Course Description

This course is intended to be taken with, or after, the introductory remote sensing class, FNRM 3262/5262. It builds on the introductory course by providing a field context to the remote sensing discipline. We will focus on field methods and associated analyses that are typical in using and applying imagery and other spatial data. We will use a variety of remote sensing imagery, maps, field data collection tools, and software. Students will learn in an active, hands-on, way through multiple small-group field exercises. The only in-person meetings will be a short orientation session (time to be determined) and the two field sessions.

Online: Canvas-based activities as assigned

Field: Selected field locations near the St. Paul campus

Instructor: Dr. Joe Knight
Dept. of Forest Resources
301-E Green Hall
Phone: 612-625-5354
Email: jknight@umn.edu
Office hour: Thursday 1-2, or by appt.

Text: There is no required text for this course. Readings are provided.

Course Goals:

- Evaluate the application of remote sensing methods and science in a field setting.
- Gain essential experience defining field-based research problems, collecting relevant remotely sensed and field data, and synthesizing results.
- Develop skills in image processing and gain expertise with software and field tools.
- Synthesize research and present information in written (project report), spoken (seminar presentation, discussions, and student-lead teaching), and visual format (poster presentation or media release).
Grades and Workload

This one-credit course will require, for a typical University of Minnesota student, three hours of academic work per week on average, or approximately 45 total hours during the 15-week semester. Since there will be two eight-hour weekend field sessions (16 hours total), you should expect to spend an additional two hours per week on average doing class work. This work will include readings, assignments, and prep activities for the field sessions. The field exercises will be group grades. All other course content will be individually graded.

Grades will be assigned according to the breakdown below. No “curve” will be applied. No extra credit opportunities will be available. Plus/minus course grades will be assigned. Any grading challenges you wish to be considered should be emailed to the instructor within one week of the posting date of the graded item. You must state what is to be reevaluated and include a specific rationale for why the grade is improper or incorrect. “I put a lot of time into this, and I think I deserve a better grade," does not constitute an acceptable rationale.

Course work break-down: %
<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Meaningful participation</td>
<td>20</td>
</tr>
<tr>
<td>Homework / prep</td>
<td>30</td>
</tr>
<tr>
<td>Team-based field exercises</td>
<td>50</td>
</tr>
<tr>
<td>Class Total</td>
<td>100</td>
</tr>
</tbody>
</table>

Letter Grades

A -- achievement that is outstanding relative to the level necessary to meet course requirements.
B -- achievement that is significantly above the level necessary to meet course requirements.
C -- achievement that meets the course requirements in every respect.
D -- achievement that is worthy of credit even though it fails to meet fully the course requirements.
S -- achievement that is satisfactory, which is equivalent to a C- or better.
F (or N) -- Represents failure (or no credit) and signifies that the work was either (1) completed but at a level of achievement that is not worthy of credit or (2) was not completed and there was no agreement between the instructor and the student that the student would be awarded
Incompletes (I) will be assigned only in extraordinary circumstances, such as prolonged illness, and will require a signed contract with the instructor. Such written agreement will not allow a period longer than one semester from the end of the course to complete the course requirements. Students taking this course using S/N grading must complete all assignments and earn a cumulative grade of C- or higher to earn an S (Satisfactory); students earning a D+ or lower will receive a grade of N.

Graduate vs. undergraduate workload

Graduate students will be held to a higher standard in the quality and quantity of their responses to the readings, and will be expected to perform additional analyses of field data using more sophisticated methods. Graduate students will also be asked to complete an additional assignment relating the techniques learned in the course to their graduate studies discipline.

Classroom Conduct

The University seeks an environment that promotes academic achievement and integrity, that is protective of free inquiry, and that serves the educational mission of the University. Similarly, the University seeks a community that is free from violence, threats, and intimidation; that is respectful of the rights, opportunities, and welfare of students, faculty, staff, and guests of the University; and that does not threaten the physical or mental health or safety of members of the University community. As a student at the University you are expected adhere to Board of Regents Policy: Student Conduct Code. To review the Student Conduct Code, please see: http://regents.umn.edu/sites/regents.umn.edu/files/policies/Student_Conduct_Code.pdf

Note that the conduct code specifically addresses disruptive classroom conduct, which means "engaging in behavior that substantially or repeatedly interrupts either the instructor's ability to teach or student learning. The classroom extends to any setting where a student is engaged in work toward academic credit or satisfaction of program-based requirements or related activities."
Please arrive on time and stay the entire class period. If you must arrive late or leave early, please sit near the door and try to enter or exit quietly.

