

**Graduate Minor in Risk Analysis of Introduced Species and Genotypes  
University of Minnesota**

**Overview of Ph.D. Minor**

- The PhD minor consists of 13 credits and will include five new ISG courses (ISG 8001 taken twice) and a three credit elective.
- Syllabi for ISG courses will be posted on: <http://ISG-IGERT.umn.edu>.

Courses required for the PhD Minor:

**ISG 5010. Risk Analysis for Introduced Species and Genotypes. (3 cr. fall course).**

Students learn fundamental components of environmental risk analysis and engage in cooperative learning cases of introduced species and genotypes to experience common approaches to risk characterization, evaluate risk management decision processes, and use risk communication and multi-stakeholder deliberation techniques. Several cases will introduce use of models in risk analysis and provide skills relevant to research in risk analysis. Course modules taught by interdisciplinary faculty teams.

**ISG 5020. Risk Analysis Modeling (1 cr., 1 week, January term).** Introduction to technical and conceptual aspects of model development, analysis, verification, and validation. Majority of time spent on active learning exercises so that students gain hands-on experience with the methods.

**ISG 8001. Discussions in Introduced Species and Genotypes (1 cr.).** Minor requires enrolling two times, for 2 credits total. Weekly forum for presentation of dissertation proposals, results from ISG practica, and discussion of topics in environmental risk analysis, including scientific, ethical and policy issues.

**ISG 8021. Problem-solving practicum in risk analysis (3 cr.).** This team research experience should be taken after completion of ISG 5010 and 5020. Students conduct research on a real-world problem in environmental risk analysis of introduced species and genotypes; with research problem identified in consultation with a public or private sector partner and guided by faculty team.

**ISG 8031. Cooperative learning practicum (1 cr.).** This course focuses on development of teaching methods and materials relevant to risk analysis training, and should be taken after completion of ISG 8021.

**Elective. One of the quantitative modeling courses (3-4 cr.)** offered by other graduate programs; e.g., Applied Microeconomics (ApEc 5151), Modeling Nature and the Nature of Modeling (EEB 5963), Decision Analysis (IE 5545), Stochastic Modeling and Analysis (OMS 8672), Probability Models for Biostatistics (PubH 8429), or Population Dynamics (Ent 5045)