

4b.4 Interaction between undergraduate & graduate programs in mathematics

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As described in detail elsewhere in this report, the Mathematics Department has two graduate programs, a masters-level computational operations research (COR) program that is administered through the Computer Science department, and a research-apprentice doctoral program administered through the Applied Science department.

Masters students in the COR program who receive funding from William and Mary serve as calculus lab instructors and work in our calculus tutorial center in return for their stipends from the College¹. Many of the students in the mathematics doctoral program that is run by Applied Science teach (as the instructor of record) one mathematics course in each of their third, fourth, and fifth semesters. Sometimes the doctoral students are assigned to teach a calculus course, but when possible, we assign these students to a sophomore course related to their research specialty. As explained elsewhere in this report, the department sees this teaching as part of the student's professional preparation. In addition, it sometimes happens that an Applied Science doctoral student in mathematics will assist his or her thesis advisor in supervising undergraduate REU projects. This is valuable experience for the doctoral student, and also valuable for our undergraduates in that it allows the doctoral student's thesis advisor to work with additional REU and honors thesis students.

There is one other kind of interaction between our undergraduate and graduate programs, in which the existence of our COR program enriches our undergraduate course offerings. The COR program offers a spectrum of advanced courses that some of our undergraduates can take, and sometimes these courses fit into a given student's program of studies. For example, if a student in the applied mathematics track of our major chooses computational mathematics as his or her focus area, it is not unreasonable for the student to include a course like CS 688, Computational Probability, as one of the three computation-oriented courses that s/he must take. In addition, there are undergraduates who become very interested in operations research, and for these students it is possible to take several of the graduate COR courses, for graduate-level credit, during the student's senior year. (The College has strict regulations governing this kind of situation, and it is not automatic that such graduate registration is possible.)

¹A few of the COR students are either part-time students, or full-time students with financial support from some outside agency, and these COR students typically do not teach for us.