The Notre Dame Summer Qualifier Preparation Course
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In 1998, we introduced a qualifying examination requirement testing the student’s understanding of basic undergraduate physics. The test identified students with major deficiencies in their physics background, leading to concerns about some students as teaching assistants. Unfortunately, we found a high failure rate of otherwise capable domestic students, resulting in a lowering in morale in the department. While elimination of the examination was considered, a much better alternative was to help the students themselves.

Since many talented American physics graduate students come from colleges graduating only a few physics majors per year, my idea was to help and support the students with holes in their physics background. In 2003, I introduced a two-month-long qualifier preparation course, which was designed to be offered primarily to the new graduate students as a bridge program between undergraduate and graduate education. The course was structured so that students would review one to two chapters of Halliday, Krane, and Resnick per day, and then collaboratively solve up to 40 problems based on the day’s assigned material. By requiring that all students present solved problems at the board, we were able to additionally encourage mastery of the tutorial style of teaching. The Graduate School supported this program by providing a stipend for the instructor and summer stipends for new graduate students.

Results of the course include high pass rates of the qualifying examination, the formation of collaborative support network of graduate students, and the establishment of a cadre of effective teaching assistants.