**Reedley College – Agriculture and Natural Resources Department Course Syllabus**

NR 18 – Aerial Photo Interpretation (*Remote Sensing)* & Geographic Information Systems

Spring 2021 - CR#53164 - Room FEM 12

Lecture: Monday 7:45am to 9:50am

Lab: Monday 10:00am to 1:05pm

**Instructor:** Joshua Soderlund

Office: FEM 4G, Phone (559) 494-0300, Ext. 3260

Email: joshua.soderlund@reedleycollege.edu

Virtual Office Hours: M--1:15pm-2:15pm; W--12:30pm-2:00pm; TH--9:00am-11:00am; F--12:30pm-1:00pm; Other times by appointment or *if my office door is open then I am available to talk.*

(ZoomConference links will be emailed out weekly)

**VIRUS WARNING- BECAUSE OF SERIOUS RISK OF COVID 19 VIRUS TRANSMISSION ALL PERSONS ARE EXPECTED TO ABIDE BY SAFETY PROTOCOLS AT ALL TIMES THROUGHOUT THE SEMESTER**

**DO NOT ATTEND ON-CAMPUS CLASSES IF YOU ARE ILL, IF YOU HAVE SYMPTOMS OF INFECTION OR HAVE BEEN IN CONTACT WITH ANYONE BELIEVED TO BE INFECTED WITH COVID 19.**

You are **required to wear a cloth face covering** over your mouth and nose while in face-to-face portions of this class and while inside of school buildings, near the entry doors and when outside but near other people.  You are required to wear facial coverings during laboratory exercises whenever other people are present in your area.

You are required to take action to sterilize equipment or other items that you handle before leaving an area and before allowing other people to touch those items.

**Course Prerequisites:**none**Units:**3.0

**Course Advisories:** English A1

**Holidays:** Martin Luther King, Jr. Day- 1/18/21; Washington Day- 2/15/20; Spring Recess- 3/29/21-4/2/21

**Drop Deadlines: January 22th,**last day to drop to qualify for a refund.  **January 29st,**last day to drop to avoid “W”.  **March 12th,**after this date letter grade assigned.

**Final Exam: Wednesday, May 19th 8:00am–9:50am**

**Textbooks:**

Law, M. and Collins, A. 2018. *Getting to Know ArcGIS Desktop*, 5th ed. Redlands: ESRI Press **(Recommended**)

Paine, D and Kiser, J.D. 2003. *Aerial Photography and Image Interpretation,* ed. 2 John Wiley and Sons, Hoboken, NJ, **(Optional)**

**Required Materials:**

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

\* USB Thumb Drive

\* Scientific Calculator

**Course Outcomes:**

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| --- |
|  |
| 1. Prepare topographic or planimetric maps using advanced surveying techniques (e.g., Global Position System (GPS), Geographic Information System (GIS), etc.). 2. Measure natural features and import pertinent information into a GIS database. 3. Integrate and apply GIS and GPS technologies to answer specific research questions. |

**Course Objectives:**

1. View and perform queries on existing GIS layers.
2. Recognize and delineate forest and other vegetation types, wildlife habitat elements, and other environmental variables on panchromatic (B&W), color, and color infrared aerial images.
3. Explain what a GIS is, how it operates, and what it can be used for.
4. Produce a map from GIS themes.
5. Navigate in the field using orienteering equipment such as hand compass, GPS receiver, topographic maps and aerial photographs or satellite imagery.
6. Manipulate GIS attribute tables.
7. Use and locate information in a metadata file.
8. Determine scale, area, and relief displacement on various topographic maps and aerial photographs.
9. Understand concepts behind satellite remote sensing and microwave radar imaging.

**Classroom Conduct:**

All students are expected to act in a mature manner that respects their fellow students, the instructor and any guest presenters.  Please turn cellular phones and all other electric devices **off** during class time.  **No** tobacco products or sunflower seeds in class or on field trips. **{This is a computer lab: NO FOOD or DRINK!}**

**Computer Use:**

Due to COVID-19 safety protocols the use of the computers in FEM 12 are limited to NR 18 due to the GIS software.  So for other classes in FEM 12 you will need to bring your personal laptop or check out a campus laptops.  Check outs will be available on a first-come-first-serve-basis while supplies last. Please bring valid ID to the college’s open computer lab located in the campus library, masks and social distancing are required.  For questions and more information call 559-637-2555.

**Cheating and Plagiarism:**

Cheating and plagiarism are serious offenses and will not be tolerated.  Students shall comply with Board Policy 5410; each student is expected to exert an entirely honest effort toward attaining an education.  Violating this policy will result in failing grade on an assignment and/or entire course.

**Accommodation Statement:**

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.

**Reedley College Policies:**

To receive a grade for this course, students must complete all assigned work.  It is your responsibility to stay informed on any changes to assignment due dates, readings, etc.  Missing a class doesn’t excuse you from this responsibility (i.e. if a due date for an assignment changes, new assignments are given, etc.).  This means you should ask a trustworthy classmate for notes if you are absent.  Being absent is not an excuse for late work, late assignments, or just not knowing what is happening.  If class happens to be canceled the dean’s office will post a cancellation notice on the classroom door or assign a substitute. For Reedley Campus classes, the dean’s office will post the canceled class to the Reedley College website.

