

SUR 4350C Advanced Photogrammetry  
SUR 6355 Analytical Photogrammetry  
Fall 2022 Syllabus

If you are experiencing [COVID-19 symptoms](#) please stay at home. Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work.

**\*\*\*RECORDED MATERIAL\*\*\***

*Class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized sharing of recorded materials is prohibited.*

**SUR 4350C Advanced Photogrammetry**  
**SUR 6355 Analytical Photogrammetry**  
**Fall 2022 Syllabus**

**INSTRUCTOR:** Dr. Ben Wilkinson  
Office: 406A Reed Lab  
Phone: (352) 392-3465  
Email: [benew@ufl.edu](mailto:benew@ufl.edu)

**MEETING TIMES:** Lectures T, R 5<sup>th</sup> period (11:45-12:35), Labs R 8-10 period (3:00-6:00)

**OFFICE HOURS:** Thursdays (1:30-2:30PM) or by appointment, via in person or web conferencing. Schedule an appointment by emailing the instructor.

**TEXTBOOK:** Wolf, P.R., B.A. Dewitt, B.E. Wilkinson Elements of Photogrammetry: with Applications in GIS, 4th Ed., McGraw-Hill, 2014.  
Textbook Errata

**PREREQUISITES:** Meas. Science SUR3520, Photogrammetry SUR3331C.

**GOALS AND OBJECTIVES:** This course relates the principles of precise measurement and proper data reduction through measurements of photographs followed by calculations to determine spatial information. After completing this course, the student should be familiar with methods commonly used in photogrammetric practice as well as the theoretical basis for these methods.

**LOGISTICS:** Students may access lectures, assignments, readings, and supporting materials through the course Canvas site as they become available. **Gainesville section students are required to attend lectures and labs in-person unless accommodations are otherwise discussed and agreed upon with the instructor.**

**Technology Requirements:**

- A computer or mobile device with high-speed internet connection.
- A webcam, headset and/or microphone, and speakers.
- Latest version of web browser. Canvas supports only the two most recent versions of any given browser. [What browser am I using?](#)
- Installation of proctoring software may be required and will be provided if so.

**Synchronous online sessions may be recorded.** By sharing your video, screen, or audio during any synchronous online class sessions, you are consenting to being recorded for the benefit of students who cannot attend live as well as for class review during the current semester. If you have special circumstances or concerns about privacy, it is your responsibility to discuss it with your instructor.

**COURSE GRADING:** The course grade will be based on participation, labs, reading assignment quizzes, computer programming homework (SUR 6934 only) and three exams. The percentage breakdown is as follows (subject to change based on course progression). Final grades are based on a curve.

<b>Labs:</b>	35%	(30% Grads/6355)	A	94 -100	C	73 - 76.99
<b>EXAM I:</b>	12.5%	(10% Grads/6355)	A-	90 - 93.99	C-	70 - 72.99
<b>EXAM II:</b>	12.5%	(10% Grads/6355)	B+	87 - 89.99	D+	67 - 69.99
<b>EXAM III:</b>	15%	(15% Grads/6355)	B	83 - 86.99	D	63 - 66.99
<b>Quizzes:</b>	20%	(10% Grads/6355)	B-	80 - 82.99	D-	60 - 62.99
<b>Participation:</b>	5%	(5% Grads/6355)	C+	77 - 79.99	E	0 - 59.99
<b>HW (6355 only):</b>		(20% Grads/6355)				

