

The University of Oklahoma

College of Continuing Education

Advanced Programs – Course Syllabus

Course Title:

Seminar in Human Geography: Computer Mapping and Critical Cartography

Course Number:

GEOG 6220-222

Course Description:

Main goal of this course is to provide the students with the knowledge and methodological skills that allow them to be conscientious map makers and map readers. By learning how maps are constructed, they will be able to understand and critically analyze the context of and intentions behind thematic maps. This course, comprising assigned reading, lectures, group discussions, hands-on exercises, and an individual mapping project, will provide the students with the required theoretical and application background to visualize spatial data and understand how maps work. A large part of the course will consist of exercises during which the students will work on the visualization of spatial data in form of thematic maps. This will deepen their understanding of principles of map design and will provide them with basic computer mapping skills, making use of the free and open source Geographic Information System QGIS (a tool to view, edit, create and analyze spatial data). Application examples, exercises, and case studies will focus on a variety of spatial scales. The course will close with an individual project for which the students will identify a current topic of their choice and, making use of the mapping skills they developed, create a map that demonstrates their knowledge of map design, visualization techniques, and critical thinking.

Class Dates, Location and Hours:

Dates: March 14 - 19, 2017

Location: Classes held at Building 2784, Room 301, Kapaun Air Station on Vogelweh Air Base.

Hours: Tuesday - Friday 6:00-9:30 pm; Saturday and Sunday 8:30 a.m.-4:30 p.m.

Last day to enroll or drop without penalty: February 13, 2017

Site Director:

Email: apramstein@ou.edu. Phone: DSN 480-6807, Civilian 06371-47-6807.

Professor Contact Information:

Course Professor: Dr. Jennifer Koch

Mailing Address: 100 E Boyd St

Sarkeys Energy Center, Suite 510

Norman, OK 73019

Telephone Number: (541) 908-3914

Email Address: jakoch@ou.edu

Professor availability: The professor will be available via email to students before and after the class sessions. On-site office hours are half an hour before and after each class session, by appointment.

Instructional Materials:

No textbook is required for the course. All course lectures and materials for reading, assignments, and exercises will be posted on the OU Desire to Learn system (D2L) in a digital format. Access D2L at <http://learn.ou.edu>: enter your OU NetID and password, and select course to access material. Please contact your local Site Director if you require assistance.

Students are encouraged to bring their laptop to class with QGIS already installed. QGIS – the course software is available at: <http://www.qgis.org/en/site/>.

Course Objectives:

The goals of this course are for the students to:

- understand the power of maps;
- learn how to interpret different types of maps;
- learn how meaning is derived from maps and how maps are imbued with meaning;
- adopt a critical/conscientious approach to map reading and interpretation;
- apply the basic principles of map design and visualization of spatial data;
- demonstrate knowledge of spatial data management;
- practice the development of different map types with QGIS; and
- communicate their newly developed mapping skills in form of a map product and a project report.

Course Outline (Subject to Modifications):

1. The Idea of the Map
 - a. Learn about the history of maps
 - b. Recognize the importance of map elements for conveying information
 - c. Understand the differences between map types
2. Statistical Foundation
 - a. Revise different statistical methods required for mapping spatial information
 - b. Practice how statistical methods are used to create thematic maps
3. Data Classification
 - a. Learn about unclassified and classed data for mapping
 - b. Understand how different data classifications affect the resulting map products
 - c. Apply data classification methods to create thematic maps
4. Scale and Generalization
 - a. Understand geographic scale, cartographic scale, and data resolution
 - b. Learn about and apply fundamental generalization methods
5. Coordinate Systems and Map Projections
 - a. Discuss the differences between 2D and 3D coordinate systems
 - b. Understand the fundamental elements of map projections
 - c. Apply the guidelines for map projection selection
6. Principles of Map Design
 - a. Practice principles of map design
 - b. Use map design principles to effectively communicate spatial information
7. Mapping Techniques
 - a. Discuss the differences between choropleth, isopleth, proportional symbol and dot density maps
 - b. Use spatial data to create choropleth, proportional symbol and dot density maps
8. Map Interpretation
 - a. Use case studies to train map interpretation skills and critical thinking
9. Mapping Project
 - a. Identify an interesting case study
 - b. Apply map making skills

Assignments, Grading and Due Dates:

Exam:

An exam will be given on **Saturday - March 18, 2017**. The graded exam will be handed out to the students on the last day of the course (Sunday – March 19, 2017).

