2016FA-CIVE-576-001: Engineering Applications of GIS and GPS

Prerequisites: Senior Standing, Engineering Major or Consent

Instructors:

Dr. Mazdak Arabi

Office: ENGR 207F

Office Hours: Monday 9:00-10:00a or by appointment

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Ali Tasdighi

Office: Glover 119

Office Hours: Tuesdays and Thursdays 2:00-3:00 PM or by appointment

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Textbooks [optional]:

"*Geographic Information Systems and Science / Edition 3rd*, 2010, Wiley, by Paul Longley, David J. Maguire, Michael F. Goodchild, David Rhind, David Maguire

- Softcover available for ~ $50, from amazon.com.

"*GIS Fundamentals / Edition 4th,* 2008 Eider Press, by Paul Bolstad

- Softcover available for $39, from Atlas Books, atlasbooks.com, 800-247-6553
  ISBN 978-0-9717647-3-6.
- DRM digital version available, $25, from CafeScribe here, or go to the com website and search for Paul Bolstad.

"*GIS Tutorials 2, Spatial Analysis Workbook*", 2010, ESRI Press, by David Allen

Other Material:

ESRI Virtual Campus Courses:

- **Learning ArcGIS Desktop (for ArcGIS 10)**
- Creating, Editing, and Managing Geodatabases for ArcGIS Desktop
- Learning ArcGIS Spatial Analyst
- Working with Rasters in ArcGIS Desktop

- Creating and Maintaining Metadata Using ArcGIS Desktop

Grading:

- Labs/HW   60%
- Project   25%
- Exam   15%

Objectives:

At the end of this course you will understand:

- The principles of geographic analysis
- Various techniques for data collection, organization, and visualization
- Methods for the analysis of spatial data and patterns

Tentative Schedule

Week	Topic
1	Introduction and basic concepts
2	Representing geography/data models
	The nature of geographic data
3	Georeferencing/Coordinate systems and projections
4	Spatial data models
5-6	GIS data collection/GPS
7	Creating and maintaining geographic databases
8	Cartography and map production
9	Query, measurement and transformation
10-11	Classification, extraction, overlay and proximity
12	Spatial analysis based on raster data processing, spatial statistics
13	Geoprocessing
14-15	Geostatistical analysis, analyzing patterns
16	Other dimensions, other tools, other solutions

Final examination: Dec 16, 4:10-6:10p

Course project due date: Dec. 11, 4:30p

General Class Policies

You are expected to:

- Attend regularly: It is recommended that you attend each class because important information will be covered in class that will help you with the laboratory assignments, homework, and exams. Also, if changes in exam procedure, exam date, exam coverage, assignments, etc. are announced in class you are responsible for knowing this information. Unannounced "pop" quizzes may be given during lectures, and unless you provide a doctor's note for illness, you will receive a zero for these quizzes if you are not present. You must either arrange with the professor ahead of time if you will miss class or lab for a legitimate reason (e.g., surgery, funeral, or university-sanctioned

activity), or provide a doctor's note if you could not notify the professor ahead of time because of illness, otherwise, you will receive a zero on any quizzes or assignments due that day or for that laboratory.

- Access Canvas regularly: The Canvas course site will be updated regularly with Power Point handouts and other materials presented in class. The lecture handouts should be printed and brought to class. The class schedule and due dates for assignments will be regularly posted and updated. It is your responsibility to be aware of this information. Anything that is posted on Canvas and covered in class is likely to be subject to questions on the exams.
- Arrive on time: Coming late to class causes a disturbance and is disrespectful to others. Please do not enter or leave the room while the class is in progress, except in the case of an emergency. Pop quizzes will likely be given at the very beginning or the very end of lecture, so it is to your advantage to arrive on time and stay until the end of class.
- Turn off your cell phones and beepers before the start of class. If you have a special need to have it on, please visit with one of the professors to discuss the matter.
- Respect assignment deadlines: **Assignments have to be submitted before the specified time on the due date**. If you turn in your homework later on the due date you will receive a 50% penalty. If you do not submit your assignment on the day it is due, you will receive a zero for that assignment. In case of an emergency please contact your instructor.
- Be honest: CSU Policies and Guiding Principles will be strictly enforced. All CSU students are responsible for knowing and adhering to the academic integrity policies of this institution. Violations of this policy may include: cheating, plagiarism, aiding academic dishonesty, fabrication, lying, bribery, and threatening behavior. Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion).
- Adhere to CSU sexual harassment policy: CSU sexual harassment policy will be strictly enforced. The CSU policy on sexual harassment applies to all students, staff and faculty. Sexual harassment is unwelcome sexual attention. It can involve intimidation, threats, coercion, or promises or create an environment that is hostile or offensive.