

SUR 3331C Photogrammetry Spring 2025 Syllabus

GOALS AND OBJECTIVES:

Relates to use of aerial photographs to determine spatial information. Covers elementary techniques of photogrammetry to establish the foundation for SUR 4350 Advanced Photogrammetry.

This course relates the principles of precise measurement and proper data reduction through measurements of photographs followed by calculations to determine spatial information. This course covers elementary techniques of photogrammetry and establishes the foundations for Advanced Photogrammetry, SUR4350C.

The course aims to provide students with a thorough understanding of:

(1) the principles of photography,

- (2) image measurement techniques,
- (3) the mathematical procedures to derive ground coordinates from these measurements,
- (4) the error budget associated with various measurement techniques, and
- (5) photogrammetric project planning.

PREREQUISITE: SUR 3103C Geomatics

INSTRUCTOR:	Dr. Ben Wilkinson, 305 Reed Lab, Phone: (352) 392-3465 Email: <u>benew@ufl.edu</u>		
MEETING TIMES & LOCATION:	Lectures T, F 5 th period (11:45-12:35) 302 Reed Lab Labs T 6 th period (12:50-1:40) 302/308 Reed Lab		
OFFICE HOURS:	Fridays 1:00-3:00, by appointment. Please use the Canvas Message/Inbox for questions or to make an appointment. 305 Reed Lab or via Zoom.		
EXAM DATES:	Exam 1: Fri., Feb. 2111:45AM-12:35PM (Honorlock)Exam 2: Fri., Apr. 411:45AM-12:35PM (Honorlock)Final: Thurs., May 110:00AM-12:00PM (Honorlock)		
TEXTBOOK:	Wolf, P.R., B.A. Dewitt, B.E. Wilkinson <u>Elements of Photogrammetry: with</u> <u>Applications in GIS</u> , 4th Ed., McGraw-Hill, 2014. Available online: <u>https://www.accessengineeringlibrary.com/content/book/9780071761123/</u>		

LEARNING OUTCOMES:

The course provides students with skills to apply photogrammetry in the context of geomatics. At the completion of the course, the student should be able to:

- · determine dimensional characteristics of digital images
- conduct precise photographic measurements of photo coordinates
- determine flight and object heights from vertical photographs
- use photogrammetric software and concepts of analytical photogrammetry to determine ground coordinates
- complete planimetric mapping tasks by heads up digitizing
- · develop mission plans for photogrammetric mapping projects

COURSE LOGISTICS:

- Live attendance is required, and Gainesville section students must attend in-person. Distance/online section students are required to attend lectures online synchronously.
- Lectures and online office hour sessions will be conducted with the Zoom web conferencing software. Lecture sessions can be joined via the link posted by the instructor on Canvas. Synchronous online sessions will 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 the instructor.
- Presentation documents, lecture recordings, assignments, and other supporting materials will be posted on the Canvas website and students may access them as they become available.
- Graded homework and lab assignments are given a due date/time, usually one or two weeks after they are assigned. All assignments will be submitted through an associated Canvas portal. Submissions are graded based on timeliness, completeness, correctness. Assignments will be graded approximately one week after the due date, contingent on assignment complexity and potential changes in course progression, with instructor feedback provided through the associated Canvas portal.
- Attendance will be taken randomly throughout the semester.

Technology Requirements

- A computer or mobile device with high-speed internet connection, and a supported browser (Chrome) for the online exams through Honorlock.
- A webcam, headset and/or microphone, and speakers.
- Latest version of a web browser. Canvas supports only the two most recent versions of any given browser.
- Installation of proctoring software may be required and will be provided if so.

Attendance and Make-Up Work

Requirements for class attendance and make-up exams, assignments and other work are consistent with university policies that can be found at: <u>https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/</u>

COURSE GRADING:

The course grade will be based on participation, labs, reading assignment quizzes, and three exams. Exams must be taken during class time and scheduled Final Exam time. The schedule below has Exam days/times. <u>Plan now so that these time blocks are available</u>. The percentage breakdown is as follows (subject to change based on course progression).

Homework:	15%	~8 assig	nments throughout the semester
Labs:	30%	~10 assi	gnments throughout the semester (one-to-two weeks long)
EXAM I:	15%	Fri.,	Feb. 21 11:45AM-12:35PM (Honorlock)
EXAM II:	15%	Fri.,	Apr. 4 11:45AM-12:35PM (Honorlock)
EXAM III:	20%	Thu.,	May 1 10:00AM-12:00PM (Honorlock)
Attendance	5%	Regular	class attendance, ad hoc surveys, message board assignments
A 94 - A-90 - B+87 - B 83 - B-80 - C+77 -	100 93.99 89.99 86.99 82.99 79.99	C C- D+ D- E	73 - 76.99 70 - 72.99 67 - 69.99 63 - 66.99 60 - 62.99 0 - 59.99

Final grades are based on a curve.

Grades and Grade Points: For information on current UF policies for assigning grade points, see https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/

Guidelines for assignments

- Assignments are to be completed independently unless otherwise indicated by the instructor.
- All submissions must be type-written, legible, and prepared with correct spelling and grammar.
- Figures should appear clear, concise, and colorblind-friendly.

Late policy: Due dates will be announced when assignments are given. <u>A deduction of 10% from the</u> graded score will be made for each day late. Assignments more than seven days late will not be accepted.

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).

