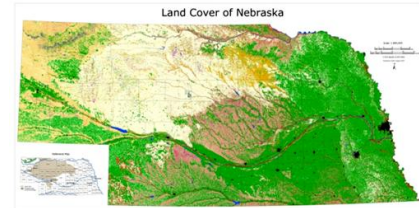
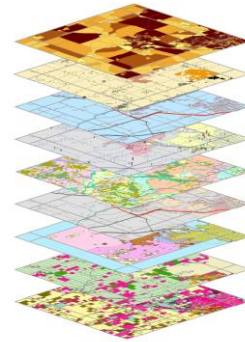
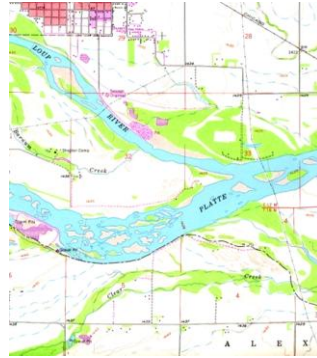
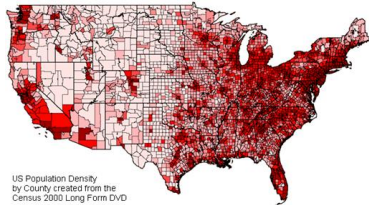
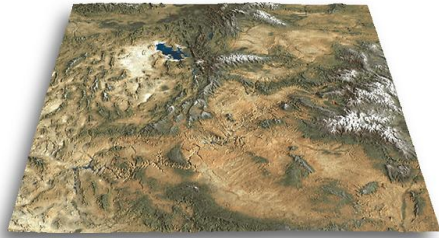


*Syllabus*  
Spring 2012

# GEOG 217: Mapping Science in the

## 21<sup>st</sup> Century



**Lectures:** 9:00-9:50 MWF, 024 Hardin Hall

**Laboratory:** 142 Hardin Hall

**Instructor:** Matthew R. Cartlidge

**Office:** 321 Hardin Hall; **Telephone:** 472-2765

**Email:** mcartlidge@unlnotes.unl.edu (please feel free to correspond with me using e-mail!)

**Office hours:** By appointment

**Course synopsis:** The course covers fundamentals of thematic mapping, topographic map analysis, interpretation of aerial and satellite images and basic principles of geographic information systems (GIS). Geography 217 provides the background needed to take advanced courses in cartography (GEOG 317), remote sensing (GEOG 418) and/or GIS (GEOG 312, 412).

Topics to be covered will include:

- Introduction to maps and map interpretation
  - topographic and thematic mapping (e.g., choropleth, isopleth, dot)
  - map scale, symbology; major projections and coordinate systems
  - topographic map interpretation
  - digital maps - DRGs, DEMS
- Introduction to GIS
  - Remote sensing and image interpretation (elements of air photo interpretation and digital image analysis)
- Web-based mapping (e.g., IMS, The National Map)

**Recommended textbook:** Kimerling, A. J., Aileen R. Buckley, Phillip C. Muehrcke and Juliana O. Muehrcke. 2009. *Map Use: Reading and Analysis*, ESRI Press, Redlands, CA.

**Readings:** There will be many handouts provided during the semester. All students will be responsible for reading this material. **Readings will be covered on exams.**

**Materials:** You will find that a hand calculator is useful in some labs. All other materials will be provided.



So, Where are we exactly?

**Grading:** Grading will be based upon two one-hour exams and a final exam, and completion of **all** assigned laboratory and homework projects (see below). **Final grades** are earned, not given. They will follow the 90, 80, 70,...etc. cutoffs. Grades on bubble will be rounded up (xx .45). Pluses will be assigned to letter grades but not minuses. Final grades will be based on the following distribution:

Two one-hour exams	30%
Final exam	20%
Labs and other assignments/quizzes	50%

**Note: To do well in this course, you need to perform well on all facets of the course! *Successful completion of all exams, homework and lab assignments (handed in on time!) is mandatory in order to earn a course grade of “D” or higher!***