**MODULES:** The course will cover ten main modules:

Mod	# Lec	Topics	Reading	Reading Quiz
1	1	<b>Introduction</b>	<b>Syllabus</b>	
2	1	<b>3D angles and angular conversion</b>	<b>C-7 (Step 1 only), D-9, D-11</b>	<b>Quiz 1</b>
3	3	<b>2D Coordinate transformations</b>	<b>C-1...C-6, C9, C10</b>	<b>Quiz 2</b>
4	2	<b>3D Conformal coordinate transformation</b>	<b>Section C-7 (all steps), C-8</b>	<b>Quiz 3</b>
5	1	<b>Homogeneous coordinate representation</b>	<b>C-11</b>	<b>Quiz 4</b>
6	5	<b>Collinearity</b> , space resection, space intersection, relative orientation, analytical stereomodel	<b>Ch. 11</b>	<b>Quiz 5</b> <b>Quiz 6</b>
7	5	<b>Aerotriangulation</b> - Independent Models, bundle adjustment, self-calibration, airborne control	<b>Ch. 17, 3-9, 3-10, 19-4...19-9</b>	<b>Quiz 7</b> <b>Quiz 8</b>
8	4	<b>Digital photogrammetry</b> - Modulation transfer, image model, spatial frequency, resampling, softcopy, image matching, orthophoto generation, digital mapping cameras, ASPRS accuracy standards	<b>3-14, Ch. 15, App. E</b>	<b>Quiz 9</b> <b>Quiz 10</b>
9	4	<b>Lidar</b>	<b>Ch. 14</b>	<b>Quiz 11</b>
10	1	<b>Computer Vision, UAS Photogrammetry, Synthesized Concepts</b>		

## Schedule of Modules, Labs, Exams

Tuesday	Thursday
8/23 No Class	8/25 Intro – No Lab
8/30 Module 2	9/1 Module 3 Lab 1 3D Rotations, Omega-Phi-Kappa – Tilt-Swing-Azimuth Conversion
9/6 Module 3	9/8 Module 3 Lab 2 2D Coordinate Transformations – Rectification
9/13 Module 4	9/15 Module 4 No Lab
9/20 Module 5	9/22 Module 6 Lab 3 3D Transformation – Terrestrial Lidar
9/27 Module 6	9/29 Module 6 Lab 4 Space Resection
10/4 Module 6	10/6 <b>Exam 1</b> Guest Speaker
10/11 Module 7	10/13 Module 7 Lab 5 Simultaneous Bundle Adjustment (2 weeks)
10/18 Module 7	10/20 Module 7 Lab 5 Continued
10/25 Module 7	10/27 Module 8 Lab 6 Softcopy Stereoplotter Operations
11/1 Module 8	11/3 Module 8 Lab 6 Continued
11/8 Module 8	11/10 <b>Exam 2</b> Lab 7 Close Range Photogrammetry/Analytical Self-Calibration
11/15 Module 9	11/17 Module 9 Lab 7 Continued
11/22 Module 9	11/24 Thanksgiving
11/29 Module 9	12/1 Module 10
12/6 Module 10	12/8 Reading Day

**Final EXAM: Thursday Dec. 15. 5:30PM – 7:30PM**

**LATE POLICY:** Due dates will be announced when assignments are given. A deduction of 10% will be made for each day they are late. It is the responsibility of the student to access on-line lectures, readings, quizzes, and exams and to maintain satisfactory progress in the course. Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: <https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

Computer or other hardware failures, except failure of the UF e-Learning system, will not excuse students for missing assignments. Any late submissions due to technical issues **MUST** be accompanied by the ticket number received from the Helpdesk when the problem was reported to them. The ticket number will document the time and date of the problem. You **MUST** e-mail your instructor within 24 hours of the technical difficulty if you wish to request consideration.

For computer, software compatibility, or access problems call the HELP DESK phone number —352-392-HELP = 352- 392-4357 (option 2).

**COMMUNICATION COURTESY AND PROFESSIONALISM:** Just as in any professional environment, meaningful and constructive dialogue is expected in this class and requires a degree of mutual respect, willingness to listen, and tolerance of opposing points of view. Respect for individual differences and alternative viewpoints will be maintained in this class at all times. All members of the class are expected to follow rules of common courtesy, decency, and civility in all interactions. Failure to do so will not be tolerated and may result in loss of participation points and/or referral to the Dean of Students' Office.

