

EEOS 281 – Introduction to Geographic Information Systems

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1:00 - 2:00 PM S-1-060 (or arrange by email)

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Office hours: Tuesdays 4:30 – 5:30 PM, Thursdays 11:00 AM – 2:00 PM, 4:30 – 5:30 PM, (most) Fridays 11:00 AM – 2:00 PM

Lectures: Tuesdays 2:00 to 4:30 PM S-3-020

Labs: Thursdays 2:00 to 4:30 PM S-3-020

Description: This course is an introductory course in geographic information systems (GIS). As with many other information systems, GIS requires that information be managed within a database structure. However, geographic information is fundamentally different compared to most other types of information and GIS is a very unique type of information system. In addition to managing information, what makes GIS such a powerful tool is the ability to implement spatial analytic procedures. This course will introduce you to the fundamentals of GIS and will demonstrate the versatility in the types of analysis that geographic information systems offer. No prior experience with GIS is expected, however familiarity with Microsoft Windows operating systems will be helpful.

Objectives:

- Examine fundamental concepts of geographic information systems.
- Review geo-referencing systems and explain how these systems are linked to digital geographic information.
- Emphasize the importance of cartographic principles when presenting GIS output.
- Discuss GIS data structures and highlight the advantages and disadvantages of each data structure.
- Review basic principles of relational databases and demonstrate how GIS objects are related to databases.
- Provide examples of how GIS is utilized in real-world applications.
- Reinforce topics discussed in lecture through weekly laboratory exercises.

Web Page: <http://www.faculty.umb.edu/david.tenenbaum/eeos281>

Required Text: Maribeth Price. *Mastering ArcGIS, 4th Edition*. McGraw-Hill, 2010. ISBN 978-0-07-352284-8.

- Policies:**
1. Regular attendance to lecture and lab is essential.
 2. Students are expected to do assigned reading before lecture sessions, and come to class prepared to discuss the material.
 3. Students are expected to complete course assignments on-time. Assignments submitted late will receive a reduction in points.
 4. All assignments are expected to be completed and submitted in **TYPED** format (not handwritten). Handwritten assignments will not be accepted.
 5. If you have multiple pages to submit for an assignment, please make sure you have the pages **STAPLED** together. Assignments that are not stapled will not be accepted.
 6. All students are expected to adhere to the guidelines set forth by the Code of Student Conduct. Any violations of this code (e.g. plagiarizing from the Internet or copying the work of other students) will result in disciplinary action taken by myself and any further disciplinary action taken by the Office of the Dean of Student Affairs.
 7. If you are a student with a disability that requires any assistive devices, services or accommodations, please contact the instructor.
 8. Please adhere to the GIS Lab Rules posted in the GIS Lab.
 9. Please be considerate of others in class. In particular, please do not talk to others during lecture; it can be very distracting to everyone else in the room. Also, make sure your cell phone is off before class begins.

Assignments: Lab sessions are intended to provide you with hands-on experience using GIS. The GIS software used in this course will be ArcGIS 9.3. In most instances, you will not be able to complete the assignment during our allotted lab periods. It is your responsibility to complete the assignments before the due date. You can access the computer lab anytime during open lab hours. If the GIS Lab (S-3-20) is not open or a scheduled class is using the lab, you can access the secondary GIS Lab in S-3-34. This room is accessible 24/7 through the use of a keypad combination. I will be announcing the keypad combination in class.

Examinations: This introductory course in geographic information systems is designed to provide you with both theoretical knowledge and practical knowledge of GIS. While the assignments are primarily devoted to developing and assessing your hands-on GIS skills, the mid-term and final examinations are designed to ensure that you have grasped the underlying principles that underpin how you use GIS. It is critical that you do your weekly reading before class, and be an active participant in lecture sessions to make sure that you understand the key concepts. The Summaries and Chapter Review Questions provided in the required textbook provide excellent opportunities to check and see if you've grasped the material.

Grading:	Assignments	50%
	Mid-term exam	20%
	Final exam	20%
	Class Participation	10%

SCHEDULE

Date	Session	Content (Chapter Review Questions)
Tues. Sept. 7	Lecture 1	Course Introduction, GIS Data – pp. 1-6, 17-34. (1, 3, 4)
Thurs. Sept. 9	Lab 1	Exercise 01
Tues. Sept. 14	Lecture 2	Mapping GIS Data – pp. 63-76. (1, 3, 9)
Thurs. Sept. 16	Lab 2	Exercise 02
Tues. Sept. 21	Lecture 3	Coordinate Systems – pp. 387-404. (1, 3, 8)
Thurs. Sept. 23	Lab 3	Exercise 03
Tues. Sept. 28	Lecture 4	Presenting GIS Data – pp. 107-120. (1, 5, 6)
Thurs. Sept. 30	Lab 4	Exercise 04
Tues. Oct. 5	Lecture 5	Attribute Data and Queries, pp. 153-164 (2, 6), 191-202. (1, 2, 7)
Thurs. Oct. 7	Lab 5	Exercise 05
Tues. Oct. 12	Lecture 6	Spatial Joins, pp. 221-236. (1, 5, 6)
Thurs. Oct. 14	Lab 6	Exercise 06
Tues. Oct. 19	Lecture 7	Mid-term Review
Thurs. Oct. 21	Mid-Term	Mid-term Examination
Tues. Oct. 26	Lecture 8	Geoprocessing, pp. 251-263. (4, 5, 7)
Thurs. Oct. 28	Lab 7	Exercise 07
Tues. Nov. 2	Lecture 9	Geocoding, pp. 359-370. (4, 5, 7)
Thurs. Nov. 4	Lab 8	Exercise 08
Tues. Nov. 9	Lecture 10	Raster Analysis, pp. 285-300. (1, 2, 5, 6, 8 – 10)
Thurs. Nov. 11	Veteran's Day	Veteran's Day (no class)
Tues. Nov. 16	Lecture 11	Basic Editing, pp. 425-432. (1, 3, 5)
Thurs. Nov. 18	Lab 9	Exercise 10
Tues. Nov. 23	Lecture 12	Geodatabases, pp. 501-510. (1, 3, 4, 6, 10)
Thurs. Nov. 25	Thanksgiving	Thanksgiving (no class)
Tues. Nov. 30	Lecture 13	More Editing Techniques, pp. 459-468. (1, 4, 5)
Thurs. Dec. 2	Lab 10	Exercise 12
Tues. Dec. 7	Lecture 14	Remote Sensing
Thurs. Dec. 9	Lab 11	TBA
Tues. Dec. 14	Lecture 15	Final Review
Tues. Dec. 21	Final Exam	Final Exam