**Participation and Grading Policy:**

Grading for this course is based on the sum of one midterm exam, a comprehensive final, lab assignments, class project, and unannounced quizzes.  Both lecture and laboratory material will be covered on midterm exams and quizzes.  No early or late exams or quizzes will be given, unless previously (one week) authorized by the instructor.  Late assignments will have 10% deducted each week.  After an assignment is submitted by the due date a student has one week to re-submit for a better grade.  Please communicate with me if you have extenuating circumstances which will cause a late assignment submission.    Individual participation will be considered when assigning your final grade. **If you miss class >6 times during the semester (without a valid reason) you may be dropped from the course**.  Exams may be curved based on a percentile of the highest point total in the class.  Extra-credit may be available. Final Grades will be assigned based on a straight percentage system according to the following scale:

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

   <59%   F

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

|  |  |
| --- | --- |
| **Item** | **Percentage and Points** |
| **Lab Assignments** | 30%                      150 |
| **Quizzes** | 10%                      50 |
| **Class Project Participation** | 20%                      100 |
| **Midterm Exam** | 20%                      100 |
| **Cumulative Final Exam** | 20%                      100 |
| **Total** | 100%                    500 |

Laboratory Activities:

There will be several laboratory activities during the semester.  If you are unable to attend a class or lab period, you will still be responsible for the material covered and **may** be able to complete an alternative assignment.  Failure to do so will result in a zero for the particular lab.  Some labs are outdoors so be prepared for outside activities.  Prepared is defined as having sturdy hiking shoes or boot, long pants, water, food, and warm (appropriate) clothing.

Lab Assignments

Lab assignments will vary from practical skills assessments, computer assignments, and written lab reports. If not otherwise announced, all assignments are due the following class period. Labs assignments will not be allowed to be made-up without a valid excuse.

Quizzes

Students will be given quizzes at random during lectures. Quizzes will cover material and terms presented in the lecture/lab and are designed to test student comprehension.

Tentative Class Schedule:  Note: exact order of topics may vary depending upon scheduling of field trips and availability of necessary resources.

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| --- | --- | --- |
| **Week          Date** | **Lecture – M** | **Lab – M** |
| **1     1/11** | Intro to Aerial Photogrammetry | #1  Introduction to Images |
| **2     1/18** | **MLK Day (no school)** | **MLK Day (no school)** |
| **3     1/25** | Aerial Photogrammetry & Flight Planning | #2 Flight Planning |
| **4       2/1** | Aerial Photogrammetry  (continued) | #3 Scale, Principal Point and Conjugate Principal Point |
| **5     2/8** | The Global Positioning System (GPS) | #4 Intro to Point Location & Capture using GPS (Garmin 60 Cx) - Campus |
| **6     2/15** | **Washington Day (no school)** | **Washington Day (no school)** |
| **7    2/22** | Introducing GIS (Geographic Information System) | #5 Exploring ArcMap-text Ch 3  Exploring ArcCatalog-text Ch 4 |
| **8      3/1** | ***Trimble Juno GPS w/TerraSync***  ***Pathfinder Office – Data Dictionary*** | ***Collect & Download Data for Reedley College Farm Map or TBA*** |
| **9     3/8** | Displaying and Presenting Data I.  Symbolizing Features-Ch7  Classifying Features-Ch8 | #6 Displaying and Presenting Data I.  Symbolizing Features-Ch7  Classifying Features-Ch8 |
| **10   3/15** | **Midterm**  Labeling Features | #7 Displaying and Presenting Data II.  Labeling features-Ch9 |
| **11   3/22** | ***Collect Data for Reedley College Farm Map or TBA***  OR  Making Maps for Presentation-Ch10   Creating Features-Ch12 | ***Collect Data & Download for Reedley College Farm Map or TBA***  OR  #7 Displaying and Presenting Data II.  Making Maps for Presentation-Ch10  #8 Creating and Editing Data  Creating Features-Ch12 |
| **12     3/29** | NO CLASS - Spring Break (3/29 - 4/2) |  |
| **13      4/5** | Making Maps for Presentation-Ch10   Creating Features-Ch12  OR  ***Collect Data for Reedley College Farm Map or Sequoia Lake*** | #7 Displaying and Presenting Data II.  Making Maps for Presentation-Ch10  #8 Creating and Editing Data  Creating Features-Ch12  OR  ***Collect Data & Download for Reedley College Farm Map or Sequoia Lake*** |
| **14    4/12** | *Editing Features-Ch13*                               #8 Creating and Editing Data Editing Features-Ch13 | |
| **15  4/19** | Querying Data-Ch15 | #9 Getting Information about Features  Querying Data-Ch15 |
| **16  4/26** | Geoprocessing Vector Data-Ch19 | #10 Analyzing Geospatial Data  Geoprocessing Vector Data-Ch19 |
| **17    5/3** | ***Create Map for RC Farm Map / TBA*** | ***Create Map for RC Farm Map / TBA*** |
| **18  5/10** | **Tentative: Guest Speaker: GIS Specialist TBA**& Review | Lab Practicum |
| **Final Exam:** | **Wednesday, May 19th 8:00am – 9:50am** | |