GEOGRAPHY 485/585: REMOTE SENSING 1
Fall 2018

LECTURE
Monday & Wednesday, 9:00-9:50,
260 Condon
Instructor: Mark Fonstad
Office: 107F Condon
Email: fonstad@uoregon.edu
Phone: 346-4208
Office Hours: Mondays 11-12 or by appointment

LAB
10:00-11:50 OR 1:00-2:50 Tuesdays
SSIL – McKenzie 442
Instructor: Aaron Zettler-Mann
Office: 105 Condon
Email: azettler@uoregon.edu
Office Hours: Wednesdays 11-12 or by appoint.

COURSE DESCRIPTION
Geography 4/585 is an introduction to remote sensing - the acquisition of data about the world from afar. Often this is in the form of digital imagery acquired by aircraft or satellites, but a variety of other types of remote sensing exist (see below) and are discussed in the class.

The course provides an overview of the physical science principles involved in remote sensing, the instruments and platforms used to collect data, and the analysis/visualization of the acquired information. Topics include data acquisition and pre-processing, image enhancement, data classification and visualization. While the emphasis of the class is on raster spectral data (such as satellite or drone imagery), other types of remote sensing information - such as lidar, radar, and structure-from-motion photogrammetry (SfM) are also addressed in lectures and lab exercises.

REQUIRED READINGS AND MATERIALS
Text - Introduction to Remote Sensing, 5th Edition. Campbell and Wynne, 2011. Guilford.
In addition to the class required text, on-line materials and research articles may be assigned. Labs and additional readings are provided on the course website at canvas.uoregon.edu

GRADING
The final grade scale is as follows: A+: >98; A: 92-98; A-: 90-92; B+: 88-90; B: 82-88; B-: 80-82; C+: 78-80; C: 72-78; C-: 70-72%; D+: 68-70; D: 62-68; D-: 60-62; F: <60. For the pass/no pass option: a pass will be awarded for a C or above for undergraduate work, B (>80) or above for graduate work. Incompletes (I) will only be given in special situations.

Undergraduate Students (Geog 485)
Exams are 50% of the grade, with one in-class midterm and an in-class final. Labs make up the remaining 50% of the grade.

Graduate Students (Geog 585)
Exams are 40% of the grade, with one in-class midterm and an in-class final. Labs make up 30% of the grade for graduates. Graduate students will produce a small final project accompanied by a project write-up and short presentation that makes up 30% of their grade. This project will be comprised of a research question, digital image acquisition and processing to answer the research question, and a significant write-up of what was done, why it was done, and how well it worked.

LABS AND LAB GRADES
Labs provide practical experience that is typical of what you will encounter on most any remote sensing project. Early labs will familiarize you with the basic uses of the software and data acquisition. Later labs will introduce you to subjects such as image enhancement (visualization) techniques, techniques for adding geographical

coordinates to images, data transformation approaches to extract specific types of information, and classification approaches for mapping land cover. There are nine labs with lab write-ups, but only the top eight lab scores will be used in calculation of your final lab grade; all labs are weighted equally.

Laboratory sessions will be in SSIL. I really want you to work with one another on these assignments in order to exchange knowledge with your partners. However, you should complete your own work and turn in your own work for grading. You are encouraged to collaborate on labs with other teams and help one another out, but do not copy each other's written answers. I expect all answers to be written in complete sentences with all words correctly spelled.

The dates below are the date each lab begins. Labs must be turned in digitally on Canvas one week after they are assigned by 11:59pm -- otherwise you will receive a ZERO on the assignment unless you have made arrangements with me beforehand. It is essential that you complete the labs because many of them are sequential and build on knowledge you have gained from the previous lab.

Always bring a USB flash drive to lab to back up your work at the end of class. The shared drives at SSIL will be available to you, but it is always good to have a backup nonetheless.

ACADEMIC DISHONESTY
I will not tolerate cheating or academic misconduct/dishonesty in my courses; examples of these behaviors include (but are not limited to):
- Plagiarism (passing off the work of another as that of your own)
- Copying answers from your neighbors during exams/activities
- Dishonesty concerning reasons for absence from class
- Any other actions that might give you an unfair advantage over your classmates.

