Geomapping Fundamentals
GEOL 3371-020, Spr.18
TR, 12:30-1:45p
Room: CAV-031

Professor: James W. Ward, Ph.D., P.G.
Office: VIN 124
Phone: 486.6767
Dept. office: 942.2242
E-mail: james.ward@angelo.edu

Office hours: Monday, Wednesday, Friday 9:15-10:00a, Tuesday &Thursday 11:00-12:15,
Monday 1:00-3:00. Or contact me to set up an alternate time to meet

Course overview: A geographic information system (GIS) is a computerized information
system that is designed to integrate various types of spatial and non-spatial data for a particular
area and application. It is a “thematic” map database in that it allows for various “themes”, or
layers of data types, to be superimposed upon each other. The resultant thematic map can then
be printed, published to the internet, and/or analyzed for specific, generally spatial related,
queries.

This class is designed to introduce the fundamental concepts of maps and GIS, and to
provide the student with experience in utilizing one of the standard desktop GIS packages:
ESRI’s ArcGIS. The class is “interdisciplinary” – the application of a GIS is only limited by the
imagination of the individual. Typical applications of a GIS include: earth science, range management,
ecology, hydrology, geography/urban planning, business management/trend and market analysis,
sociology, archeology, and law enforcement.

Course Materials:
The required texts for this course are:


Expected Learning Outcomes/Objectives: Upon completion of this course, students will apply critical
reasoning and problem solving skills to: 1. Understand the basic concepts of the GIS system; 2. Create
ArcMap projects using readily available data types; 3. Create vector GIS data from GPS and from
onscreen editing; 4. Manipulate raster based GIS data; 5. Perform spatial analysis using geoprocessing
skills; 6. Prepare output of these data and analyses; and 7. Perform any other GIS related functions needed
to complete the term project.
**Grading:** Grading will be based upon: Ten in class/out of class projects, one midterm, one final exam, and a term Digital Atlas project.

The final point breakdown will be:

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<thead>
<tr>
<th></th>
<th>Points each</th>
<th>#</th>
<th>%</th>
<th>Final Grade</th>
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<tbody>
<tr>
<td>Projects</td>
<td>100</td>
<td>10</td>
<td>50</td>
<td></td>
</tr>
<tr>
<td>Midterm</td>
<td>100</td>
<td>1</td>
<td>15</td>
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<tr>
<td>Final</td>
<td>100</td>
<td>1</td>
<td>15</td>
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</tr>
<tr>
<td>Digital Atlas Project</td>
<td>100</td>
<td>1</td>
<td>20</td>
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Late penalties will be 10% per day on assignments if unexcused. Overall grades will be as follows: 90 and above = A; 80–89 = B; 70–79 = C; 60–69 = D; below 60 = F

**Attendance Policy:** You are expected to attend every class meeting. We will discuss many topics that are not in the textbook. If you must miss a class, contact me if you need help in obtaining assignments or notes. Although showing up for class is not directly part of your grade (see Grading section above), you will find it extremely difficult to pass this class if you do not attend regularly and participate!

**Courses Webpage:** http://blackboard.angelo.edu contains class outlines, web links to scenic areas mentioned in class, practice problems, and your official grades.

**Cell Phones and Other Electronic Devices:** Cell phones must be turned off while in class. In addition, it is unacceptable to engage in text messaging during the class meeting time. If you are using any electronic devices other than a calculator (not your phone in calculator mode), a voice recorder, or a laptop computer to take notes, you may be asked by the instructor to leave the classroom for the remainder of the class period. The use of any electronic device not authorized by the instructor during a test may result in the forfeiture of your grade for that test. All electronic devices should be turned off and stored out of sight during tests.

**ASU Honor Code:** Angelo State University expects its students to maintain complete honesty and integrity in their academic pursuits. Students are responsible for understanding the Academic Honor Code, which is contained in both print and web versions of the Student Handbook.

**Persons with Disabilities:** Persons with disabilities which may warrant academic accommodations must contact the Student Life Office, Room 112 University Center, in order to request such accommodations prior to any accommodations being implemented. You are encouraged to make this request early in the semester so that appropriate arrangements can be made.

**Religious Holy Day:** A student who intends to observe a religious holy day should make that intention known in writing to the instructor prior to the absence. A student who is absent from classes for the observance of a religious holy day shall be allowed to take an examination or complete an assignment scheduled for that day within a reasonable time after the absence.
<table>
<thead>
<tr>
<th>Schedule overview</th>
<th>Lecture/Discussion topics</th>
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<tbody>
<tr>
<td>I:</td>
<td>Introduction to GIS, examples of projects, CH 1</td>
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<tr>
<td>1/16-19</td>
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</tbody>
</table>
| II:               | GIS data: models, coordinate systems, Ch 2  
| 1/22-26           | Details of our software: The ESRI ArcGIS software |
| III:              | Classifying data, displaying rasters, "how to" in ArcGIS, Ch3-4  
| 1/29-2/2          | Types of maps, types of data  
|                   | Elements of map design, symbology, coordinate systems, grids  
|                   | **Project 1 Due 2/2** |
| IV:               | Working w/ digital spatial data in GIS, CH5  
| 2/5-9             | And spatial analysis, CH 6  
|                   | **Project 2 Due, 2/9** |
| V:                | Making a map w/ GIS, CH7  
| 2/12-16           | Dealing with tables: attribute vs stand alone and queries  
|                   | **Project 3 Due 2/16** |
| VI:               | Queries overview, attribute queries, spatial queries  
| 2/19-23           | Remote sensing with GIS CH 9-11  
|                   | **Project 4 Due, 2/23** |
| VII:              | Evaluating environments from space, CH 12  
| 3/26-3/2          | Geodatabase overviews and Digital landscaping, CH 14  
|                   | **Project 5 Due 3/2** |
| VIII:             | Developing 3-d models  
| 3/5-9             | Review for Midterm  
|                   | **Midterm Exam** |
| IX:               | Spring Break, no class |
| 3/12-16           |                           |
| X:                | Begin developing Digital Atlas Project  
| 3/19-23           | **Project 6 Due 3/23** |
| XI:               | Coordinate systems, concepts, spheroids and datum, projections  
| 3/26-30           | **Project 7 Due, 3/30** |
| XII:              | Coordinate systems continued  
| 4/2-6             | **Project 8 Due: 4/6** |
| XIII:             | Basic editing, snapping, adjacent polygons, "how to" in ArcGIS  
| 4/9-13            | More editing, topology, buffering, complex polygon topology,  
|                   | **Project 9 Due 4/13** |
| XIV:              | Geodatabase overview  
| 4/16-20           | **Project 10 Due 4/20** |
| XV:               | student presentations on atlas  
| 4/23-27           |                           |
| XVI               | student presentations on atlas/Turn in Digital Atlas 5/6  
| 4/30-5-6         |                           |
| XVII              | **Comprehensive FINAL EXAM 5/10 at 10:30a-12:30p**  
| 5/10              |                           |