Assigned Readings:

All assigned reading materials will be made available through the learning management system D2L (<http://learn.ou.edu>) two weeks before the start of the course. Students will be expected to have read all the provided reading materials at the beginning of the course on March 14, 2017.

Mapping Project:

During the last day of class, students will work with the instruction on the development of the topic for their individual mapping project. The students will have a period of nine days after the course to complete and submit the final products of the project: a computer map and a project report. Submission and grading of the project materials as well as the instructor's feedback will be facilitated through the learning management system D2L (<http://learn.ou.edu>). Detailed instructions on length, format and evaluation criteria for the project report will be made available on D2L on the last day of the course.

Grading:

This is a letter-graded course: A, B, C, D, or F. The final grade will be calculated based on the following weights:

Assignment	Due Date	Percent of Grade
Exam	March 18, 2017	20%
Presentation and Discussion Lead	During class sessions	30%
Exercises	During class sessions	20%
Mapping Project	March 28, 2017	30%

The final letter grading for the course will be as follows: A: $\geq 90\%$, B: 89% - 80%, C: 79% - 70%, D: 69% - 60%, F: $\leq 59\%$. The instructor will round all averages to two significant figures (69.5 will round to 70 and 69.4 will round to 69) to determine the student's letter grade in the course (70 = C, 69 = D). There is no curve in this course. The instructor reserves the right to make linear adjustments to exam grades in cases where an exam question was found to be in error or unreasonably difficult. Each exam and project is graded on a scale of 50 points. Late submissions are not accepted; no credits will be given for late submissions, unless granted prior permissions.

Notice: Failure to meet assignment due dates could result in a grade of I (Incomplete) and may adversely impact Tuition Assistance and/or Financial Aid.

POLICIES AND NOTICES

Attendance/Grade Policy

Attendance and participation in interaction, individual assignments, group exercises, simulations, role playing, etc. are valuable aspects of any course because much of the learning comes from discussions in class with other students. It is expected that you attend all classes and be on time except for excused emergencies.

Excused absences are given for professor mandated activities or legally required activities such as emergencies or military assignments. It is the policy of the University to excuse absences of students that result from religious observances and to provide without penalty for the rescheduling of examinations and additional required class work that may fall on religious holidays. Unavoidable personal emergencies, including (but not limited to) serious illness; delays in getting to class because of accidents, etc.; deaths and funerals, and hazardous road conditions will be excused.

If you are obtaining financial assistance (TA, STAP, FA, VA, Scholarship, etc.) to pay all or part of your tuition cost, you must follow your funding agency/institution's policy regarding "I" (Incomplete) grades unless the timeline is longer than what the University policy allows then you must adhere to the University policy. Students who receive Financial Aid must resolve/complete any "I" (Incomplete) grades by the end of the term or he/she may be placed on "financial aid probation." If the "I" grade is not resolved/completed by the end of the following term, the student's Financial Aid may be suspended making the student ineligible for further Financial Aid.

Students are responsible for meeting the guidelines of Tuition Assistance and Veterans Assistance. See the education counselor at your local education center for a complete description of your TA or VA requirements.

Academic Integrity and Student Conduct

Academic integrity means honesty and responsibility in scholarship. Academic assignments exist to help students learn; grades exist to show how fully this goal is attained. Therefore all work and all grades should result from the student's own understanding and effort.

Academic misconduct is any act which improperly affects the evaluation of a student's academic performance or achievement. Misconduct occurs when the student either knows or reasonably should know that the act constitutes misconduct. Academic misconduct includes: cheating and using unauthorized materials on examinations and other assignments; improper collaboration, submitting the same assignment for different classes (self-plagiarism); fabrication, forgery, alteration of documents, lying, etc...in order to obtain an academic advantage; assisting others in academic misconduct; attempting to commit academic misconduct; destruction of property, hacking, etc...; intimidation and interference with integrity process; and plagiarism. All students should review the Student's Guide to Academic Integrity at http://integrity.ou.edu/students_guide.html

Students and faculty each have responsibility for maintaining an appropriate learning environment. All students should review policies regarding student conduct at <http://studentconduct.ou.edu/>

Accommodation Statement

The University of Oklahoma is committed to making its activities as accessible as possible. For accommodations on the basis of disability, please contact your local OU Site Director.

