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 10 lab exercises will be given (Generally 10 pts. each)
Two applied lab projects
   1. South America Cartographic Lab 20 pts.
   2. The Grand Canyon Lab 20 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, Caroyln Groess, and Laura Feaster. **NOTE**: You must have the THIRD edition of this text which has been updated for ArcGIS Version 10.

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 Consistent non-attendance during the first 4 weeks of class will result in the student being withdrawn by the instructor.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 in the office of Student Judicial Affairs.

Incomplete:
A grade of “I” will be awarded when, due to unanticipated and extenuating personal circumstances, the student can not 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.
<table>
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<tr>
<th>Dates</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  
             Chico labs  
             Read Demers Chapter Five |
| Week Four  | Chico Labs  
             Read Demers Chapter Three  
             Chapters Five and Six – ArcGIS Exercises – Large format printing and layouts  
             **Chico Labs – Ex #1 and #2 – Due Thursday** |
| Week Five  | Earth as a Sphere  
             Ellipsoid Models and Datums  
             Projections  
             **Quiz #1 Tuesday**  
             Chapter 13 ArcGIS Exercises - Projections  
             Lab – Chapters 5 & 6 – Due Thursday |
| Week Six   | Precision Vs Accuracy  
             Feature Types  
             Midterm Review  
             Read Demers Chapter Six and Seven  
             Lab – Chapter Thirteen (13B step 20) – Due Thursday |
| Week Seven | **Midterm**  
             **Applied Quiz** |
| Week Eight | Cartographic Basics  
             Properties of Spatial Data  
             Read Demers Chapter Two and Fourteen  
             Chapter Seven GTK ArcGIS – Classification and Labeling  
             **Applied Lab #1 – South America Cartographic – Due Thursday** |
| Week Nine  | **Spring Break** |
| Week Ten   | GIS Analysis Functions  
             Read Demers Chapter Eight  
             Chapter Eight ArcGIS exercise – Querying Data  
             Lab - Chapter Eight (supplement) – Thursday |
| Week Eleven| GIS Analysis Functions: Integrated Analysis of Spatial and Attribute Data  
             Read Demers Chapter Nine  
             Chapter Ten – ArcGIS exercises – Spatial Selection  
             Lab – Chapter Ten (supplement) – Due Thursday |
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| Week Twelve   | GIS Analysis Functions: Integrated Analysis of Spatial and Attribute Data  
|               | Read Demers Chapter Twelve                                           |
|               | Chapters 11 & 12 – ArcGIS exercises – Spatial Analysis               |
| Week Thirteen | GIS Analysis Functions: Integrated Analysis of Spatial and Attribute Data  
|               | Read Demers Chapter Ten                                             |
|               | Lab - Chapters 11 and 12 (supplement) – Due Tuesday                  |
| Week Fourteen | GIS Analysis Functions: Integrated Analysis of Spatial and Attribute Data  
|               | Read Demers Chapter Eleven and Chapter Thirteen                      |
|               | Lab – Chapter Twenty - Due Thursday                                   |
|               | Quiz #2 – Thursday                                                   |
| Week Fifteen  | Data Quality                                                          |
|               | Applied Lab Project #2                                                |
| Week Sixteen  | GIS Package Functionality                                             |
|               | Selecting a GIS                                                       |
|               | Read Demers Chapter Fifteen                                           |
|               | Applied Lab Project #2                                                |
|               | Applied Lab Project #2 Due Thursday                                   |
|               | Final Review                                                          |
| Week Seventeen| **Final Exam**                                                        |

### Additional Resources:

**Cartographic Links:**
- EPA Enviro-Facts Pages: [http://www.epa.gov/enviro/](http://www.epa.gov/enviro/)

**Data Links:**
- Natural Earth Data: [http://www.naturalearthdata.com/](http://www.naturalearthdata.com/)
- California Spatial Data Library: [http://www.gis.ca.gov/](http://www.gis.ca.gov/)

**Links of Links:**
- [http://www.cgrer.uiowa.edu/servers/servers_references.html#interact](http://www.cgrer.uiowa.edu/servers/servers_references.html#interact)