- Turn off or silence your electronic devices (e.g. cellphones, laptops) before class begins.
- If you use a computer during class, please refrain from using it for non-course-related activities, as this may distract other students.
- Avoid eating meals during class (drinks or light snacks are ok).

**Absences and Late Policy**

You are expected to be present for all class meetings. You are responsible for *documenting* the legitimacy of any absences. Legitimate absences include:

- illnesses certified by Boynton Health Service or your family physician
- emergencies caused by a death or serious illness in your immediate family
- participation in intercollegiate athletic events or other official University activities
- subpoenas, jury duty, military service, and religious observances

If you know that you will need to be absent on a particular day, let the instructor know beforehand. To retake an exam or submit a late assignment without penalty, you must provide documentation of your absence. Otherwise late assignments will be subject to a 25% penalty *per day*. Late assignments will not be accepted after four days except in the case of a documented legitimate absence. There will be no makeup exams given without documentation.

The two all-day field trips are required activities, done in teams. In the event of an excused absence, make-up work will be assigned individually.

**Student Academic Integrity and Scholastic Dishonesty**

You are expected to do your own academic work and cite sources as necessary. Failing to do so is scholastic dishonesty. Scholastic dishonesty means plagiarizing; cheating on assignments or examinations; engaging in unauthorized collaboration on academic work; taking, acquiring, or using test materials without faculty permission; submitting false or incomplete records of academic achievement; acting alone or in cooperation with another to falsify records or to obtain dishonestly grades, honors, awards, or professional endorsement; altering, forging, or misusing a University academic record; or fabricating or falsifying data, research procedures, or data analysis. (Student Conduct Code: [http://www1.umn.edu/regents/policies学术/integrity/Student_Conduct_Code.html](http://www1.umn.edu/regents/policies学术/integrity/Student_Conduct_Code.html)). If it is
determined that a student has cheated, he or she may be given an "F" or an "N" for the course, and may face additional sanctions from the University. For additional information, please see: http://policy.umn.edu/Policies/Education/Education/INSTRUCTORRESP.html.

The Office for Student Conduct and Academic Integrity has compiled a useful list of Frequently Asked Questions pertaining to scholastic dishonesty: http://www1.umn.edu/oscai/integrity/student/index.html. If you have further questions, please see the instructor.

Appropriate Student Use of Class Notes and Course Materials

Taking notes is a means of recording information but more importantly of personally absorbing and integrating the educational experience. However, broadly disseminating class notes beyond the classroom community or accepting compensation for taking and distributing classroom notes undermines instructor interests in their intellectual work product while not substantially furthering instructor and student interests in effective learning. Such actions violate shared norms and standards of the academic community. For additional information, please see: http://policy.umn.edu/education/studentresp

Use of Personal Electronic Devices in the Classroom

Using personal electronic devices in the classroom setting can hinder instruction and learning, not only for the student using the device but also for other students in the class. To this end, the University establishes the right of each faculty member to determine if and how personal electronic devices are allowed to be used in the classroom. For complete information, please reference: http://policy.umn.edu/education/studentresp

Accommodations for Students with Disabilities

The University is committed to providing quality education to all students regardless of ability. Determining appropriate disability accommodations is a collaborative process. You as a student must register with Disability Services and provide documentation of your disability. The course instructor must provide information regarding a course's content, methods, and essential components. The combination of this information will be used by Disability Services to determine appropriate accommodations for a particular student in a particular course. For more information, please reference Disability Services: http://ds.umn.edu/student-services.html
Student Mental Health and Stress Management

As a student you may experience a range of issues that can cause barriers to learning, such as strained relationships, increased anxiety, alcohol/drug problems, feeling down, difficulty concentrating and/or lack of motivation. These mental health concerns or stressful events may lead to diminished academic performance and may reduce your ability to participate in daily activities. University of Minnesota services are available to assist you. You can learn more about the broad range of confidential mental health services available on campus via the Student Mental Health Website: http://www.mentalhealth.umn.edu