All cases of academic dishonesty/misconduct will be referred immediately to the Student Judicial Affairs Office. The penalties for engaging in academic dishonesty and/or misconduct can range from a grade of "F" for an assignment to an automatic failure of the course. Please consult the university policy on the UO Dean of Students website http://uodos.uoregon.edu

LATE/MAKE-UP WORK
Late labs will not be accepted and make-up work will not be assigned, except in extreme circumstances and where you have documentation. If you must miss a lab section or exam due to illness or other unavoidable circumstances, you MUST notify the instructor and lab instructor prior to missing if at all possible.

ACCESSIBLE EDUCATION NOTICE
I work hard to ensure a quality learning experience for all students. If you need specific accommodations to get the most out of this class, please let me know by (1) informing me of your particular needs, and (2) providing the appropriate documentation from the Accessible Education Center. I will make every effort to accommodate your needs, but you must notify me by the first week of class if you need special arrangements.

NOTE: I consider this syllabus a contract between myself and the students in this course. In writing this syllabus, I have obligated myself to follow the policies and procedures contained herein. You are responsible for understanding and following these policies as well. I reserve the right to make changes to this syllabus. You will receive verbal and written notification of major changes to course policies, procedures and content.

Remote Sensing 485/585 -- Fall 2018 Schedule

Date	Day	Times	Lecture Activity	Weekly Readings	Weekly Lab Activity	Due on Tuesdays, 11:59pm
24-Sep	Monday	9-9:50	Nature and History of RS	Ch. 1	1. Introduction to SSIL, Remote Sensing Software and Data	None
26-Sep	Wednesday	9-9:50	The RS "system", Electromagnetic Radiation	Ch. 2		
1-Oct	Monday	9-9:50	Electromagnetic Radiation	Ch. 2	2. Image Type Comparisons	Lab 1 writeup
3-Oct	Wednesday	9-9:50	Mapping Cameras	Ch. 3		
8-Oct	Monday	9-9:50	Digital Imagery	Ch. 4	3. Subsetting, Mosaicing, Filters, Indices	Lab 2 writeup
10-Oct	Wednesday	9-9:50	Image Interpretation	Ch. 5		
15-Oct	Monday	9-9:50	Satellite RS Platforms	Ch. 6	4. Image Interpretation & Enhancement	Lab 3 writeup
17-Oct	Wednesday	9-9:50	Image Resolution and Preprocessing	Ch. 10, 11		
22-Oct	Monday	9-9:50	Image Classification	Ch. 12	5. Classification 1: Unsupervised	Lab 4 writeup
24-Oct	Wednesday	9-9:50	Image Classification and Field Data	Ch. 12, 13		
29-Oct	Monday	9-9:50	MIDTERM		6. Classification 2: Supervised	Lab 5 writeup
31-Oct	Wednesday	9-9:50	Accuracy Assessment and Change Detection	Ch. 14, 16		
5-Nov	Monday	9-9:50	Plant Sciences	Ch. 17	7. Change Detection	Lab 6 writeup
7-Nov	Wednesday	9-9:50	Land Use and Land Cover	Ch. 20		
12-Nov	Monday	9-9:50	Photogrammetry	Supplemental	8. Close-Range Imaging	Lab 7 writeup
14-Nov	Wednesday	9-9:50	Lidar	Ch. 8		
19-Nov	Monday	9-9:50	Thermal Remote Sensing	Ch. 9	9. Lidar	Lab 8 writeup
21-Nov	Wednesday	9-9:50	Active Microwave Remote Sensing	Ch. 7		
26-Nov	Monday	9-9:50	Earth and Hydrospheric Sciences	Ch. 18, 19	Student Presentations	Lab 9 writeup
28-Nov	Wednesday	9-9:50	Global Remote Sensing	Ch. 21		
5-Dec	Wednesday	10:15-12:1	FINAL EXAM			