able to compensate with the use of short term staff. The attached figure below shows course above course level 600. We have recently been successful in hiring four new faculty to start in 2015/16, but this will not completely resolve these issues. Following the recommendation of the GFEC we established a general curriculum committee. This committee will review all course offerings and also oversee the balance between undergraduate and graduate course offerings. We hope for continued support in rebuilding the Physics faculty base to our normal average of at least 50 FTE. We have found that this level allows us to provide both excellent undergraduate and graduate education, and to compete successfully for research funding with institutions around the country.

Concern: Diversity
Recommendation: Bolstering efforts to recruit underrepresented minorities.
Response: We are well aware that our program is less diverse than desired. Though we constantly strive to increase graduate student diversity, it remains a challenge and we intensified the discussion to determine best strategies for increasing the diversity. I am pleased to say that we have an active discussion happening in the department, that goes well beyond the respective committee. We describe just a few examples of activities we are pursuing:
In recent years we have been participating in the American Physical Society’s (APS) Conference for Undergraduate Women in Physics, which is an excellent opportunity for our faculty to connect with potential woman graduate students. We submitted a bid to host this conference in Madison and we are pleased that Madison has been selected to host this event in 2017.
We are also considering signing up as a member institution at the American Physical Society (APS) Bridge program, which has the goal to increase the number of underrepresented minorities in Physics graduate programs. For the 2016/17 academic year we are planning to further improve our recruiting strategy which with the goal to obtain a more diverse applicant pool for the graduate program. We also regularly recruit at the annual Society of Black Physicists conference and are also excited about participating in the APS Bridge Program at the next available opportunity.
We brought the topic to the attention of our Board of Visitors which has committed to an effort to raise funds to enable a 2-year fellowship for an outstanding women applicant and will be engaged in the recruiting efforts. Unlike other departments, we do not have dedicated staff committed to these project, and so far have been limited to connecting with existing programs, as described above.

**Concern: Varying teaching loads**  
Recommendation: Reduction or more equitable distribution of workload of physics teaching assistants;  
**Response:** Our TA Policy and Review Committee has reviewed the data. We also compared our practices with reports from other Midwest Physics Departments and find that the workload of our TAs is typically equal or slightly higher than that of our peer institutions. We agree with the recommendation of the committee and will give attention to ensure a reasonably equal and not excessive workload for Teaching Assistants. We have started to work on implementing on mitigating measures that will in several cases reduce the workload and will ensure that we maintain a consistent, equal, and not excessive workload for all TAs. Examples include reducing grading time by shifting some grading functions to online tools. This is a time-intensive project, but we are confident that much of it could be coded by paid undergraduate physics majors. This would require some one-time financial support. Grading of handwritten exams, essential to the calculus level courses, could be handled partly by paid graders working with, and coordinated by, the TAs. This would require additional grader hours from the college.

It was also noted that TAs feel in some cases that teaching is less appreciated than research. The fact that TA stipends are lower than RA salaries is obviously not helpful. (Our incoming TA stipends are about $4k lower on a 9 month basis than at peer institutions.) Higher TA stipends would help the situation. We have succeeded to raise funds to complement the stipends with additional fellowships to make some progress. However, we realize that this mechanism is not a sustainable solution. We will be mindful to apply other ways to give our TAs the recognition they deserve.

**Concern: Post graduation tracking**  
**Response:** Within the last few years we have established an Alumni Relations and Board of Visitors committee, headed by Professor Robert Joynt. Bob and our Board of Visitors are considering these issues. We also take advantage of the Wisconsin Foundation and Alumni Association’s tracking of alumni addresses. We send our alumni newsletters with departmental updates and request/welcome feedback and updates from them in each issue. We are keen to learn more about any centralized tracking of alumni outcomes that the campus or the foundation may be undertaking, but realize that the initiative needs to come from Physics. With current resources it is difficult to do more than what we are doing. We will develop a plan for an exit survey of graduates.
A half-time staff position, who would also implement diversity initiatives, would help to provide us the information we need about post-graduation activities.

