Course Description:
This class focuses on the use of Geographic Information Systems. Emphasis will be placed on Geographic Information Systems theory. Topics to be covered include history of GIS, projections, graphic portrayal of spatial information, digital data structures, data acquisition, software and hardware for GIS, spatial analysis functions, and an overview Geographic Information Systems (GIS).

Course Objectives:
1. Introduce students to the field of Geographic Information Systems
2. Review the history of Geographic Information Systems
3. Become familiar with projection systems
4. Become familiar with digital data types and models
5. Provide students with an overview Geographic Information System theory
6. Introduce students to spatial operations

Exams:
Two objective exams will be administered (100 pts. each)
   MIDTERM
   FINAL
Two Quizzes will be administered (25 pts each)
One applied Quiz will be administered (25 pts)
The final has an applied component (20 pts)

Laboratory exercises:
Approximately 8 lab exercises will be given (Generally 5-10 pts. each)
One applied lab project:
   • The Grand Canyon Lab 30 pts.
Laboratory edict:
Please inform the lab manager or supervisor of any technical problems with the lab. This is the lab manager’s expertise and responsibility. I will, however, ensure that technical issues that impact students’ coursework in the lab are resolved as quickly as possible.

Required Materials:
- Getting to Know ArcGIS Desktop by Tim Ormsby, Eileen Napoleon, Robert Burke, Carolyn Groess, and Laura Feaster. NOTE: You must have the 3rd edition for ArcGIS 10 of this text.

Attendance Policy:
Regular attendance is required. Consistent non-attendance during the first 4 weeks of class will result in the student being withdrawn by the instructor. The responsibility of formally withdrawing from the class after the first 4 weeks is the student’s. Chronic non-attendance after the first four weeks may cause a reduction in the letter grade that was earned or a grade of “F” to be awarded.

Course Grade:
Your final grade for the course will be based on the number of points you accumulate during the semester. The course objectives and associated points are detailed elsewhere in this syllabus. Students who do not formally withdraw and do not complete minimum course requirements will earn a failing grade. Incompletes are at the instructor’s discretion and only granted due to extenuating circumstances.

Late Assignments:
No late work will be accepted. The instructor is aware that technical problems do arise for time to time; therefore, the lowest lab score will be dropped.

Make-ups:
Making up exams is solely at the discretion of the instructor with written documentation expected to substantiate the cause of an unexcused absence.

Cheating:
Collaboration with your fellow students is encouraged; however, you are expected to complete all of the labs individually. Students found cheating on exams or representing the work of others as their own will be given an “F” grade for the exam/assignment and for the course. Students caught cheating will also be introduced to Lisa Root the Coordinator of University Student Discipline.

Incomplete:
A grade of “I” will be awarded when, due to unanticipated and extenuating personal circumstances, the student cannot complete the class. An “I” grade will only be awarded at the written request of the student, given to the instructor prior to the beginning of the final exam week. The instructor has the final determination in awarding an “I” grade.
## Class Schedule

The class schedule and assignments are subject to change at the discretion of the instructor.

<table>
<thead>
<tr>
<th>Dates</th>
<th>Section 01</th>
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| Week One  | Introduction  
            History of GIS  
            What is a GIS  
            In class Raster Lab  
            Read Demers Chapter one  
            Photo Flashcard – Due Thursday |
| Week Two  | GIS Data Models – Raster Vs. Vector  
            Read Demers Chapter Four  
            Read ArcGIS Chapters One – Four  
            Lab - ArcGIS Exercises 3a – 3c and 4a – 4c  
            Raster Lab Due Tuesday  
            Lab - Chapter Three (3C step 15) & Chapter Four (4C step 18) Due Thursday |
| Week Three| GIS Data Models – Raster Vs. Vector  
            Chapters Five and Six – ArcGIS Exercises – Large format printing and layouts  
            Lab – Chapters 5 & 6 – Due Thursday |
| Week Four | GIS Data Models – Raster Vs. Vector  
            Chico Labs  
            Read Demers Chapter Three |
| Week Five | Earth as a Sphere  
            Ellipsoid Models and Datums  
            Projections  
            Chapter 13 ArcGIS Exercises - Projections  
            Chico Lab – Ex #2 – Due Thursday |
| Week Six  | Quiz #1  
            Precision Vs Accuracy  
            Feature Types  
            Midterm Review  
            Read Demers Chapter Six and Seven |
| Week Seven| Cartographic Basics  
            Properties of Spatial Data  
            Read Demers Chapter Two and Fourteen  
            Chapter Seven GTK ArcGIS - Classification and Labeling  
            Lab – Chapter Thirteen (supplement) - Due Thursday |
| Week Eight| Midterm  
            Applied Quiz |
| Week Nine | Spring Break |
| Week Ten  | GIS Analysis Functions  
            Read Demers Chapter Eight  
            Chapter Eight ArcGIS exercise – Querying Data |
| Week Eleven| GIS Analysis Functions: Integrated Analysis of Spatial and Attribute Data  
            Read Demers Chapter Nine  
            Chapter Ten – ArcGIS exercises – Spatial Selection  
            Lab - Chapter Eight (supplement) – Thursday |
| Week Twelve | GIS Analysis Functions: Integrated Analysis of Spatial and Attribute Data  
*Read Demers Chapter Twelve*  
*Chapters 11 & 12 – ArcGIS exercises – Spatial Analysis*  
*Lab – Chapter Ten (supplement) – Due Thursday* |
| Week Thirteen | GIS Analysis Functions: Integrated Analysis of Spatial and Attribute Data  
*Read Demers Chapter Ten* |
| Week Fourteen | GIS Analysis Functions: Integrated Analysis of Spatial and Attribute Data  
*Read Demers Chapter Eleven and Chapter Thirteen*  
*Lab - Chapters 11 and 12 (supplement) – Due Thursday*  
*Quiz #2 – Thursday* |
| Week Fifteen | Data Quality  
*Applied Lab Project – The Grand Canyon* |
| Week Sixteen | GIS Package Functionality  
Selecting a GIS  
*Read Demers Chapter Fifteen*  
*Applied Lab Project*  
*Applied Lab Project - Due Thursday*  
Final Review |
| Week Seventeen Finals Week | **Final Exam** |

**Additional Resources:**

**Cartographic Links:**

History of cartography and GIS:  
National Atlas Home Page  
http://nationalatlas.gov/  
Zillow Real Estate Appraiser  
http://www.zillow.com/  
EPA Enviro-Facts Pages  
http://www.epa.gov/enviro/  

**Data Links:**

Natural Earth Data  
http://www.naturalearthdata.com/  
California Spatial Data Library  
http://www.gis.ca.gov/  
USGS Home Page  
http://www.usgs.gov/  
USGS Data Center  
http://eros.usgs.gov/  
GIS Data Depot  
http://data.geocomm.com/  
USGS 1km World Data  
USGS NED data  
http://seamless.usgs.gov/  

**Links of Links:**

http://www.cgrer.uiowa.edu/servers/servers_references.html#interact