

Course Syllabus

Fundamentals of Environmental Geomatics (*online*)

Course Number: 11:573:232 3 Cr.

Instructor: Dr. Marci Meixler (meixler@aesop.rutgers.edu)

Email anytime with questions!

Course Website: If you are registered for this course, you should have access to the course website.

Description

What is Geomatics? Geomatics is the integration of geographic information systems, remote sensing, and global navigation systems, all put to use for the purpose of spatial analysis.

Fundamentals of Environmental Geomatics is designed to introduce undergraduate students to the concepts, technologies and techniques that allow us to collect, manage, analyze and represent spatial information for a wide variety of applications. Students majoring in landscape architecture, ecology, urban studies, economics, marketing or a variety of other disciplines will benefit from this course. The course is also designed to provide the foundation for advanced course work and is the first in a Geomatics sequence tailored to provide both lecture and hands-on experience with technologies of the discipline.

We will cover basic concepts, definitions, and functions for each of the technologies associated with Geomatics. We will examine how each of these technologies are applied in different fields including urban planning, environmental and natural resource management, and economics among others. We will also consider larger societal issues in this course including how the increasing use of geomatics technologies in public agencies, business and non-profit organizations has enabled business, government and the public to make more informed decisions.

The topic of the course is inherently hands-on, however the size and online nature of this course precludes labs. Lab sessions are taught as a separate 1-credit course which is not a requirement but is highly encouraged in order for students to gain hands-on experience that brings the lectures to life.

Fundamentals of Environmental Geomatics is a requirement for the Geomatics Certificate.

Learning outcomes

- To acquire a knowledge of foundational concepts, processes and technology used in geomatics

- To develop skills in problem solving and the use of analytical reasoning
- To understand the methods of scientific investigation using computer technology
- To appreciate new advances in GIScience
- To understand the processes needed to address real-world, complex environmental issues using spatial analysis
- To learn to think “spatially”

Grading System

The course is comprised of lectures, online quizzes, review assignments, and exams.

Lectures: each weekday a new topic will be introduced through lecture video(s). You are responsible for watching the video sometime during that day and taking the associated quiz before the due date.

Quizzes: there will be one online quiz per lecture topic. Quiz questions can be found in the lecture videos. There will be no makeups for missed quizzes.

Review assignments: Please submit to the dropbox one question and answer for each lecture topic since the beginning of class/last exam. There will be 3 review assignments. Assignments are due by midnight on the due date. Late penalty: 50% off for each day late.

Exams: There are two midterms and a cumulative final exam. These will be a combination of true/false, matching and multiple choice. There will be no makeup exams.

Graded item	%
Quizzes	30%
Review Assignments (3)	10%
Midterm Exam 1	20%
Midterm Exam 2	20%
Final Exam	20%

Class schedule

(for all due dates assume midnight is the deadline unless stated otherwise)

Date	Topic	Quiz due date	Assignment
July 22	Introduction	July 23	
July 23	Video: GIS in practice 1	July 24	
July 24	GIS	July 25	
July 25	Data models	July 26	
July 26	Projections	July 29	Review questions/anws (due midnight July 28)
July 29	Midterm 1 (finish by midnight)		
July 30	Data entry	July 31	
July 31	GNSS	August 1	
August 1	Aerial and satellite imagery	August 2	
August 2	Attribute data and tables	August 5	Review questions/anws (due midnight Aug 4)
August 5	Midterm 2 (finish by midnight)		
August 6	Spatial analysis	August 7	
August 7	Prediction and interpolation	August 8	
August 8	Raster analysis	August 9	
August 9	Terrain analysis	August 12	
August 12	Video: GIS in practice 2	August 13	
August 13	Future of geomatics	August 14	Review questions/anws (due midnight Aug 13)
August 14	Final exam (finish by midnight)		