**SEMESTER EVALUATION PROCESS:** Student assessment of instruction is an important part of efforts to improve teaching and learning. **At approximately the mid-point of the semester**, the School of Forest Resources & Conservation will request anonymous feedback on student satisfaction on various aspects of this course. These surveys will be sent out through Canvas and are not required but encouraged. This is not the UF Faculty Evaluation! **At the end of the semester**, students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. Guidance on how to give feedback in a professional and respectful manner is available at <https://gatorevals.aa.ufl.edu/students/>. Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via <https://ufl.bluera.com/ufl/>. Summaries of course evaluation results are available to students at <https://gatorevals.aa.ufl.edu/public-results/>.

**ACADEMIC HONESTY POLICY:** As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: *"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity."* You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit at the University of Florida, the following pledge is either required or implied: *"On my honor, I have neither given nor received unauthorized aid in doing this assignment."* It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams). Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct or appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: <http://www.dso.ufl.edu/sccr/process/student-conduct-honor-code>.

**INCLUSIVE LEARNING ENVIRONMENT:** This course embraces the University of Florida's Non-Discrimination Policy, which reads,

*The University shall actively promote equal opportunity policies and practices conforming to laws against discrimination. The University is committed to non-discrimination with respect to race, creed, color, religion, age, disability, sex, sexual orientation, gender identity and expression, marital status, national origin, political opinions or affiliations, genetic information and veteran status as protected under the Vietnam Era Veterans' Readjustment Assistance Act.*

If you have questions or concerns about your rights and responsibilities for inclusive learning environment, please see the instructor or refer to the Office of Multicultural & Diversity Affairs website: <http://multicultural.ufl.edu>.

**SERVICES FOR STUDENTS WITH DISABILITIES:** The Disability Resource Center coordinates the needed accommodations of students with disabilities. This includes registering disabilities, recommending academic accommodations within the classroom, accessing special adaptive computer equipment, providing interpretation services and mediating faculty-student disability related issues. Students requesting classroom accommodation must first register with the Dean of Students Office. The Dean of Students Office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation. 0001 Reid Hall, 352-392-8565, [www.dso.ufl.edu/drc/](http://www.dso.ufl.edu/drc/)

**SOFTWARE USE:** All faculty, staff and students of the university are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against university policies and rules, disciplinary action will be taken as appropriate.

**CAMPUS HELPING RESOURCES:** For issues with technical difficulties for e-learning in Canvas, please post your question to the Technical Help Discussion in your course, or contact the UF Help Desk at:

- [Learning-support@ufl.edu](mailto:Learning-support@ufl.edu) | (352) 392-HELP - select option 2 | <http://elearning.ufl.edu>
- Library Help Desk support <http://cms.uflib.ufl.edu/ask>
- SFRC Academic Hub <https://ufl.instructure.com/courses/303721>

**STUDENT LIFE, WELLNESS, AND COUNSELING HELP:** Students experiencing crises or personal problems that interfere with their general well-being are encouraged to utilize the university's counseling resources. The Counseling & Wellness Center provides confidential counseling services at no cost for currently enrolled students. Resources are available on campus for students having personal problems or lacking clear career or academic goals, which interfere with their academic performance.

- Counseling and Wellness resources <http://www.counseling.ufl.edu/cwc/>
- U Matter, We Care <http://www.umatter.ufl.edu/>
- Career Connections Center <http://career.ufl.edu/>
- Other resources are available at <http://www.distance.ufl.edu/getting-help> for online students.

**STUDENT COMPLAINT PROCESS:** The School of Forest Resources & Conservation cares about your experience and we will make every effort to address course concerns. We request that all of our online students complete a course satisfaction survey each semester, which is a time for you to voice your thoughts on how your course is being delivered.

If you have a more urgent concern, your first point of contact should be the SFRC Academic Coordinator or the Graduate/Undergraduate Coordinator for the program offering the course. You may also submit a complaint directly to UF administration:

- Students in online courses: <http://www.distance.ufl.edu/student-complaint-process>
- Students in face-to-face courses: <https://sccr.dso.ufl.edu/policies/student-honor-code-student-conduct-code/>