**Concern: Appropriate program size**
Recommendation: Check that there are enough faculty for all grad students.
Response: In order to meet our research needs we find that a program with between 150 and 200 graduate students to be ideal. Our Department has a strong research program and is proud to be able to fund and mentor graduate students in a wide area of world class research. At this level, all of our students are fully funded and find attractive and well mentored PhD research opportunities. Our students have historically been able to find gainful employment upon graduation.

In fact, some of our experimental programs would benefit from a larger physics graduate student pool. This would have the additional benefit of hiring fewer TAs from other departments to teach physics courses. Typically physics graduate students have a better connection to the subject, and are more successful with the undergraduate students. However, we are admitting students entirely with the goal of PhD research in mind. It is important for the Physics Department to hire more faculty to give students sufficient choices for performing world class research.

Figure:
Number of graduate courses (>600) taught in the past 10 years.

![Graph of Number of Graduate Courses Over Time](image-url)
October 14, 2014

Professor Bob Joynt  
Chair, Department of Physics  
Sent Electronically

Dear Professor Joynt:

As you know, an important part of the university’s ongoing review process is the vetting of graduate programs by the Graduate Faculty Executive Committee (GFEC) of the Graduate School. When the College of Letters and Science assembled a review committee to conduct a decadal assessment of the Physics Academic Programs, a member of the GFEC, José Pincheira, was asked to join the committee and was given the responsibility of attending to graduate training issues of particular interest to the Graduate School. Pincheira led a discussion of the review at the GFEC meeting on September 12, 2014. In this letter, I summarize the committee’s discussion and assessment.

As you can imagine, GFEC is always pleased to have an opportunity to examine highly regarded programs like yours. The GFEC was glad to learn that most of your Ph.D. students are fully funded throughout their time in the program and that the vast bulk of your students complete the program in fewer than six and a half years. The GFEC was also happy to learn about the department’s weekly seminar series, which keeps grad students apprised about the array of research going on inside and outside the department. Finally, GFEC learned that graduate students find the program climate generally supportive, and that core required courses appear to provide students with the crucial foundation on which they can build their own scholarship. This too is gratifying.

The Physics graduate program’s strengths notwithstanding, the GFEC did have some concerns. These include:

- A reduction in the number of upper division courses offered in recent years;
- A relatively low level of student diversity;
- Varied teaching loads among teaching assistants;
- The idea that the program should increase its size in order to increase the population of available teaching assistants;
- Inadequate attention to the post-graduation experience of recent Ph.D. graduates.

In light of its concerns, GFEC recommends that your program consider or take action in the following areas:

- Bolstering your efforts to recruit underrepresented minorities;
• Reduction or more equitable distribution of workload of physics teaching assistants;
• Development of an exit survey on graduates’ employment experience;
• Track the employment experience of graduates over time;
• Provide better information to students on the array of post-graduation employment options;
• Establish a curriculum committee to, among other things, consider how best to balance undergraduate and graduate offerings;
• Appropriate program size. In addition to the availability of funding for graduate students, the program should consider whether there are faculty who can provide appropriate mentoring for all entering graduate students and that there are likely to be suitable employment opportunities for all program degree recipients.

In closing, I want to emphasize the generally positive tone of the GFEC discussion of the physics graduate program. The decadal review is an opportunity for you to build on what is already a strong program. We look forward to receiving a written report about your plans in response to GFEC’s concerns, and we would be grateful if you would provide this to GFEC no later than October 1, 2015.

Sincerely,

Wendy Crone
Interim Dean of the Graduate School

cc: Karl Scholz, College of Letters and Science
    Eric Wilcots, College of Letters and Science
    Renee Lefkow, Physics
    Aimee Lefkow, Physics
    Daniel Kleinman, Graduate School
    Kelly Haslam, Graduate School
    Jennifer Martin, Graduate School
    Jocelyn Milner, Office of the Provost