

**Template  
Academic Program  
Assessment of Student Learning Plan  
University of New Mexico**

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Instructions:

This template is a suggested guideline for creating three-year plans to assess academic program-level student learning outcomes. The order and format of the information does *not* need to follow the template exactly. Alternative formats (e.g., those used by specialized accreditors) may be acceptable; please check first with the Office of the Provost.\* Regardless of whether you complete the template or use an approved alternate format, the six key sets of questions (D1-D2 and E1-E4) do need to be addressed in the three-year assessment plan.

Please transmit Degree Program Assessment Plans electronically when possible.

\*If you have any questions, please contact the Assessment Office at [assess@unm.edu](mailto:assess@unm.edu) or 277-4130.

Template  
Academic Program  
Plan for Assessment of Student Learning Outcomes  
The University of New Mexico

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**A. College, Department and Date**

1. College: *Arts & Sciences/Engineering*
2. Department: *Physics & Astronomy/Electrical & Computer Engineering*
3. Date: *April 22, 2009*

**B. Academic Program of Study\***

*M.S. Optical Science and Engineering*

**C. Contact Person(s) for the Assessment Plan**

*Mansoor Sheik-Bahae, Professor Physics & Astronomy, msb@unm.edu*

**D. Broad Program Goals & Measurable Student Learning Outcomes**

**1. Broad Program Learning Goals for this Degree/Certificate Program**

- A. Students have a solid foundation of advanced knowledge in broad areas of optical sciences and engineering.
- B. Students demonstrate ability to participate in research in commercial, government and academic settings as part of internship options in the MS-OSE program.

**2. List of Student Learning Outcomes (SLOs) for this Degree/Certificate Program**

- A.1. Students demonstrate a thorough grasp of undergraduate as well as graduate optics and photonics.
- B.1. Students make professional written and oral presentations of research results.
- B.2. Students can apply their knowledge to tackle real and practical challenges in optics/photonics research and engineering.

**E. Assessment of Student Learning Three-Year Plan**

All programs are expected to measure some outcomes annually and to measure all priority program outcomes at least once over two consecutive three-year review cycles. Describe below the plan for the next three years of assessment of program-level student learning outcomes.

**1. Student Learning Outcomes**

*[Insert at least 2-5 priority learning outcomes that will be assessed by the unit over the next three years. Each unit will select which of its learning outcomes to assess.]*

Relationship to UNM Student Learning Goals (insert the program SLOs and check all that apply):

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\* Academic Program of Study is defined as an approved course of study leading to a certificate or degree reflected on a UNM transcript. A graduate-level program of study typically includes a capstone experience (e.g. thesis, dissertation, professional paper or project, comprehensive exam, etc.).

University of New Mexico Student Learning Goals				
Program SLOs	Knowledge	Skills	Responsibility	Program SLO is conceptually different from university goals.
A.1. Students demonstrate a thorough grasp of undergraduate as well as graduate optics and photonics.				
B.1. Students make professional written and oral presentations of research results.				
B.2. Students can apply their knowledge to tackle real and practical challenges in optics/photonics research and engineering.				

## 2. How will learning outcomes be assessed?

### A. What:

- i. *For each SLO, briefly describe the means of assessment, i.e., what samples of evidence of learning will be gathered or measures used to assess students' accomplishment of the learning outcomes in the three- year plan?*
- ii. *Indicate whether each measure is direct or indirect. If you are unsure, then write "Unsure of measurement type." There is an expectation that at least half of the assessment methods/measures will be direct measures of student learning. [See attached examples of direct and indirect measures.]*

A.1. Non-thesis option: Students either have to pass a written exam that tests their basic knowledge of Electromagnetism, Optics and Lasers or have to take an oral exam administered by the exam committee. (The written exams are given at the beginning of fall semester) The exam scores are archived. (This is a **direct measure**.)

Thesis option: Students have to write a thesis and publicly defend it. (This is a **direct measure**.)

In the core courses, students are expected to earn a grade of B- or higher. (This is an **indirect measure**.)

B.1. Non-thesis option: Students have to take at least three research hours with a faculty member. The faculty member submits an evaluation of the student's performance. (This is an **indirect measure**.)

Internship option: Students work on a project outside the university (at industry or a national lab). A faculty member with whom the student takes a three research hour (internship) course oversees this project. The student is required to give an oral presentation on her/his internship project. (This is a **direct measure**.)

Thesis option: Students must write a thesis and publicly defend it. The thesis committee evaluates the written and the oral presentation and submits evaluation sheets. (This is a *direct measure*.)

- B.2. Non-thesis option: The instructor of the problems course evaluates the student's ability to make written and oral presentations. See Form 2. (This is a *direct measure*.)

Internship option: The instructor of the internship course (PHYC 559) completes an evaluation Sheet. See attached Form 2. (This is a *direct measure*.)

Thesis option: The thesis committee evaluates the student's overall research work and submits evaluation sheets. (see attached Form 1) (This is a *direct measure*.)

iii. Briefly describe the **criteria for success** related to each direct or indirect means of assessment. What is the program's performance target (e.g., is an "acceptable or better" performance by 60% of students on a given measure acceptable to the program faculty)? If scoring rubrics are used to define qualitative criteria and measure performance, attach them to the plan as they are available.

- B. **Who:** State explicitly whether the program's assessment will include evidence from all students in the program or a sample. Address the validity of any proposed sample of students.

**3. When will learning outcomes be assessed? When and in what forum will the results of the assessment be discussed?**

*[Briefly describe the timeframe over which your unit will conduct the assessment of learning outcomes selected for the three-year plan. For example, provide a layout of the semesters or years (e.g., 2008-2009, 2009-2010, and 2010-2011), list which outcomes will be assessed, and which semester/year the results will be discussed and used to improve student learning (e.g., discussed with program faculty, interdepartmental faculty, advisory boards, students, etc.)]*

**4. What is the unit's process to analyze/interpret assessment data and use results to improve student learning?**

*Briefly describe:*

1. *who will participate in the assessment process (the gathering of evidence, the analysis/interpretation, recommendations).*

Annually the OSE graduate committee summarizes the evaluations and provides feedback and recommendations to the faculty.

2. *the process for consideration of the implications of assessment for change:*
  - a. *to assessment mechanisms themselves,*
  - b. *to curriculum design,*
  - c. *to pedagogy*

*...in the interest of improving student learning.*

Based on the overall students' performances in the written and oral exams, the OSE graduate committee regularly makes remedial adjustments to the curriculum and the exam content and procedures.

3. *How, when, and to whom will recommendations be communicated?*

*Adapted from Kansas State University Office of Assessment*