I. INTRODUCTORY

Objectives: To develop a basic understanding of geographic information system, global positioning system, and remote sensing technologies, particularly as they relate to natural resource management.

<table>
<thead>
<tr>
<th>LECTURE</th>
<th>LAB</th>
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<tbody>
<tr>
<td>Class time: Monday, Wednesday 11:30-12:20 pm</td>
<td>Monday 1:30-3:20 pm</td>
</tr>
<tr>
<td>Classroom: 009 Ag Hall</td>
<td>266 Ag Hall</td>
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FINAL EXAM DATE: 10:00-11:50 a.m. MONDAY December 7, 2015

Prerequisites: MATH 1613 - Trigonometry.

II. INSTRUCTOR

Mr. Mark Gregory
Office: 560 Ag Hall, Telephone: 744-9603
Email: mark.gregory@okstate.edu

Office Hours: 8:00 – 10:00 a.m. Monday – Thursday. I am generally available every day between 8:00 a.m. and 5:00 p.m. (unless teaching), although the best times to find me in my office would be in the mornings. Please feel free to visit my office or contact me to set up a specific appointment any time you wish to discuss this course or any other matter with which I might help.

III. STYLE/MODE OF TEACHING

Lecture times will involve lecturing and demonstrating various technologies and their applications. Extensive use will be made of PowerPoint presentations, Internet web applications, and software demonstrations. Class participation will be encouraged by posing questions to the students. In addition, discussion and questions by the students is highly encouraged.

Lab sessions will involve a minimum of lecture by the instructor. Students will be given a laboratory assignment that utilizes the principles discussed in lecture and techniques covered in previous assignments and exercises. Students are free to work on lab exercises on their own pace during the laboratory session.

IV. TEXT AND CLASS MATERIALS

A. Getting to Know ArcGIS desktop, (2013), by Law & Collins

B. In addition, the class will utilize an extensive set of handouts and assigned readings.

V. TOPICAL OUTLINE

Remote Sensing
  Overview/Principles
  Aerial Photography
Photo interpretation
Earth Observation Satellites
   Landsat, SPOT, miscellaneous Satellite Programs
Imagery versus Digital Image Processing

Geographic Information Systems
   GIS Overview
   Hardware vs. Software
   Data Structure - Raster vs. Vector
   Data Sources/Acquisition
   Data Analysis
      Landuse/Landcover Mapping
      Suitability Analysis
      Change Detection
   Digital Elevation Data
ArcGIS
   ArcMap\ArcCatalog
   ArcToolbox
Data Resolution - Precision/Accuracy
Data Display/Map Presentation

Global Positioning
   Principles and Overview
   Data Dictionary
   Data Collection
   Differential Processing

VI. HOMEWORK, LAB EXERCISES and EXAMINATION SCHEDULE*

Mon., Aug. 17                   Lab 1: Stereo viewing
Mon., Aug. 24                   Homework 1: Getting to know GIS – Chapters 1 & 2, and
                                 Interacting with Maps – Exercises 3a – 3d
                                 Lab 2: Remote Sensing
Mon., Aug. 31                   Homework 2: Interacting with Data – Exercises 4a – 4c
                                 Lab 3: Maps and Scale
Mon., Sept. 7                   LABOR DAY, NO CLASS, UNIVERSITY HOLIDAY
Mon., Sept. 14                  Homework 3: Symbolizing Features – Exercises 7a – 7d
                                 Lab 4: Map Presentation 1
Mon., Sept. 21                  Homework 4: Classifying Features – Exercise 8a – 8c and
                                 Making Maps for Presentation: Exercises 10a – 10d
                                 Lab 5: Map Presentation 2

Wednesday, September 23

Mon., Sept. 28                  Homework 5: Exploring Online Resources – Exercises 5a – 5c
                                 Lab 6: GIS Basics and GIS Data Sources
Mon., Oct. 5                     Homework 6: Joining and Relating Data – Exercises 16a – 16c
                                 Lab 7: GPS Data Dictionary
Fri., Oct. 9  

Student’s Fall Break

Mon., Oct. 12  
Homework 7: Principles of GPS – Geographer’s Craft  
Lab 8: GPS field data Collection, Download, & Differential Correction

Mon., Oct. 19  
Homework 8: Labeling Features – Exercises 9a – 9d and Querying Data – Exercises 15a – 15c  
Lab 9: Map Labels, Selection and Reports

