

Agron/EnSci 270X: Geospatial Technologies Summer 2019

Instructor

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Meeting Time and Place

This course is delivered entirely online. There are regular deadlines to keep you on pace for covering material through the semester.

Office Hours

There are no standard office hours as most students taking this course are not on campus. However, I am here to support you and answer your questions. Options for communication include the discussion board on Canvas, email, scheduling an online video meeting, or scheduling an on-campus meeting. I will sometimes use a team to provide support when I am unable to respond to emails quickly. Please email questions about labs and other course content to 270help@iastate.edu.

Course Description: This course is designed to introduce you to the tools and technology for acquiring, managing, analyzing, and displaying geographic information. It is a combined *introduction* to the tools of geospatial technology and the concepts of analyzing geospatial information, including geographic information systems (GIS), remote sensing, spatial analysis, and cartography (the science and art of mapmaking). Applications presented in this course will focus on the biological, ecological, environmental, and agricultural sciences.

Learning Outcomes: By the conclusion of this course, you will:

- Understand the fundamentals of working with spatial data.
- Be familiar with various spatial data types and methods of collecting, storing, displaying, and analyzing spatial information.
- Demonstrate how geospatial tools can be applied to problem-solving scenarios in a variety of natural science disciplines.
- Be aware of the advantages of viewing the world with a geographic perspective and be able to describe how spatial thinking can contribute to problem-solving.

Required Textbook

Introduction to Geospatial Technologies, 4th Edition by Bradley A. Shellito, 2018. W.H. Freeman and Company. NY. (ISBN: 978-1-3190-6045-9)

Course Web Page: The ISU Canvas website is used for submitting assignments and other course management. That website also includes a copy of this syllabus, topic presentations, additional assignment information, and sample data.

Grade Distribution

Modules	65%
Mid-term Exam	15%
Final Exam	20%

Grading Scale

100 – 94%	A	76 – 73%	C
93 – 90%	A-	72 – 70%	C-
89 – 87%	B+	69 – 67%	D+
86 – 83%	B	66 – 63%	D
82 – 80%	B-	62 – 60%	D-
79 – 77%	C+	< 60%	F

Due Date	Topics	Readings
5/24/2019	Map Basics LAB 1.1 (Intro to Geospatial Concepts and Google Earth Pro, page 25)	Chapter 1
5/31/2019	Geodesy, Projections, and Coordinate Systems LAB 2.1 (Coordinates and Position Measurements, page 61)	Chapter 2
6/7/2019	Georeferencing & Digitizing LAB 3.1 (Georeferencing an Image, page 83)	Chapter 3
6/14/2019	Global Navigation Satellite Systems (GNSS) LAB 4.1 (GNSS Applications, page 118)	Chapter 4
6/21/2019	Data Models and Metadata Lab 5.2 (GIS Introduction: ArcGIS Pro Version, page 172)	Chapter 5
6/27/2019	Cartography LAB 7.2 (GIS Layouts: ArcGIS Pro Version, page 277)	Chapter 7
6/28/2019	<i>Mid-term Exam</i>	
7/5/2019	Remote Sensing I LAB 10.1 (Remotely Sensed Imagery and Color Composites, page 383)	Chapters 9 & 10
7/12/2019	Remote Sensing II LAB 11.1 (Landsat 8 Imagery, page 423)	Chapters 11 & 12
7/17/2019	Vector Analysis & Database Queries LAB 6.2 (GIS Spatial Analysis: ArcGIS Pro Version, page 226)	Chapter 6
7/22/2019	Raster Analysis I LAB 13.1 (Digital Terrain Analysis, page 490)	Chapter 13
7/26/2019	Raster Analysis II LAB: Hillshades and Hydrology (Instructions posted in Canvas)	Posted Reading
7/31/2019	Spatial Statistics LAB: Point Patterns in Forest Fires (Instructions posted in Canvas)	Posted Reading
8/5/2019	Scale & Generalization LAB: Modifiable Area Unit Problem (Instructions posted in Canvas)	Posted Reading
8/8/2019	Future Directions for Geospatial Technology No lab	Chapter 15
8/9/2019	<i>Final Exam</i>	

Assignments: Each module contains at least one lab and quiz connected with its topic. To keep you on pace for progressing through the course in time, deadlines have been set for each module. Please keep in mind that the summer is a shorter semester, so the timeline is more condensed. You are more than welcome to begin working on a module before it is officially assigned. Labs will be deducted 10% for every 24 hours they are submitted after the due date.

