**NR 18-Aerial Photo Interpretation and Geographic Information Systems**

Reedley College- Fall 2009 CR#50039

Lecture Mon. and Wed. 8:00 am to 9:50 am.

Lab Mon. and Wed. 10:00 am to 12:50 pm.

**Instructor:** Ian Stone

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Office Hours: Tues. 11:00 am to 12:00 noon and 3:00 to 4:00 pm, Thurs. 1:00 to 2:00 pm.

 Other time by appointment

**Course Outcomes:**

1. Construct topographic or planimetric maps using advanced surveying techniques (e.g. global position system (GPS), geographic information systems (GIS), etc.)
2. Measure natural features and import pertinent information into a GIS database
3. Evaluate and design aerial photograph flight lines with respect to scales, focal length, air speed, flight height, etc.
4. Integrate and apply GIS and GPS technologies to answer specific research questions.

**Course Objectives:**

1. Collect data (e.g. elevation, legal description, latitude and longitude, UTM, etc.) using advanced surveying techniques (e.g. global position system (GPS), geographic information systems (GIS), etc.)
2. Locate geographic natural features through maps or GPS and import descriptions into a GIS.
3. Demonstrate an understanding of the theory, operation, and application of GIS technology.
4. Design and implement a GIS project through team or individual presentations.

**Attendance and Drop Policy:**

Class attendance is essential for students to be successful in any course, and this is especially true for compressed schedule courses. One missed class period in this course is equivalent to two or three missed class periods in a standard course. Therefore, it is essential that students attend all lectures and labs and labs; however, students are not graded on attendance. Due to the limited number of seats in the class, and the high demand, students who miss the first class meeting will be promptly dropped. Students must stay in class for the entire period to be counted as present. Students absent from three or more class meetings (lecture or lab) without a recognized excuse will be dropped from the course.

It is a student’s responsibility to drop the course if they no longer wish to be enrolled in the course. Failure to do so could result in a student receiving a failing grade in the course or being dropped by the instructor for failure to attend.

The following dates are important to be aware of

10/25 last day to add

1026 last day to drop without a drop grade

11/15 last day to drop with a drop grade

**Absence Policy**

The only excused absences that will be recognized are personal illness, medical emergency, family emergencies, a death in the immediate family (parent, sibling, grandparent), and professional development (i.e. professional meetings, job interviews). For these excuses to be recognized students must provide appropriate documentation. Personal illness and medical emergencies requires verification by a physician (doctor’s excuse) or the college nurse. Medical issues are private, and if a student wishes he or she can provide documentation of the illness to the college nurse and have the nurse send verification to the instructor to assure medical issues remain private. For family emergency students should provide some documentation from their immediate family detailing the emergency and why the student should be excused. For a death in the immediate family students should provide the instructor with a copy of the obituary. For professional development students must provide documentation that they attended the event (for example a letter from an advisor, e-mail confirming the job interview, etc.) Recognition of the excuse is the decision of the instructor and will be based on the documentation provided. Failure to provide appropriate documentation will result in the absence being considered unexcused.

In the event that a student will be absent for an extended period of time (more than one class meeting) due to illness or similar issues must notify the instructor immediately. An extended absence in compressed schedule courses can severely impact a student’s performance in the course. Students who will have an extended absence should seek guidance from the instructor as to whether they should continue in the course or drop.

**Classroom Policies and Essential Information**

Academic Honesty

Cheating and plagiarism are serious offences and will not be tolerated. Because cheating, plagiarism, and collusion in dishonest activities erode the integrity of the college, each student is expected to exert an entirely honest effort in all academic endeavors. Academic dishonesty in any form is a very serious offense and will incur serious consequences.

**Cheating** is the act or attempted act of taking an examination or performing an assigned, evaluated task in a fraudulent or deceptive manner, such as having improper access to answers, in an attempt to gain an unearned academic advantage. Cheating may include, but is not limited to, copying from another’s work, supplying one’s work to another, giving or receiving copies of examinations without an instructor’s permission, using or displaying notes or devices inappropriate to the conditions of the examination, allowing someone other than the officially enrolled student to represent the student, or failing to disclose research results completely.

