

**Western Illinois University – School of Agriculture**  
**AGTM 471: Agricultural Remote Sensing (3)**  
**Course Syllabus – Fall 2024 “Subject to Change”**

**Course Meets:** M/W 12:00 – 12:50 pm in KH 307 & TH 10:00 – 11:50 am in KH 307  
**Required Text:** TBD  
**Instructor:** Dr. Daniel Atherton                      **E-mail:** [DL-Atherton@wiu.edu](mailto:DL-Atherton@wiu.edu)  
**Office:** B 22 Knoblauch Hall                      **Office Phone:** 309-298-2395  
**Office Hours:** M/W 1:00 to 1:50 or T/TH 12:00 to 12:50 or by appointment

**Course Description:** Course addresses concepts of remote sensing for precision agriculture. Topics include: global positioning system (GPS) accuracy & differential GPS, vegetative spectral reflectance signatures, multispectral and hyperspectral imagery, indices, and various analysis techniques for agricultural datasets.

**Course Objectives:**

- Identify principles of GPS including factors affecting accuracy and differential correction for GPS
- Explain principles of map scale and projection and coordinate systems
- Express methods for capturing multispectral and hyperspectral remotely sensed agricultural data
- Appraise vegetative spectral reflectance signatures
- Describe various dataset analysis techniques including indices, spectral change analysis, principal component analysis, and cluster analysis

**Attendance:** If at any time you miss the lecture or lab, please use the OARS system to report your absence ([www.wiu.edu/oars](http://www.wiu.edu/oars)). I will need the email generated from this system prior to class and not after. If I receive the email after class has ended then the late grade policies come into effect. It is the student’s responsibility to coordinate with the instructor to make up missed work. Quizzes may be given at any time and no makeup quizzes will be given unless the instructor approves the absence prior to missing class.

**Academic Dishonesty:** <http://www.wiu.edu/policies/acintegrity.php>

Any violation of the Academic Dishonesty Policy in Student Handbook will result in an automatic failure in the course. Plagiarism and cheating are areas of concern for this course. This course is designed to enhance your writing and presentation skills within your academic area, not the ability to copy other’s thoughts and ideas.

**Quality of Work Policy:** All assignments should be word processed with title of assignment, name, date, and a summary of the assignment included at the beginning of the assignment. Run spell-checker. If completing multiple-step problems, show all work. Your work should be neat and orderly.

**Students Rights and Responsibilities:** <http://www.wiu.edu/provost/students.php>

**Attention Education Majors:** The changes within the state teaching license require all education majors to receive a grade of a "C-" or better in this course in order to meet Illinois teaching license requirements. With the university +/- grading system, receiving a "D+" or below will require you to retake this course or find a substitute course to meet School of Agriculture graduation requirements.

**Assessment and Grading:** Your final grade is based on your overall weighted percent of the following:

<u>Component</u>	<u>Percentage</u>
Exam 1	15%
Exam 2	15%
Final Exam (Comprehensive)	30%
Quizzes	10%
Project	15%
Class participation	15% (Participation includes attendance)

**Grading Scale**

A	93 – 100%	A-	90 – 92%	B+	87 – 89%	B	83 – 86%
B-	80 – 82%	C+	77 – 79%	C	73 – 76%	C-	70 – 72%
D+	67 – 69%	D	63 – 66%	D-	60 – 62%	F	< 60%

**Final Grades:** Unless a computational error was made, grades will not be changed after the end of the semester. Please do not come to the instructor with “extenuating circumstances” for why your grade should be changed – the semester grade represents the level of work you completed over the semester.

**Late Assignments:** No late assignments will be accepted unless instructor approves of turning in an assignment late prior to assignment’s due date. Assignments will be due at the beginning of class on their due date. Hand written assignments will not be accepted unless instructed otherwise. Assignments will be 12 point font with 1” margins. Points will be deducted for incorrect spelling and grammar.

**Policy on Student Absences:** Absence from class will be considered excused if the absence is (1) due to a required isolation or quarantine based on a (2) documented directive from a public health official or health provider, and (3) if the instructor of record receives notification through WIU Student Services. The student (4) remains responsible for contacting instructors to arrange to complete missed work as soon as possible and is (5) ultimately responsible for material covered in class.

