Instructor: Dr. Phil Dennison  
Class Time and Location: Thursday, 4:35-7:35 PM, 215 OSH  
Office Hours: Thursday 1:35-4:35 PM or by appointment  
Office: 270 C OSH  
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Course Description
Vegetation is a critical component of nearly all terrestrial ecosystems. It’s difficult to understate the importance of plants. Vegetation plays a key role in the global carbon cycle through photosynthesis and respiration, and can serve as an important carbon reservoir, source, and sink. Vegetation also controls terrestrial water and energy fluxes, and most of the food we eat comes from terrestrial plants (or animals that eat plants). With vegetation covering approximately 70% of the Earth’s land surface, measurement and monitoring of vegetation becomes a difficult geographic problem. Remote sensing is a key technology for measurement of vegetation attributes over space and through time. This seminar will cover theory, techniques, and applications of remote sensing of vegetation. We will use papers from the recent literature to gain an understanding of remote sensing of vegetation type, cover, stress, health, biochemistry, structure, biomass, phenology, photosynthesis, primary productivity, and evapotranspiration. We will cover a diverse set of data types and methods used to measure vegetation attributes, while also addressing the specific research needs of students in the class. We will also use collaborative projects to do our own exploration of remote sensing applications.

Learning Outcomes
• Understand how vegetation properties and processes produce signals present in different types of remotely sensed data  
• Be able to describe how models are used in conjunction with remotely sensed data to derive biophysical and biochemical variables  
• Be able to use remotely sensed data to measure vegetation parameters

Evaluation
There are no exams for this course. Students will be evaluated based on their participation in class discussions, leading class discussions, and a final group project. The following weights will be assigned to each required activity to determine grades for the course:

Participation in class discussions: 20%  
Leading class discussions: 30%  
Final Project: 50%

Participation in Class Discussions
Students are expected to be present for seminar, adequately prepare for class discussions by doing readings, and actively contribute to discussions. Participation in each class session will be evaluated on the following scale:
3 Active participation, contributed insightful comments or questions to discussion, came to class prepared to participate.

2 Moderate participation, made some contributions to discussion, may have come to class underprepared.

1 Minimal participation, made very minor contributions to discussion and/or came to class unprepared.

0 No participation, did not contribute to discussion. Unexcused absences will result in a 0 participation score for that class.

Readings
Three papers will be assigned for reading each week. These papers will be made available on Canvas. Students will be asked to find appropriate papers for the class to review; the instructor must approve the papers and may suggest or require alternative papers.

Leading Class Discussions
Students are required to lead a class discussion of two papers. Your goals are to help the class understand and interpret the paper you are presenting, and to facilitate a conversation about the research presented in the paper. I expect that paper discussions should require 45-50 minutes each. Students should prepare a powerpoint presentation for each paper that includes the following content:

1) Context for the research presented in the paper.
2) Any background necessary for understanding the paper. Keep in mind that your audience will have a wide range of experience.
3) Previous or subsequent findings from the literature that may be relevant to the paper.
4) An explanation of the methods, results, discussion, and conclusions presented in the paper, including explanation of relevant figures and tables.
5) Assessment of the paper’s significant contributions and limitations.

Final Project
This class includes a collaborative final project. Depending on the number of students in the class and their areas of interest, there will 1-4 group projects. Each group will be required to present background, methods, and results from the project in a formal presentation at the end of the semester.

Academic Misconduct Statement
Academic misconduct will not be tolerated. Penalties may include failure of an assignment, the entire course, and/or the filing of formal charges with appropriate university authorities. Academic misconduct includes, but is not limited to, cheating, misrepresenting one’s work, and plagiarism:

- Cheating involves the unauthorized possession or use of information in an academic exercise, including unauthorized communication with another person during an exercise such as an examination.
- Misrepresenting one’s work includes, but is not limited to, representing material prepared by another as one’s own work or submitting the same work in more than one course without prior permission of all instructors.
- Plagiarism means the intentional unacknowledged use or incorporation of any other person’s work in one’s own work offered for academic consideration or public presentation.

Disabilities Statement
The University of Utah seeks to provide equal access to its programs, services and activities for people with disabilities. If you will need accommodations in the class, reasonable prior notice needs to be given to the Center for Disability Services, 162 Olpin Union Building, 581-5020 (V/TDD). CDS will work with you and the instructor to make arrangements for accommodations. All written information in this course can be made available in alternative format with prior notification to the Center for Disability Services.

Schedule
The course schedule will be updated on Canvas as class readings are determined and assigned to individual students. Important dates and deadlines are listed below.

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<tr>
<th>Date</th>
<th>Topic</th>
<th>Readings</th>
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| Thu Jan 15 | Introduction, remote sensing basics  
*List of 4 potential papers due by 9 AM Jan 21* |          |
| Thu Jan 22 | Remote sensing of vegetation                                | TBD      |
| Thu Jan 29 | 3 paper presentations                                      | TBD      |
| Thu Feb 5  | 3 paper presentations                                      | TBD      |
| Thu Feb 12 | 3 paper presentations                                      | TBD      |
| Thu Feb 19 | 3 paper presentations                                      | TBD      |
| Thu Feb 26 | 2 paper presentations, Final Project Discussion            | TBD      |
| Thu Mar 5  | 3 paper presentations                                      | TBD      |
| Thu Mar 12 | 2 paper presentations, Final Project Discussion            | TBD      |
| Thu Mar 19 | *Spring Break, No Class*                                   |          |
| Thu Mar 26 | 3 paper presentations                                      | TBD      |
| Thu Apr 2  | Final project work                                         |          |
| Thu Apr 9  | Final project work                                         |          |
| Thu Apr 16 | Final project work                                         |          |
| Thu Apr 23 | *AAG Week, No Class*                                       |          |
| Finals Week| Final Project Presentations, date and time *TBD*           |          |