Adjustment for Pregnancy/Childbirth-Related Issues

Should you need modifications or adjustments to your course requirements because of documented pregnancy-related or childbirth-related issues, please contact me as soon as possible to discuss. Generally, modifications will be made where medically necessary and similar in scope to accommodations based on temporary disability. Please see <http://www.ou.edu/content/eoo/faqs/pregnancy-faqs.html>.

Title IX Resources

For any concerns regarding gender-based discrimination, sexual harassment, sexual misconduct, stalking, or intimate partner violence, the University offers a variety of resources, including advocates on-call 24/7, counseling services, mutual no-contact orders, scheduling adjustments, and disciplinary sanctions against the perpetrator. Please contact the Sexual Misconduct Office at smo@ou.edu or (405) 325-2215 (8-5), or the Sexual Assault Response Team at (405) 615 -0013 (24/7) to report an incident. To learn more about Title IX, please visit the Institutional Equity Office's website at <http://www.ou.edu/content/eoo.html>

Course Policies

Advanced Programs policy is to order books in paperback if available. Courses, dates, and professors are subject to change. Please check with your OU Site Director. Students should retain a copy of any assignments that are mailed to the professor for the course. Advanced Programs does not provide duplicating services or office supplies.

Any and all course materials, syllabus, lessons, lectures, etc. are the property of professor teaching the course and the Board of Regents of the University of Oklahoma and are protected under applicable copyright.

For more information about Advanced Programs, visit our website at: <http://www.goou.ou.edu/>

INSTRUCTOR VITA

Jennifer Anna Maria Koch, Ph.D.

Education

- 2010 Ph.D., Environmental Systems Engineering, Kassel University
- 2005 Diploma, Geoecology, University of Bayreuth, Majors: Ecological Modeling, Agricultural Ecology, Minors: Hydrogeology, Object Oriented Programming

Current Positions

Assistant Professor, Department of Geography and Environmental Sustainability, University of Oklahoma

Frequently Taught Advanced Programs Courses

- GIS 5013 Introduction to Spatial Thinking and Computer Mapping
- GEOG 6220 Seminar in Human Geography

Major Areas of Teaching and Research Interest

Areas of Teaching:

- Computer Mapping and Geographic Information Systems
- Spatial Programming and Data Analytics
- Integrated Modeling

Research Interest:

- Land Systems Science
- Modeling and Simulation
- Alternative Futures Analysis
- Spatio-Temporal Analysis

Representative Publications and Presentations

- Koch, J.; Schaldach, R.; Köchy, M. (2008) *Modeling the impacts of grazing land management on land-use change for the Jordan River region*. Global and Planetary Change 64(3-4), 177-187.
- Lapola, D.M.; Schaldach, R.; Alcamo, J.; Bondeau, A.; Koch, J.; Koelking, C.; Priess, J.A. (2010) *Indirect land-use changes can overcome carbon savings from biofuels in Brazil*. Proceedings of the National Academy of Sciences of the United States of America (PNAS) 107, 3388-3393.
- Spies, T.A.; White, E.M.; Kline, J.D.; Fischer, P.A.; Ager, A.A.; Bolte, J.P.; Koch, J.; Platt, E.K.; Olsen, C.S.; Jacobs, D.; Shindler, B.; Steen-Adams, M.; Hammer, R. (2014) *Examining fire-prone forest landscapes as coupled human and natural systems*. Ecology & Society 19(3):9.
- Dorning, M.A.; Koch, J.; Shoemaker, D.A.; Meentemeyer, R.K. (2015) *Simulating urbanization scenarios reveals tradeoffs between conservation planning strategies*. Landscape and Urban Planning 136:28-39.

Major Professional Affiliations

- South Central Climate Science Center
- AAG – Association of American Geographers
- AGU – American Geophysical Union
- iEMSs – The International Environmental Modelling and Software Society
- ISEM – The International Society for Ecological Modeling
- US-IALE – US Regional Association of the International Association for Landscape Ecology