Most labs come from the textbook but supporting materials can be found on the course website. It is recommended that you complete each lab by taking notes of your answers to the questions in the textbook. Then go to the Canvas site to report your findings (<https://canvas.iastate.edu>) The Canvas site will have the same questions, but many will be converted to multiple-choice type questions to guide you. This also helps to quicken the turnaround time for providing you with graded feedback.

Exams: Two cumulative exams will be given. Exams will cover content from presentations, the textbook, and labs. The exams will consist of a combination of multiple choice type and short written answer type questions. Exams will be delivered within the Canvas system and made available for a period of 24 hours.

Missing an Exam: Only illness, death in the family, or similar extenuating circumstances as judged by the instructor are acceptable as excuses for missing an exam without prior agreement. The instructor reserves the right to require verification (e.g., a doctor's note) in such an instance. Contacting the instructor prior to an exam regarding an issue will be treated more favorably than after the exam. Without prior agreement or an acceptable excuse, the exam will be recorded as a zero.

Critical Thinking Questions (Extra Credit)

The purpose of the topics in this course is to describe resources, concepts, and strategies for solving problems with geospatial technologies. Synthesizing those technologies and concepts for how they can be used for scientific investigation and how they impact society is a higher-level learning activity and highly encouraged. Critical thinking questions will be made available during the semester for an extra credit of 5 points each.

Academic Dishonesty: Your professional success will largely be based on your ability to do good work. Plagiarism, cheating on an exam, or other attempts to falsely represent your abilities are detrimental to your development and will not be tolerated in this course. ISU has a clear policy on these matters: <http://www.studentconduct.dso.iastate.edu/academic/misconduct>.

University Policies

Disability Accommodation

Iowa State University is committed to assuring that all educational activities are free from discrimination and harassment based on disability status. As instructors of this course, we want every student to be able to do their best. All students requesting accommodations for a disability are required to meet with staff in Student Disability Resources (SDR) to establish eligibility. A Student Academic Accommodation Request (SAAR) form will be provided to eligible students. SDR, a unit in the Dean of Students Office, is located in room 1076, Student Services Building or online at <http://www.dso.iastate.edu/dr/>. Contact SDR by e-mail at disabilityresources@iastate.edu or by phone at 515-294-7220 for additional information. After you have obtained a SAAR form, please contact us at agron206prof@gmail.com to set up a meeting within the first two weeks of the semester or as soon as you become aware of your need.

Dead Week

This class follows the Iowa State University Dead Week policy as noted in section 10.6.4 of the Faculty Handbook.

Harassment and Discrimination

Iowa State University strives to maintain our campus as a place of work and study for faculty, staff, and students that is free of all forms of prohibited discrimination and harassment based upon race, ethnicity, sex (including sexual assault), pregnancy, color, religion, national origin, physical or mental disability, age, marital status, sexual orientation, gender identity, genetic information, or status as a U.S. veteran. Any student who has concerns about such behavior should contact us at agron206prof@gmail.com, Student Assistance at 515-294-1020 or dso-sas@iastate.edu, or the Office of Equal Opportunity and Compliance at 515-294-7612.

Religious Accommodation

If an academic or work requirement conflicts with your religious practices and/or observances, you may request reasonable accommodations. Your request must be in writing, and we, your instructors, will review the request. You may also seek assistance from the Dean of Students Office or the Office of Equal Opportunity and Compliance.

General Academic Concerns

If you are experiencing, or have experienced, a problem with any of the above issues, or any other academic concerns, email academicissues@iastate.edu.