

Geography 303

Geographic Information Systems and Science

Course Description

This course provides an introduction to advanced concepts and theories of spatial data analysis using geographic information systems (GIS). Topics include: spatial data models, solving spatial issues using vector analysis methods, visualization in GIS. Lab sessions include exercises with ArcGIS 10.4. Students will apply their acquired skills in a final project.

Instructor Dr. Julia Siemer

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Office Hours Monday and Tuesday 1:00 pm–2:00 pm or by appointment

Textbook JENSEN, John R. and JENSEN, Ryan R. (2013): *Introductory Geographic Information Systems*. Pearson. Boston. ISBN 978-0-13-614776-3

Available at the University Bookstore

URCourses Selected course materials will be made available on URCourses. Check also the calendar on URCourses for up-dated class information. If you choose to use a personal e-mail account for communication, please forward your U of R e-mails to this account. Please specify meaningful subjects for all e-mails.

Lecture Time Lecture: MWF, 10:30 am–11:20 am: CL 317
Lab sessions: F, 10:30 am–11:20 am: CL 109 (see schedule for specific dates)

Prerequisites GEOG 203 or permission of department head

Other materials USB memory stick for lab materials and assignments

Attendance policy Attendance at all times is recommended. Attendance at **ArcGIS lab sessions is mandatory** and will be checked randomly.

Evaluation	ArcGIS-Exercises (7: each 5%; required)	35%
	Midterm Exams (Theory: March 07: 20%; Hands-on: March 16: 15%; required)	35%
	Final Project (required; due date: April 13, 2018)	<u>30%</u>
		100%

Knowledge and Effort

This course requires computer file management skills and the ability to work within a Windows computer environment without assistance. Students are expected to spend considerable time developing thoughtful products, as well as conducting limited research to feed into their written assignments. Students must demonstrate a mature, professional, and conscientious effort toward class work and participation.

In addition to class hours, students should expect an average weekly work-load of 1.5 hour for readings and up to 2 hours of individual (computer) work (depending on previous experience with ArcGIS or similar products).

Late assignments and missed examinations

All assignments/labs, projects and exams are required. A missed or late assignment or exam results in a grade of NP for the course. Due dates for assignments/labs will be specified. **Assignments/labs or projects that are submitted late will be penalized 10% per day** (including weekends, starting with the due day). Assignments/labs or project components submitted **more than 3 days late are not accepted** and result in a grade of NP for the course. A missed exam can normally not be written at a later time.

(See also section Accommodations)

Accommodations

Any student with a disability who may need accommodations should discuss these with the course instructor after contacting the Coordinator of the Disability Resource Office at 585-4631.

If you are **unable to complete an assignment, midterm examination or components of the final project** for compassionate or health reasons, contact the instructor **as soon as possible**. A medical certificate from an attending physician must accompany the request if the reason is medical. For other reasons, such evidence as is appropriate should be provided.

Recording of lectures

Students must be aware of two issues regarding audio, image or video recording of lectures. First, a lecture/lab is considered the intellectual property of the instructor, and copyright guidelines and regulations apply to the recording of lectures. Second, there is a need to protect the privacy of students in the class from being recorded without their knowledge and permission. As such, students in this course may not create recordings of any kind in this class. Any student creating unauthorized recordings will be subject to disciplinary action under §5.13 of the Undergraduate Calendar.

Students requiring recordings as an accommodation for a disability, and who have documentation from the Centre for Student Accessibility, are exempted from this restriction. Students in this position must speak to the instructor prior to recording lectures, and any such recordings are solely authorized for the purposes of individual study.

CL 317 – Lecture – Tentative Schedule*

<i>Week</i>	<i>Date</i>	<i>Lecture Topic</i>	<i>Required Readings</i>
1	Jan 08	Introduction to the course	Chapter 1
1	Jan 10	Review of GIS fundamentals	Chapter 1
2	Jan 15	Projections in GIS	Chapter 2
2	Jan 17	Projections in GIS	Chapter 2
3	Jan 22	Georeferencing	Chapter 2
3	Jan 24	Georeferencing	Chapter 2
4	Jan 29	Importing XY tabular and other spatial data	Chapter 3 (55–70)
4	Jan 31	Digitizing, basic editing in GIS	Additional reading
5	Feb 05	Geodatabases	Chapter 5
5	Feb 07	Geodatabases	Chapter 5
6	Feb 12	Geoprocessing, Model builder	Chapter 6 (149–165)
6	Feb 14	Geoprocessing, Model builder	Additional reading
	<i>Feb 19–23</i>	<i>Reading week</i>	
7	Feb 26	Spatial analyses	Chapter 6
7	Feb 28	Spatial analyses	Chapter 7
8	Mar 05	Geocoding	Chapter 7 (195–200)
8	Mar 07	Midterm – theory	--
9	Mar 12	Cartography and GIS	Chapter 10
9	Mar 14	Final Project will be handed out	--
10	Mar 19/21	No lecture – Work on individual Final Project (CL 109)	--
11	Mar 26/28	No lecture – Work on individual Final Project (CL 109)	--
12	Apr 02/04	No lecture – Work on individual Final Project (CL 109)	--
13	Apr 09/11	No lecture – Work on individual Final Project (CL 109)	--

* subject to change, check URCourses calendar for up-dates

CL 1.09 – ArcGIS Sessions – Tentative Schedule*

Week	Date	Lab Topic	Exercise
1	Jan 12	<i>No lab</i>	--
2	Jan 19	Projections in GIS	Exercise 1
3	Jan 26	Georeferencing in GIS	Exercise 2
4	Feb 02	Digitizing in GIS	Exercise 3
5	Feb 09	Geodatabases	Exercise 4
6	Feb 16	Model builder	Exercise 5
	<i>Feb 19–23</i>	<i>Reading week</i>	
7	Mar 02	Spatial analysis	Exercise 6
8	Mar 09	Geocoding	Exercise 7
9	Mar 16	Midterm – hands-on	--
10	Mar 23	Work on individual Final Project	--
11	<i>Mar 30</i>	<i>Good Friday</i>	
12	Apr 06	Work on individual Final Project	--
13	Apr 13	Submit your Final Project	--

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