Sexual Harassment

Sexual harassment means unwelcome sexual advances, requests for sexual favors, and/or other verbal or physical conduct of a sexual nature. Such conduct has the purpose or effect of unreasonably interfering with an individual's work or academic performance or creating an intimidating, hostile, or offensive working or academic environment in any University activity or program. Such behavior is not acceptable in the University setting. For additional information, please consult Board of Regents Policy: http://www1.umn.edu/regents/policies/humanresources/SexHarassment.html

Equity, Diversity, Equal Opportunity, and Affirmative Action

The University provides equal access to and opportunity in its programs and facilities, without regard to race, color, creed, religion, national origin, gender, age, marital status, disability, public assistance status, veteran status, sexual orientation, gender identity, or gender expression. For more information, please consult Board of Regents Policy: http://regents.umn.edu/sites/regents.umn.edu/files/policies/Equity_Diversity_EO_AA.pdf

Academic Freedom and Responsibility

Academic freedom is a cornerstone of the University. Within the scope and content of the course as defined by the instructor, it includes the freedom to discuss relevant matters in the classroom. Along with this freedom comes responsibility. Students are encouraged to develop the capacity for critical judgment and to engage in a sustained and independent search for truth. Students are free to take reasoned exception to the views offered in any course of study and to reserve judgment about matters of opinion, but they are responsible for learning the
content of any course of study for which they are enrolled. Reports of concerns about academic freedom are taken seriously, and there are individuals and offices available for help. Contact the instructor, the Department Chair, your adviser, the associate dean of the college, or the Vice Provost for Faculty and Academic Affairs in the Office of the Provost.
<table>
<thead>
<tr>
<th>Date</th>
<th>Day</th>
<th>Topic</th>
<th>Readings</th>
<th>Turn-in</th>
</tr>
</thead>
<tbody>
<tr>
<td>9/11</td>
<td>F</td>
<td>Module 1: Background</td>
<td>Remote sensing overview</td>
<td>Overview exercise</td>
</tr>
<tr>
<td>9/18</td>
<td>F</td>
<td>Module 1: Background</td>
<td>Algorithms/software</td>
<td>Spectroradiometer specs</td>
</tr>
<tr>
<td>9/25</td>
<td>F</td>
<td>Module 1: Background</td>
<td>Field spectroscopy</td>
<td>Field session #1 prep</td>
</tr>
<tr>
<td>9/26</td>
<td>Sa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10/2</td>
<td>F</td>
<td>Module 2: Field Sampling</td>
<td>Sampling methods</td>
<td>Field exercise #1 hw</td>
</tr>
<tr>
<td>10/9</td>
<td>F</td>
<td>Module 2: Field Sampling</td>
<td>Boundaries/setbacks</td>
<td></td>
</tr>
<tr>
<td>10/16</td>
<td>F</td>
<td>Module 3: Implementation</td>
<td>Species mapping</td>
<td>Species mapping #1</td>
</tr>
<tr>
<td>10/23</td>
<td>F</td>
<td>Module 3: Implementation</td>
<td>Interpretation keys</td>
<td>Species mapping #2</td>
</tr>
<tr>
<td>10/30</td>
<td>F</td>
<td>Module 3: Implementation</td>
<td>GPS navigation</td>
<td>Field session #2 prep</td>
</tr>
<tr>
<td>10/31</td>
<td>Sa</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11/6</td>
<td>F</td>
<td>Module 4: Deliverables</td>
<td>Stand maps</td>
<td>Field exercise #2 hw</td>
</tr>
<tr>
<td>11/13</td>
<td>F</td>
<td>Module 4: Deliverables</td>
<td>Change monitoring</td>
<td></td>
</tr>
<tr>
<td>11/20</td>
<td>F</td>
<td>Module 4: Deliverables</td>
<td>Site plans</td>
<td>Planning exercise</td>
</tr>
<tr>
<td>11/27</td>
<td>F</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/4</td>
<td>F</td>
<td>Applications</td>
<td></td>
<td></td>
</tr>
<tr>
<td>12/11</td>
<td>F</td>
<td>Wrap-Up</td>
<td></td>
<td>Integration exercise</td>
</tr>
</tbody>
</table>

Draft Schedule (subject to change as planning progresses)