Please attach a narrative (not to exceed 4 pages, excluding appendices) addressing the following:

- What are the student learning outcomes? Please provide a numbered list.
- Which learning outcomes were assessed?
- How were they assessed? (Programs must use at least one direct assessment of student learning.)
- Undergraduate programs should assess at least one University Undergraduate Learning Outcome (UULO) each year, which may or may not overlap with a program learning outcome.
- Graduate programs should assess at least one outcome related to one of the following graduate level requirements each year:
  - student engagement in research, scholarship, creative expression and/or appropriate high-level professional practice.
  - activities requiring originality, critical analysis and expertise.
  - the development of extensive knowledge in the field under study.
- What was learned from the assessment results?
- How did the program respond to what was learned?

Please limit the narrative portion of your report to no more than four pages. You may attach appendices with data, tables, charts, or other materials as needed. Please explain the relevant conclusions from any appendices in your narrative. Please contact the Office of Academic Assessment if you have questions or need assistance.
Student Learning Objectives

The goal of the Master of Science in Health Physics Program is to provide a high-quality graduate education experience for students in the fields of medical and health physics. The program consists of two sub-plans targeting the primary paths to employment: Environmental Health Physics (EHP) and Medical Physics (MP). The EHP sub-plan is accredited by the Accreditation Board of Engineering and Technology (ABET, 2015) and the MP sub-plan is accredited by the Commission on Accreditation of Medical Physics Education Programs (CAMPEP, 2014).

The academic program consists of a common core coursework shared by both sub-plans, augmented by discipline-specific coursework and thesis research. The student learning objectives are developed at the program level, and are addressed primarily through the common core courses. Sub-plan specific courses supplement the core courses on the SLO’s and serve to deliver additional content to ensure students meet the requirements of the accrediting bodies.

Student Learning Objectives (SLO)

1. Graduates able to demonstrate knowledge of theoretical fundamentals of health physics
2. Graduates competent in advanced disciplines related to health physics
3. Graduates capable of assessing and solving problems related to health physics
4. Graduates will have had “hands-on” experience with experimental equipment and techniques and abilities to analyze data and develop reports
5. Graduates able to gain practical experience with state-of-the-art equipment and software
6. Graduates able to write technical documents
7. Graduates able to communicate with technical & non-technical audiences
8. Graduates able to function within a team
9. Graduates able to participate in the research process and disseminate results
10. Graduates cognizant of the need for life-long learning and professional responsibility
11. Graduates exposed to professional practice
12. Graduates able to interact with professionals in a less formal setting
13. Graduates exposed to health physics and medical ethics
14. Graduates cognizant of the need to understand socio-cultural, political, and environmental issues related to health physics

Assessment Activities – 2017

Our accrediting bodies require an annual self-evaluation of the program, program objectives, student learning objectives and performance. This self-evaluation is performed as part of the end of the academic year program faculty meeting. The annual self-evaluation is focused on the performance of the students and feedback on courses from the previous year (FA and SP terms), performance on the oral examinations, and thesis defenses with the intent of addressing any immediate concerns or issues with the program content and direction. As part of the self-assessment process, the faculty will also review the alumni and employer feedback on alumni performance and capabilities to identify any concerns or deficiencies. The program faculty will also meet with our external review committees (for EHP and MP) to discuss and evaluate the program outcomes, student learning outcomes, and the feedback gathered over the course of the academic year. This year’s assessment process was performed with additional emphasis regarding SLO’s 6-8 (students being able to communicate effectively). These SLO’s tie directly
into the graduate program level requirement: “effective communication in both oral and written forms”.

Performance of the academic program with regards to the SLO’s was evaluated directly by the faculty involved in teaching the courses by comparing student performance on assignments, quizzes, exams, reports, and presentations against the course and program expectations as well as against previous year’s student performance. Student evaluations of the course provided feedback to the instructor as well as the department chair on the content relative to program objectives. The performance of students in the comprehensive oral examination also provided feedback on areas that need improvement in the program.

In addition to the data and observations from classroom performance, the program was also assessed through exit interviews with graduating students (all 3 students declined exit interviews this cycle). The preparation of students for the workforce was assessed by surveying alumni’s employers (0 responses this cycle). We also had three medical physics students take their national board exams during the past year.

We also held three external advisory committee meetings: the Environmental HP external advisory board met on Sept 16, 2016 and the Medical Physics external advisory board met on Dec. 13, 2016 and May 2, 2017. As part of these meetings the department faculty and external advisors reviewed the program SLO’s and accreditation program goals, curriculum, student performance, and program performance.

Assessment Results / Lessons Learned

Based on student performance in the coursework and on the cumulative oral examination, a slight improvement in their ability to solve “real world” problems, i.e., the types of problems commonly encountered in the health physics field was noted. This is likely due to a greater emphasis on this type of problem solving in both medical and environmental health physics courses.

All four students taking the department comprehensive oral exam passed on their first attempt. Three students took the American Board of Radiology (ABR) part 1 exam. Two students passed both sections while the third passed general physics but failed the clinical section. Based on results from the oral comprehensive exam and the national certification exam, our program is successful in preparing students for careers in both environmental health physics and medical physics.

Program Responses (“Closing the Loop”)

HPS 616 (advanced health physics) is currently being redesigned by a part-time instructor. Additional modifications to the course, as well as other courses in the environmental health physics sub-track will be made as soon as new health physics faculty have been hired (two searches are in progress). The modifications to HPS 616 include a group design project in health physics. These changes are intended to address the program requirement and SLO promoting working in teams (SLO 8).

The time to degree completion (2.5 to 3 years) remains a concern. The primary factor appears to be students delaying their thesis work until the completion or near completion of their coursework. To address this issue we have changed the program requirements to require students
to select their thesis advisor within their first semester in the program. Another factor in the length of time to completion is the lack of graduate assistantships over the summer, resulting in students leaving the program for the summer months. While faculty are attempting to resolve this gap with external research funding, additional state support for state GA’s over the summer could also be useful in supporting students performing thesis work over the summer.