NYU | DEPARTMENT OF BIOLOGY

BIOL-UA 64/ENVST-UA 372 Ecological Analysis Geographic Information Systems

Instructor:
Mary Killilea

Course Description:
Being able to organize and analyze ecological data is an essential research tool. Geographic information systems (GIS) are computerized systems for the capture, storage, management, analysis and display of geographically referenced data and their attributes. In this course, you will learn the basic principles and applications of GIS including coordinate systems, data transformations, spatial analysis, and accuracy assessment. Laboratory exercises will use ecological data and examples to provide extensive hands-on experience with ArcGIS a professional GIS software package.

Pre-requisite:
Principles of Biology I (BIOL-UA 11) or
Environmental System Science (BIOL-UA 100)

Textbook and Required Materials:
Bolstad, Paul (2016) GIS Fundamentals: A First Text on Geographic Information Systems, 5th Edition Xanedu.com

Grading:

Weekly Lab Assignments	10%
Independent Project	40%
Midterm	25%
Final	25%

Topics:
Introduction to GIS; Introduction to data models
Getting started with GIS
Map Projections and Coordinate Systems
Map Projections
Project Ideas (individual meetings)
Project Research
Writing a proposal
Finding GIS Data and Data Management
Maps, Data Entry, Editing and Output
Importing Tables
Global Navigations Satellite Systems and Aerial and Satellite Images
Remote sensing
Spatial Analysis
Raster and Terrain Analysis
Writing a scientific paper
Project work
Spatial Estimation and Spatial Models
Data Standards and Data Quality
Paper feedback and how to prepare a presentation