

11:372:233 | Fundamentals of Environmental Geomatics Laboratory

Rutgers, the State University of New Jersey
School of Environmental and Biological Sciences
Spring 2015

Meeting Place: Room 237A, Environmental and Natural Resources Building (CRSSA Teaching Lab)

Meeting Time: Section 01: Monday, 5:35 p.m. - 6:55 p.m.

Section 02: Wednesday, 12:35 p.m. - 1:55 p.m.

Section 03: Monday, 3:55 p.m. - 5:15 p.m.

Section 04: Tuesday, 12:35 p.m. - 1:55 p.m.

Credits: 1

Instructors: Dave Smith (Sections 2 and 3)

Office: Room 127, Environmental and Natural Resources Building

Email: dave.c.smith@rutgers.edu

Office Hours: Tuesdays 3:00 PM – 5:00 PM

Ellen Oettinger (Sections 1 and 4)

Office Hours: By appointment

Course Website: <https://sakai.rutgers.edu> -- course site is listed as "FUND GEOMATICS LAB F14"

This course is REQUIRED for all *Environmental Planning and Design* options. It is also required for the *Environmental Geomatics Certificate* program.

Course Description:

Geomatics is a rapidly growing field that has applications in a wide array of different disciplines including urban and environmental planning, ecological analysis and modeling, epidemiology, and emergency response and management to name just a few. It incorporates Geographic Information Systems (GIS), Remote Sensing, and Global Navigation Satellite Systems like GPS, along with other spatial sciences. The reason for the growing popularity and broad appeal of Geomatics is simple: if the location of the thing you are asking about is meaningful to the question you are asking, then chances are that Geomatics provides the best tools for finding the answer.

This course focuses on providing hands-on experience with the GIS tools and methods presented in the Fundamentals of Environmental Geomatics lecture course. The intention of the lab is to supplement the lecture material, which provides a vital understanding of the conceptual framework for these tools and a broader context for how they are used.

Prerequisites:

There is no prerequisite for this course. However, students are strongly encouraged to take both the lecture and lab courses. ***Both the lecture and lab courses are required for all EPD options and for the Environmental Geomatics Certificate program.***

Readings:

There are no required readings for this course.

Course Structure and Learning Objectives:

The purpose of the course is to introduce students to ArcGIS software and some of the basic geoprocessing and analytical tools that it provides. There will be ten weekly labs each covering a different topic with its own learning objectives. There will also be midterm and final synthesis lab, in which students will be expected to use the tools they have been taught to solve a complex geospatial problem.

Typically, each class will begin with a short presentation that reviews the concepts presented last time and introduces the current week's topic. Students will then follow the step-by-step lab handout at your own pace—the instructor will be there to provide assistance when needed. Finally, each week, there will be an assignment in which you will be expected to apply the skills you have learned in that week's lab on your own.

Grading:

Class Participation/Attendance:	10%
Weekly Labs:	50%
Synthesis Lab I:	15%
Synthesis Lab II:	25%

Attendance Policy:

Students are expected to attend all lab sessions. This is particularly important for this course. The material we cover is cumulative, so missing a lab session will make it more difficult to follow along the next time.

Absences may be excused in cases of illness, family emergency, or organized professional development events (*e.g.* conferences). Where possible, let your instructor know in advance of your absence so that we can arrange to cover any material you miss. If advance notice is not possible, inform your instructor in writing within seven days of returning to campus. ***Any material missed during an unexcused absence will be the responsibility of the student.***

More than two unexcused absences will result in 0 for your final attendance and participation grade. Each additional unexcused absence will result in a further step reduction in your overall final grade.

Late Submission Policy:

All assignments are due at the beginning of the following lab session, unless otherwise noted. ***Assignments turned in late will be docked one letter grade.*** Again, because the material we cover is cumulative, it is important to complete the previous week's assignment before we start on the next topic in order to avoid falling behind.

Use of Computer Lab:

While there will typically be time to work independently on the week's assignment during each lab session, some work outside of class will generally be necessary. You are welcome to use the lab any time it is open and no class is being held. A schedule of lab hours will be posted outside of the lab and on the Sakai site.

While working in the lab, standard computer lab rules and common sense apply:

- No food or open drinks are allowed in the lab.
- Clean up your desk before leaving.
- Be respectful of others working in the lab.
- Do not leave any logged in computers unattended.
- Do not attempt to install any software on any computer without express permission from your instructor.
- Report any malfunctioning computers to your instructor as soon as possible.

Academic Integrity Policy:

Students will be held to the University's Policy on Academic Integrity, which can be found at: <http://academicintegrity.rutgers.edu/policy-on-academic-integrity>

Course Schedule:

WEEK	LAB TOPIC
1	Intro to ArcGIS
2	Basic Cartography, Projections, and Coordinate Systems
3	Data Storage and Portability
4	Tables, Queries, Joins and Relates
5	Buffering and Overlay Analysis
6	Raster Analysis
7	Synthesis Lab I (WK 1)
8	Synthesis Lab I (WK 2)
9	SPRING BREAK
10	Finding Data
11	Digitizing
12	ArcGIS Online
13	Tools for Improved Workflow
14	Synthesis Lab II (WK 1)
15	Synthesis Lab II (WK 1)