## Labs and Homework

The laboratory exercises will provide you with a hands-on introduction to mapping science. Labs will sometimes be complemented by homework assignments. Most of the labs in this class are instructional (i.e., “guided”), not evaluative. Labs that involve computing will be conducted in room 142 Hardin Hall. Note that material covered in labs and “homework” may be included on exams. Homework may involve completing lab assignments, preparing material for a class discussion or writing a short paper. Specific instructions will be given when the assignment is made. **It is recommended that you keep a paper or electronic backup copy of your answers to labs and homework.**

**Your absence from a lab (missing a lab) will constitute a significant problem since access to lab facilities and instructor’s time are limited. Persons who have excused absences will be required to complete the lab on their own within one week of the assignment. Late labs will be downgraded by one letter grade for each week late. Successful completion of all lab and homework assignments (on time) is mandatory in order to earn a course grade of D or higher!!**

## TENTATIVE SCHEDULE

**Recommended readings in Kimerling are noted in parentheses**

**Note: You will find copies of all handouts and reading assignments on Blackboard. You are responsible for reading all handouts provided in class as well as those assigned below. Additional readings will be added to those shown here.**

Week 1	Course overview; Introduction to maps and mapping (Ch. 1-2) Reading assignment: <i>125 Years of Topographic Mapping at USGS</i> (Blackboard)
Week 1 cont'd	Mapping: Basic concepts and terminology; Lab 1: USGS topographic maps Reading assignment: <a href="http://erg.usgs.gov/isb/pubs/booklets/usgsmaps/usgsmaps.html">http://erg.usgs.gov/isb/pubs/booklets/usgsmaps/usgsmaps.html</a> and <a href="http://topomaps.usgs.gov/">http://topomaps.usgs.gov/</a> Also read the fact sheets on U.S. Topo, Topographic Map Symbols, Map Scales, Map Margin Information and National Map Accuracy Standards (posted on Blackboard)
Week 2	Lab 1: USGS topographic maps (No Classes 1/16 in honor of MLK) (Ch 16)
Week 2 cont'd	Topographic map interpretation; Lab 2: Interpreting Topographic Maps
Week 3	Lab 2: Interpreting Topographic Maps
Week 3 cont'd	Map coordinate systems and projections (Ch 3-4) Reading assignment: read write-ups on Latitude and Longitude, UTM Coordinate System, Public Land Survey System and Map Projections (posted on Blackboard)
Week 4	Lab 3: Projections and Coordinate systems
Week 4 cont'd	Lab 4: Intro to Digital Geospatial Data – Digital Elevation Models and Digital Raster Graphics Reading assignment: read <a href="http://topomaps.usgs.gov/drg/drg_overview.html">http://topomaps.usgs.gov/drg/drg_overview.html</a> as well as the brief write- up on DRGs and DEMs and the National Elevation Dataset fact sheet posted on Blackboard
Week 5	Lab 5: Introduction to Topographic Analysis with Digital Elevation Models
Week 5 cont'd	<i>Catch-up day</i>
Week 6	<b>First exam</b>
Week 6 cont'd	Thematic Mapping (Ch 7-8)
Week 7	Lab 6: Thematic Mapping with ArcGIS
Week 7 cont'd	Introduction to remote sensing/aerial photography (Ch 9)
Week 8	Lab 7: Introduction to Aerial Photography
Week 8 cont'd	Lab 8: Interpretation of Aerial Photography – Part II
Week 9	Lab 9: Interpretation of Aerial Photography – Part III
Week 9 cont'd	Lab 10:- Digital Aerial Photography
Week 10	Remote Sensing

- Week 10 cont'd **Second Exam**
- Week 11 **SPRING BREAK**
- Week 12 Lab 11: Digital Image Analysis with ERDAS/Imagine
- Week 12 Cont'd Remote sensing (continued)
- Week 13 Lab 12: Unsupervised Classification of Landsat Imagery
- Week 13 cont'd Introduction to Geographic Information Systems (GIS) (Ch 19-21)
- Week 14 Lab 13: Data analysis with ArcGIS
- Week 14 cont'd *Catch-up day*
- Week 15 Mapping on the internet
- Week 15 cont'd Lab 14: Exploring Internet mapping sites
- Week 16 *Review session(s)*
- May 2 (Wed.) **FINAL EXAM** (10:00 a.m. – 12:00 p.m.)