Mon., Oct. 26  
Homework 9: Selecting Features by Location – Exercises 17a – 17b  
Lab 10: Select by Location

Wednesday, October 28  
Test 2

Mon., Nov. 2  
Homework 10: Preparing Data for Analysis – Exercises 18a – 18d  
Lab 11: Dissolve, Clip, Graphs, Export

Mon., Nov. 9  
Homework 11: Analyzing Spatial Data – Exercises 19a – 19d  
Lab 12: Buffers, Area and Length Calculation

Mon., Nov. 16  
Homework 12: Coordinate Systems & Projections – Exercises 6a – 6c  
Lab 13: Geo-referencing Images

Mon., Nov. 23  
Homework 13: Building Geodatabases – Exercises 11a – 11c and Creating features – Exercises 12a –12b  
Lab 14: On-Screen Digitizing

Wed., Nov. 25  
Student’s Thanksgiving Break

Monday – Friday, Nov. 30 – Dec. 4  
Pre-Finals Week

Mon., Nov. 30  
Homework 14: Editing Features & Attributes – Exercises 13a – 13c  
Lab 15: Sample scheme design and layout or Terrain Analysis

Monday, December 7, 10:00-11:50 a.m.  
FINAL EXAMINATION

* Topics and dates subject to change

VII. GRADING CRITERIA

FINAL GRADE:

Labs ................................................................. 20% of final grade  
Homework .................................................... 10% of final grade  
Two 1-hour exams (@ 22.5% each)......... 45% of final grade  
Final exam (comprehensive) ................. 25% of final grade

≥90% = A  
80-89% = B  
70-79% = C  
60-69% = D  
<60% = F

LABS: Completion of all lab exercises is required. All lab exercises are due by the end of the lab period in which the exercise was assigned. Any lab exercise submitted after
the end of the lab period of the due date is considered late and will result in a 10% reduction in the lab grade that would have otherwise been earned. An additional 10% reduction in the lab grade will take place for each lab period after the original due date.

ADDITIONAL PENALTY FOR UNEXCUSED ABSENCE FROM LABS: Reduction of Final Course Letter grade by ONE LETTER grade for each FOUR unexcused absences from lab. For example, a final course grade of “C” will be reduced to a “D” if the student has unexcused absences from 4 labs and to an “F” if the student has unexcused absences from 8 labs.

HOMEWORK: Homework will generally be assigned every week. Completion of the assigned homework will facilitate successful completion of the weekly laboratory exercises. Homework is due by the end of the class period on the due date of the assignment. Any homework submitted after the end the class on the due date is considered late and will result in a 10% reduction in the homework grade that would have otherwise been earned. An additional 10% reduction in the homework grade will take place for each lecture class period that the homework is turned in late from the assigned due date.

TESTS: There will be two tests during the semester plus a comprehensive final examination. "Hands on" laboratory related exercises may be a significant part of the questions on the tests.

Except for the Final Examination, NO CREDIT will be given for any assignment (lab, homework, test, etc.) turned in after 5 PM Dec. 4, 2015.

CLASS ATTENDANCE: Although no attendance roll will be kept for lecture periods, students are expected to attend every class meeting. It is particularly important to attend all labs since it is very difficult to make up material covered in lab (in addition, see the above policy on completion of lab exercises).

SPECIAL NEEDS: If you have a disability and need special accommodations of any nature, I will work with you and Student Disability Services, 315 Student Union, to provide reasonable accommodations so that you have a fair opportunity to perform successfully in this class. Please let me know about your disability and the accommodations you require by the end of the second week of class.

HONESTY AND ACADEMIC INTEGRITY: I recognize the learning that can often take place by working with other students in class and particular with laboratory assignments. As such I encourage you to interact with others, but I also expect the work you turn in to be your own work. Copies of other student’s work turned in as your own will be given a zero (0) grade. Any student caught cheating or guilty of plagiarism will be subject to actions under OSU’s academic integrity policy.

VIII. UNIVERSITY POLICIES

See attached Oklahoma State University Syllabus Attachment Fall 2015 and/or consult the Academic Affairs office at 101 Whitehurst Hall, Stillwater, OK 74078; P (405)744-5627 or

https://academicaffairs.okstate.edu/sites/default/files/Fall%202015%20Syllabus.pdf