

Physics Department, Stern College for Women

by,

Dr. Anatoly I. Frenkel, Department Chair

During the Spring 2014 semester, we designed and applied rubrics to assess eight program-level Student Learning Objectives (SLOs) for our four core programs: General Education courses, Major in Physics, Major in Physical Sciences, and Major in Pre-Engineering.

For example, in the General Education courses, one of the objectives is for students to be able to know the fundamental physics laws (in their most general formulations) and understand their physical implications. In addition, we want students to know how to adapt these general formulations to concrete applications. As another example, in the Major in Physics program, a key objective is for students to be able to choose relevant theories and research for solving a specific physics problem. Other student learning objectives relate to the knowledge of fundamental physics laws and concepts and their implications, numerical insights in solving problems, and analytical techniques in laboratory settings.

To determine whether students are attaining program-level objectives in their physics courses, we collected and analyzed various sources of performance data from tests, lab reports, and student presentations using faculty designed rubrics. More specifically, for each program-level SLO, a Department faculty member, often in consultation with other faculty, designed a rubric to analyze student work in light of the program-level objective. The final version of the rubric was approved by the entire Department. Departmental assistant, Rakhi Podder performed statistical analyses of all data collected by faculty in their classes. At the faculty meeting on March 26, 2014, these data were discussed and used to identify problems that students are having with different program components, such as appropriate mathematical background for some advanced courses, and also to reveal students' particular strengths (e.g., graphical representation of concepts)

At the end of the Spring semester, the analysis will be complete and the Department's faculty will meet again to discuss possible changes in the programs and, if needed, in the SLOs. A new set of SLOs will be tested during the Fall 2014 semester.