**Oakland University Assessment Committee**

**Assessment Plan Template**

**Step 1: Basic Information**

Program Name: **PhD in Applied and Computational Physics**

School or College your program resides in: College of Arts and Sciences

Program Level (check all that apply):

Undergrad ☐

Master’s ☐

**Doctoral X**

Date Plan Submitted: February 15, 2021

Current Assessment Contact Representative (& E-mail): Kapila Clara Castoldi – castoldi@oakland.edu

Current Department or Program Chair (& E-mail): Andrei Slavin – slavin@oakland.edu

Current Dean (& E-mail): Kevin Corcoran – corcoran@oakland.edu

**Step 2: Type of Assessment Plan**

**Option A.** Programs that have an external accrediting agency other than the Higher Learning Commission may be eligible to use their accreditor’s response in lieu of following the UAC’s standard process. These programs use the UAC’s ‘external accreditation mapping’ form instead of this form. For more information, please contact the UAC/OIRA liaison Reuben Ternes (ternes@oakland.edu). Programs without external accreditation should proceed to option B.

**Option B**. If you are not accredited by an external body (or your accreditor’s standards do not meet the standards set by the Higher Learning Commission), then proceed to Steps 3-5 to create your assessment plan. Members of the UAC are always willing to work with individuals from any department to develop or revise their assessment plans. In addition, the Office of Institutional Research and Assessment (OIRA) has some very helpful tools for faculty and departments listed [on their website](http://www.oakland.edu/oira). If at any time you have any questions, need any assistance, or would like to schedule a meeting with any UAC representatives, please contact the UAC and OIRA liaison, Reuben Ternes (ternes@oakland.edu).

**Step 3: Aligning Program Goals, Student Learning Outcomes, and Assessment Measures**

Please begin your program assessment plan by completing the table below. Use the “Table” menu in Word to add rows, merge cells, etc. as needed.

* In column 1, record your program goals as they relate your unit’s program goals.
* In column 2, record your program’s planned student learning outcomes related to each program goal.
	+ SLOs should be written using observable and measurable verbs (e.g. write, state, explain, apply, demonstrate, etc.) as opposed to verbs that are difficult to observe directly (e.g. learn, know, etc.).
* In column 3, record the assessment measure(s) that evaluate each student learning outcome (note: each learning outcome should have an associated assessment measure).
* Add rows to the table as necessary.

| (1) Program Goals |  (2) Student Learning Outcomes | (3) Assessment Measures |
| --- | --- | --- |
| GOAL #1To prepare the students to pursue a career in research and engineering in academic settings, or private sectors. | SLO #1The students will master the theories, numerical techniques, and/or experimental practices of classical and modern physics in the advanced courses.SLO #2The students will develop the research expertise in applied and/or computational physics required to be successful in a career in the field.SLO #3The students will develop the skills required to perform quality research, and to disseminate research results through publications in scientific journals and conference presentations. | Measure #1Qualifying ExaminationMeasure #2Alumni SurveyMeasure #3Student Publications and Presentations |
| GOAL #2To train the students in research methods in applied and computational physics utilizing state-of-the-art theoretical, computational, and/or experimental techniques. | SLO #4The students will develop the skills required to perform cutting-edge theoretical, computational, or experimental research. | Measure #4Thesis and Oral Defense |

**Step 4: Participation in Assessment Process**

| Who Will Participate in Carrying Out the Assessment Plan | What Will Be Their Specific Role/s |
| --- | --- |
| The department’s Assessment Committee, comprised of * the assessment representative (currently K. C. Castoldi)
* the Applied and Computational Physics PhD program coordinator (Vasyl Tyberkevych)
* the department chair (Andrei Slavin)
 | The assessment representative will* Initiate and collect the Alumni Survey
* Collect information from all research faculty involved in the program about produced Theses and publications
* Analyze all collected materials and produce a summary
* Discuss the results of the assessment with the Assessment Committee to determine if any changes to the program are required
* Produce the draft of an Assessment Report for UAC and discuss it with the Assessment Committee
* Ensure that all discussed changes to the program are carried out by the department

The assessment committee will* Review the evaluations of Theses produced by the Dissertation Committee, consisting of at least three internal faculty members and possibly adjuncts from the industry.
* Review the collected Alumni Survey
* Discuss possible changes required to the program
* Review the draft of the Assessment Report for UAC
* Present the Assessment Report to the department’s full-time faculty for final approval
* Present the suggested changes to the program to the department’s full-time faculty for final approval
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 **Step 5: Plan for Analyzing and Using Assessment Results to Improve Program**

A. How will you analyze your assessment data?

**Measure #1 – Qualifying Examination**

Within two years after the admission in the program, students must pass a comprehensive qualifying examination, consisting of a written and an oral component. The written component examines the student’s knowledge of Mathematics and Theoretical Physics. The oral component includes a presentation of the student’s research. The examination is designed and evaluated by the dissertation committee and is intended to determine the extent of the student’s knowledge and readiness for the doctoral degree. Traditionally, a grade above 60% is passing, 50-60% is borderline, and below 50% is failing. If a student fails the examination, the committee may allow the student to retake the examination within one year. Failure to pass the examination a second time constitutes failure in the PhD program.

The summary of the grades earned in the qualifiers will be utilized to observe if there are weaknesses associated to any course in the program, which will demand attention. We will also compare the performance of current students to that of previous assessment periods to determine if the program’s standards are being maintained.

**Measure #2 – Alumni Survey**

A survey of OU Physics Alumni will be conducted every other year. A copy of the survey is attached.

The survey contains a series of questions designed to determine if the students were properly prepared for their professional career.

**Measure #3 – Publications**

A byproduct of research in any field is peer-reviewed publications. These may include journal publications, abstracts of submitted papers, conference proceedings, and talks. We will use the number of publications co-authored by the students as a measure of the level of research they achieved. The quality of the journals where the papers were published will also be considered.

**Measure #4 – Thesis and Oral Defense**

Each student will be required to take a minimum of 30 credits of dissertation research culminating in a PhD thesis that contains publication-quality research. The Dissertation Committee (consisting of at least three members, one of whom serves as dissertation adviser), and the Joint Committee in Applied and Computational Physics (consisting of three faculty members in these two branches of physics), will assess the maturity of the research that culminated in the thesis and participate the student’s oral defense of their work. In the case of Industrial Collaboration, both the internal and the external supervisors will review the thesis.

Attached are sample grading rubrics for thesis and oral defense and a sample scoring sheet.

B. How will you use results to improve your program?

The Assessment Committee will meet periodically to review the results of the assessment measurements and discuss whether

program changes are required to achieve program goals.

If it is determined that changes are required, the committee will prepare recommendations that will be presented to and

discussed by all the full-time physics faculty.

If the entire faculty determines that some of or all recommendations should be implemented, the Assessment Chair will submit

a revised Assessment Plan to UAC. At the same time the changes will be implemented and monitored. Their impact on the

program will be evaluated, and the entire process will be reiterated on an ongoing basis.

**Step 6: Submit Assessment Plan**

Send completed form electronically to ternes@oakland.edu.