**Plagiarism** is a specific form of cheating: the use of another’s words or ideas without identifying them as such or giving credit to the source. Plagiarism may include, but is not limited to, failing to provide complete citations and references for all work that draws on the ideas, words, or work of others, failing to identify the contributors to work done in collaboration, submitting duplicate work to be evaluated in different courses without the knowledge and consent of the instructors involved, or failing to observe computer security systems and software copyrights.

Any student found to have violated academic honesty standards on an assignment, quiz, or exam will **receive immediate sanctions.** Sanction can include a failing grade on the assignment or in the course at the discretion of the instructor. Student violating academic honesty standard may also be turned over to the Vice President of Student Services for further sanctions.

Classroom Conduct

The objective of this course is for students to learn, and accomplishing this requires a structured environment. Students must remain respectful of their fellow students and the instructor at all times. Disruptive behavior of any sort will not be tolerated. Students engaging in disruptive behavior such as loud outbursts, obscene gestures or language, harassment or belittlement of fellow students or the instructor, or any other offensive and disruptive conduct will be told to stop the behavior immediately. If a student persists with the behavior they will be ejected from the class and reported to the Vice President of Student Services.

Students are not to use tobacco products (smoking or smokeless) during class or in the vans while traveling to and from labs. Students using tobacco products during class or in the vans will be told to put the product away and case using it. If students continue to violate this policy they may be ejected from class. Students are not to bring any food items into class during lecture. When working with laptops or in computer labs students are not to consume food or drink to prevent damage to the computers. During field trips students are expected to clean up after themselves in the van and remove all drink and food containers/wrappers from the van.

Students should take care to arrive to class on time. It is distracting and disruptive to other students to arrive late and interrupt the class. Students arriving more than 15 minutes late should wait until a class break before entering the room. If a student is habitually late for class they will be required to meet with the instructor concerning their tardiness. For field trips students must be on time. The bus will not wait for students who are late. Failure to arrive on time may result in the student missing the field lab, and the student will be considered absent.

Electronic Devices

All electronic devices such as cell phones, I Pods, etc. must be turned off during class. Students may use laptops during class to take notes, but the sound must be muted to prevent disturbing class. The use of any electronic devices other than a non-graphing calculator during quizzes or exams is not permitted. Students violating these policies will receive a reminder to turn off devices or silence their laptops.

Academic Accommodation

If you have a verified need for an academic accommodation or materials in alternate media (i.e., Braille, large print, electronic text, etc.) per the Americans with Disabilities Act (ADA) or Section 504 of the Rehabilitation Act, please contact me as soon as possible.

**Textbooks and References:**

Required: Ormsby, T. et. al. 2004. *Getting to Know ArcGIS Desktop for 9.3*, 1st ed. Redlands: ESRI Press

Recommended: Gottfried, K. 2003. *Geoinformation: Remote Sensing, Photogrametry, and Geographic Information Systems* Taylor and Francis New York, NY

Additional References:

Paine, D. and Kiser, J. *Aerial Photography and Image Interpretation* 2nd ed. John Wiley Press

Kiser, J. *Surveying for Forestry and the Natural Resources* 2nd ed. John Bell and Associates. Corvallis, OR

Avery , T.E and Burkhart, H.E. *Forest Measurements* 5th ed. McGraw Hill

**Required Materials**

Students will need the following materials to perform tasks in class.

A scientific calculator such as a TI 30 series or similar

An engineer’s tri rule

The data disk from *Getting to Know ArcGIS Desktop for 9.3*

**Grading Policy:**

Grades in this course will are based on a 10 point grading scale.

