

## Research and Development Planning

ISE 599: (3 units) MW 2-3:20 PM

Instructor: Dr. Jeffrey H. Smith

31598D (on campus section, OHE 100C),

31798D (off campus section, DEN) Fall 07



As the rate of technology evolution continues to accelerate across an expanding variety of markets and countries, organizations seek to obtain and maintain competitive position through their research and development investment decisions. Examples include decisions about new information technologies, business infrastructure, and new product decisions. Resolving these decisions in the face of conflicting organizational goals, competing projects with different construction costs, risks, and budget constraints presents a formidable problem. The technology investments for each project also have costs and development risks, coupled with uncertain development budgets and dependencies that further complicate selection of an optimal development portfolio.

### Course Description:

This course provides a framework and approach for addressing research and development investment decisions. The course is designed to enable the student to formulate, collect, analyze, frame, and interpret decision making information for evaluating and selecting an optimal research and development portfolio.

The class will use concepts from the world of finance to motivate the development of methodologies for solving the R&D portfolio selection problem. The first phase of the course consists prerequisite background topics and definition of terminology. Next, we will cover frameworks without uncertainty or budget constraints followed by the addition of temporal budget constraints and profiles.

### Pre-requisites:

This course is open to students with graduate or upper division undergraduate standing. ISE 220, linear algebra, familiarity with spreadsheet programs; Calculus (optional, but helpful): introductory course in decision analysis.

### Course Text:

*Investment Science*, David Luenberger, Oxford University Press, Oxford, 1998.

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