Graduate Program in Operations Research & Industrial Engineering
The University of Texas at Austin

Doctor of Philosophy in ORIE
with Concentration in Decision Analysis

The Decision Analysis PhD Concentration is designed to provide the necessary coursework and training for students that wish to pursue research in decision analysis or be leading decision-analysis practitioners. Students obtain a PhD in ORIE, but focus their coursework on topics that are necessary to research and practice decision analysis. Students must satisfy all the ORIE degree requirements. Students successfully completing the Concentration may list it on their resume and Prof. Bickel will confirm if requested.

PhD Concentration Requirements

- *Students must first obtain an MS in ORIE with a Concentration in Decision Analysis*
- 24 semester hours beyond the MS, which must be approved by Prof. Bickel
- Combined GPA of at least 3.5 in Decision Analysis I and II
- No required course may be taken credit/no-credit
- Passing the ORIE qualifying exam within 1.5 years of admission into ORIE
- Becoming a PhD candidate within 3.0 years of admission into ORIE
- Students must **apply** for admission to the Concentration in Decision Analysis program after completing their first course in decision analysis. Not all students will be accepted.

MS Required Courses (27 hours)

Applied Probability (ORI 390R.1, Faculty, Fall)
Linear Programming (ORI 391Q.5, Faculty, Fall)
Decision Analysis I (ORI 390R.17, Fall)
Decision Analysis II (ORI 390R.xx, Spring)
Applied Projects in ORIE (ORI 397, Spring)
Statistical Modeling I (SDS 383C, Fall)
Integer Programming (ORI 391Q.4, Spring)
Applied Stochastic Processes (ORI 390R.5, Spring)
Three-hour MS Elective

Note: The timing of the courses listed above and below is notional. Students must check course schedules via the Registrar's website. Some courses are not offered every year.

Required Master's Report (3 hours)

Master's Report (ORI 398R, Fall/Spring)

PhD Required Courses (18 hours)

Statistical Modeling II (SDS 383D, Spring)
Nonlinear Programming (ORI 391Q.1, Spring)
Markov Decision Processes (ORI 390R.16, Spring)
Microeconomics I (ECO 387L.1, Fall)
Microeconomics II (ECO 387L.3, Spring)

Required Dissertation

Dissertation must be supervised or co-supervised by Prof. Bickel. Dissertation must be of sufficient breadth and quality that three journal publications, based on the dissertation, have been submitted prior to the PhD defense.

PhD Elective Courses (6 hours)

Choose any courses you like from the list of Approved Electives for the Concentration in Decision Analysis. You must take at least six hours, but taking additional courses is possible, pending approval.

Example Degree Plans to Obtain PhD Concentration in Decision Analysis

Example Course Sequence to Complete MS

Semester	Course 1	Course 2	Course 3
Fall, First Year	ORI 390R.1: Applied Probability	ORI 391Q.5: Linear Programming	SDS 383C: Statistical Modeling I
Spring, First Year	SSC 384.2: Mathematical Statistics I	ORI 391Q.4: Integer Programming	ORI 390R.5: Applied Stoch. Processes
Fall, Second Year	ORI 390R.17: Decision Analysis I	*ECO 387L.1: Microeconomics I*	*ECO387L.27: Mathematical Econ.*
Spring, Second Year	ORI 390R.xx: Decision Analysis II	ORI 397: Applied Projects ORIE	ORI 398R: Master's Report

Courses are required. Courses are electives. Courses are research. Courses in *italics* bring total hours to 36, but are not required for degree program. These can be used to fulfill PhD requirements.

Example Course Sequence post MS

Semester	Course 1	Course 2	Course 3
Fall, Third Year	STA 287: Decision Modeling	PhD Research	PhD Research
Spring, Third Year	ORI 391Q.1 Nonlinear Programming	ORI 390R.16: Markov Decision Process	PhD Research
Fall, Fourth Year	ECO 397L.27: Game Theory	PhD Research	PhD Research
Spring, Fourth Year	ECO 387L.3: Microeconomics II	MIS 383N: Decision-Support Model.	PhD Research
Fall, Fifth Year	PhD Research	PhD Research	PhD Research
Spring, Fifth Year	PhD Research	PhD Research	PhD Research

Courses are required. Courses are electives and are only examples. Courses are research.

Please note that five years in residence is an estimate for the total amount of time needed to complete a PhD in ORIE with a concentration in Decision Analysis. The actual time required may differ and depends upon the availability of funding and student progress.

How to Apply

Students may apply upon passing the ORIE qualifying exam. To apply, email Prof. Bickel the following:
-- Transcript
-- Degree plan detailing PhD coursework
-- Statement detailing your proposed research topic and your career goals

Contact: Prof. J. Eric Bickel, Graduate Program in Operations Research & Industrial Engineering,
ebickel@mail.utexas.edu, http://faculty.engr.utexas.edu/bickel/