

## Computational Operations Research Profile of Institutional Effectiveness

### COR Purpose

-----

Computational Operations Research (COR) is distinguished by its emphasis on modeling real world systems and analyzing their behavior using a variety of mathematical and computational techniques. Recognizing the important overlap between computer science and operations research, the College redesigned its operations research curriculum to offer a M.S. with a specialization in COR administered by the Computer Science Department in cooperation with the Department of Mathematics. Qualified students may elect to continue graduate work in operations research leading to a Ph.D. in either the Computer Science Department (with a computational emphasis) or the Applied Science Department (with an applied mathematics and modeling emphasis). The M.S. specialization in COR offers courses, seminars, and other learning experiences that contribute to the scholarly and professional training of graduate students in COR as well as advanced undergraduate students in Mathematics.

### COR Expectations

- 
- 1 - Students will be able to formulate mathematical models of real world problems.
  - 2 - Students will be able to explain model formulations, describe algorithms that determine solutions to these formulations, as well as interpret the solutions found by these algorithms both orally and in writing.
  - 3 - Students will be exposed to a wide range of computational tools and algorithmic approaches whose goal is to determine solutions to mathematical models.

### COR Experiences

- 
- 1 - Each student must take at least 7 COR-CS courses. Each of these courses includes model formulations.
  - 2 - All students must take CSci 698 (Simulation and Modeling). In this course each student must develop a "real world" simulation model and give a written and oral presentation on the results.
  - 3 - Many other COR-CS courses require both written and oral presentations (e.g. 688 and 628).
  - 4 - All students must take CSci 628 (Linear Programming). Students learn how to write models in a high level mathematical programming language (AMPL) in CSci 628.
  - 5 - Students use Splus (668, 678), Cplex (628, 658, 648), C programming (658, 530, 526), Siman/Arena (698), NEOS server (638, 658) and Maple (688).

### COR Evaluations

- 
- 1 - Faculty who teach these courses use exams, problem sets, homework assignments, individual and group projects, computational experiments, reading reports, and class presentations to evaluate how well learning expectations are being met.
  - 2 - Faculty who teach these courses use student meetings and research projects to evaluate how well learning expectations are being met.