90-100% A

80-89% B

70-79% C

60-69% D

Final grades will be based on lab assignments, quizzes, exams, a map project, and a lab practicum. The weight of each grading component is as follows.

|  |  |  |
| --- | --- | --- |
| Item  | Total Points  | Percent of Final Grade |
| Exam 1 | 100 | 10% |
| Exam 2 | 100 | 10% |
| Final Exam  | 250 | 25% |
| Lab Practicum  | 150 | 15% |
| Map Project | 100 | 10% |
| Lab Assignments  | 200 | 20% |
| Pop Quizzes  | 100 | 10% |
| Total  | 1,000 | 100% |

Mid-term Exams:

Exams will cover material from both the lecture and lab. Exams are cumulative and will cover materials from previous exams as well as material presented after the previous exam. No makeup examinations will be given. Students will have the option to replace their lowest exam grade with the grade of their final exam, provided they score higher on the final exam. In the event that a student misses an exam, this will count as the lowest score and the final exam score will take the place of the missed exam. Student with a valid excuse who notifies the instructor of this excuse one week prior to the exam will have the option of taking the exam early. This courtesy does not extend to unexcused absences.

Final Exam

Attendance for the final exam is mandatory. If a student will be absent for the exam they may reschedule the exam time with prior notice (a minimum of 1 business day). Students failing to take the final exam will receive an automatic 0. The final exam is cumulative and will cover any and all topics presented in lectures and labs.

Quizzes

Students will be given unannounced quizzes at random during lectures. Quizzes will cover material and terms presented in the lecture and are designed to test student comprehension. A total of 10 quizzes worth 10 points each will be given during the semester.

Map Project

Students will be required to prepare a map project in the ARC View GIS program to solve a particular problem, objective, or questions of their choosing. Students may develop this project from an existing dataset available to them or they may develop an independent project and gather the associated geodata necessary to complete the project. Students must create a map from either a vector or raster dataset that displays information (for example where a certain soil series overlaps certain elevations) and that addresses the issue selected by the student. The map will be turned in a digital and hard copy format.

Lab Practicum

Students will be given a lab practicum which will require them to perform tasks that were taught in the course (for example: measure area using a dot grid, identify a point on an aerial photo, measure objects in ARC GIS, determine projections and coordinate system of a dataset, etc.). Students will be graded on the accuracy with which they perform these tasks. Completing the practicum is mandatory. Students with a valid excuse can reschedule the practicum with notice of at least one business day. Students who fail to take the practicum will receive a grade of 0.

**Tentative Class Schedule**

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| --- | --- |
| Lecture | Lab |
| Date  | Subject  | **Date**  | Subject  |
| 10/17 | Introduction, Math Skills Assessment, Basics of Aerial Photography  | **10/17** | Legal Land Descriptions, Basic Map and Aerial Photo Use and Measurements  |
| 10/19 | Principles of Scale and Measurements | **10/19** | Use of measurement tools, assessing hard features and structures |
| 10/24 | Determining Features, Vegetation, and Stand Boundaries  | **10/24** | Identification of Vegetation, Delineation of Stand Boundaries, Map Creation  |
| 10/26 | Aerial Flight Planning, Point Location  | **10/26** | Flight Planning, Point Location, Field Verification |
| 10/31 | Exam 1  | **10/31** | GPS Basics |
| 11/2 | Principles of GPS | **11/2** | Introduction to GPS |
| 11/7 | Geospatial Data  | **11/7** | Intro to ESRI ARC GIS 9.1 |
| 11/9 | Coordinate Systems and Map Projections  | **11/9** | Opening GIS Datasets, Setting Projections, Metadata |
| 11/14 | Principles of Vector Datasets  | **11/14** | Working with Digital Data  |
| 11/16 | Principles of Raster Datasets  | **11/16** | Digitizing  |
| 11/21 | Analyzing Feature Relationships  | **11/21** | Data Manipulation: Vector Data  |
| 11/23 | Analyzing Feature Relationships  | **11/23** | Data Manipulation: Raster Data |
| 11/28 | Exam 2 | **11/28** | Using Raster Calculator  |
| 11/30 | Data Presentation  | **11/30** | Converting Data  |
| 12/5 | Remote Sensing and Advanced Digital Imagery | **12/5** | Student Map Projects, Lab Practicum Preparation  |
| 12/7 | Review for Final  | **12/7** | Lab Practicum  |
| 12/12-12/16  | Final Exams Week  | **12/12-12/16**  | Finals, No Lab  |