**Policy on Disruptive Students:** Students will face disciplinary action if they are found to be non-compliant with WIU’s COVID-19 Health and Safety Policy ([http://www.wiu.edu/policies/covid\\_safety.php](http://www.wiu.edu/policies/covid_safety.php)). Non-compliance may be considered disruptive student behavior and disciplinary action will follow general process outlined in disruptive student behavior procedures (<http://www.wiu.edu/policies/disrupst.php>) and/or other applicable enforcement measures applicable to the Code of Student Conduct.

**Disruptive Student Behavior:** <http://www.wiu.edu/vpas/policies/disrupst.php>

**Students with disabilities:** In accordance with University values and disability law, students with disabilities may request academic accommodations where there are aspects of a course that result in barriers to inclusion or accurate assessment of achievement. To file an official request for disability-related accommodations, please contact Disability Resources in the Student Development and Success Center at 309-298-1884, [disability@wiu.edu](mailto:disability@wiu.edu), or in 125 Memorial Hall. Please notify the instructor as soon as possible to ensure that this course is accessible to you in a timely manner.

**Professional Learning Environment:** Please be respectful of your fellow students and the instructor and do your part to maintain the professional learning environment of this course. **Please silence your cell phones. Avoid texting during class.** Individual disruptions, such as **entering the classroom late, allowing your cell phone to ring audibly, engaging in unrelated activities** (e.g., **texting or surfing the web**) during class time, or **packing your belongings before class ends**, distract other students and detract from the quality of the learning environment for the whole class. **Infractions will be noted and your class participation grade will suffer.** The instructor reserves the right to ask for cell phones to be returned to students after the class period or to remove from group work a student who is demonstrating inadequate levels of participation.

**Military/Veteran Support Statement:** As a military-friendly institution, and in accordance with federal regulations and Illinois statutes, Western Illinois University has established *policies* and procedures to accommodate military service students. In addition to the supports available at WIU’s Veterans Resource Center ([www.wiu.edu/student\\_success/veterans](http://www.wiu.edu/student_success/veterans) / 309-298-3505), veterans, members of the National Guard or Reserves, and active-duty military personnel with military obligations (e.g., deployments, trainings, drill) are encouraged to communicate these, in advance whenever possible, to the instructor. The Military Service Policy can be found at <http://www.wiu.edu/policies/military.php>

**University values, Title IX, and other federal and state laws prohibit sex discrimination, including sexual assault/misconduct, dating/domestic violence, and stalking. If you, or someone you know, has been the victim of any of these offenses, we encourage you to report this to the Title IX Coordinator at 309-298-1977 or anonymously online at: [http://www.wiu.edu/equal\\_opportunity\\_and\\_access/request\\_form/index](http://www.wiu.edu/equal_opportunity_and_access/request_form/index). If you disclose an incident to a faculty member, the faculty member must notify the Title IX Coordinator. The complete Title IX policy is available at: <http://www.wiu.edu/vpas/policies/titleIX>.**

**Tentative Schedule \*\*\* Scheduling and weekly topics are subject to change at instructor’s discretion \*\*\***

<b>Week</b>	<b>Topics</b>
Week 1	Course Intro., requirements, etc.; Intro to Remote Sensing (R/S)
Week 2	Review of GPS, map scale, coordinate signatures
Week 3	Labor Day – No Class; Electromagnetic Radiation
Week 4	Electromagnetic Radiation
Week 5	Electromagnetic Radiation; Photogrammetry and Image Interpretation
Week 6	Photogrammetry and Image Interpretation
Week 7	Review for Exam 1; <b>Exam 1</b> ; Digital Imagery
Week 8	Digital Imagery
Week 9	Digital Imagery
Week 10	Digital Imagery; Multispectral / Hyperspectral R/S Systems
Week 11	Multispectral / Hyperspectral R/S Systems
Week 12	Review for Exam 2; <b>Exam 2</b> ; Vegetative Spectral Signatures
Week 13	Vegetative Spectral Signatures, Indices; Cluster Analysis
+++++	Thanksgiving – No Class
Week 14	Indices; Cluster Analysis, Spectral Change Analysis, Principal Comp. Analysis
Week 15	Vegetative Analysis; Review for Final Exam

**Final Exam – Monday, Dec. 9<sup>th</sup> 1:00 – 2:50 pm**