Accommodations for Students with Disabilities: Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the Disability Resource Center. See the "Get Started With the DRC" webpage on the Disability Resource Center site https://disability.ufl.edu/get-started/ It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Week	#	Lecture	Lab	Reading
Week	1			
Tuesday	1/14	Introduction	L1: Vision	Syllabus
Friday	1/17	Units, errors, significant figures		Appendix A
Week	2			
Tuesday	1/21	Optics for photogrammetry	L2: Significant figures – statistics exercise	Ch. 1, Appendix A
Friday	1/24	Principles of photography		Ch. 2
Week	3			
Tuesday	1/28	Digital images	L3: Digital images	Ch. 2
Friday	1/31	Aerial cameras		Cn. 3
Tuesday	4 2/4	Camera calibration & photo measurements	L4: Fundamental photo measurements	Ch. 3 Ch. 4
Friday	2/7	Photo coordinate refinement		
Week	5			
Tuesday	2/11	Vertical photos	L5: Scale and flying height	Ch. 6
Friday	2/14	Vertical photos		
Week	6			
Tuesday	2/18	Stereoscopic Viewing	L6: Relief displacement of a vertical	Ch. 7
Friday	2/21	Exam 1		
Week	7			
Tuesday	2/25	Stereoscopic parallax	L7: Introduction to stereo viewing	Ch. 8
Friday	2/28	Stereoscopic parallax		
Week	8			
Tuesday	3/4	Object space coordinate systems	L8: Parallax measurement	Ch. 5
Friday	3/7	Georeferencing and Mosaics		Ch. 9
Week	9			
Tuesday	3/11	Tilted photos	No Lab	Ch. 10
Friday	3/14	Stereoscopic Plotters		Ch. 12
Week	10	Spring Break	No Lab	
Week	11			<i>c</i> 1 1 2
Tuesday	3/25	Softcopy Plotters	L9-10 Compilation	Ch. 12
Friday	3/28	Topographic Mapping		Ch. 13
Tuesday	12	Project planning	I 0 10 Compilation (continued)	Ch 18
Friday	$\frac{4}{1}$	Froject planning	L9-10 Compliation (continued)	CII. 18
Week	13	DAun 2		
Tuesday	4/8	Project planning	L11-12: Flight planning and cost est.	Ch. 18
Friday	4/11	Introduction to lidar		Ch. 14
Week	14			
Tuesday	4/15	Lidar	L11-12: Flight planning and cost est. (continued)	Ch. 14
Friday	4/18			
Week	15			
Tuesday	4/22	Course Review		
Final Evan	1 Thurs	day May 1st 104 M-12PM		

Schedule – May be modified as the semester progresses. <u>Exam days and times will not change</u>.

Use Artificial Intelligence (AI) in this course: The use of chatbots or other AI, such as ChatGPT, Google Bard, Bing AI, etc. is <u>not allowed</u> on any assignments, labs, or exams in this class. The use of writing assistants, such as Grammarly are allowed only for lab reports (not exams or homework) and <u>must</u> <u>be cited</u> if they are used in any way. Failure to follow these guidelines will results in a zero grade for the associated submission. When in doubt about this policy, consult the instructor.

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.

In-Class Recording : Students are allowed to record video or audio of class lectures. However, the purposes for which these recordings may be used are strictly controlled. The only allowable purposes are (1) for personal education use, (2) in connection with a complaint to the university, or (3) as evidence in, or in preparation for, a criminal or civil proceeding. All other purposes are prohibited. Specifically, students may not publish recorded lectures without the written consent of the instructor.

A "class lecture" is an educational presentation intended to inform or teach enrolled students about a particular subject, including any instructor-led discussions that form part of the presentation, and deliver by an instructor hired or appointed by the University, or by a guest instructor, as part of a University of Florida course. A class lecture does not include lab sessions, student presentations, clinical presentation such as patient history, academic exercises involving solely student participation, assessments (quizzes, tests, exams), field trips, private conversations between students in the class or between a student and the faculty or guest lecturer during a class session.

Publication without permission of the instructor is prohibited. To "publish" means to share, transmit, circulate, distribute, or provide access to a recording, regardless, of format or medium, to another person (or persons), including but not limited to another student within the same class section. Additionally, a recording, or transcript of a recording, is considered published if it is posted on or uploaded to, in whole or in part, any media platform, including but not limited to social media, book, magazine, newspaper, leaflet, or third-party note/tutoring services. A student who publishes a recording without written consent may be subject to a civil cause of action instituted by a person injured by the publication and/or discipline under UF Regulation 4.040 Student Honor Code and Student Conduct Code.

Privacy Statement: Our 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 recording and unauthorized sharing of recorded materials is prohibited.

Online Course Evaluation Process: Student assessment of instruction is an important part of efforts to improve teaching and learning. At the end of the semester, students are expected to provide feedback on the quality of instruction in this course using a standard set of university and college criteria. 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/.

UF Honor Code: UF students are bound by The Honor Pledge which states **"We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code."** On all work submitted for credit by students 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."** The Conduct Code specifies a number of behaviors that are in violation of this code and the possible sanctions. See the UF Conduct Code website for more information. If you have any questions or concerns, please consult with the instructor or TAs in this class.

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). 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: https://policy.ufl.edu/regulation/4-040/

Whole Gator App: The Whole Gator and website and app connects UF students with resources dedicated to supporting overall health and well-being. In addition to many of the resources below it also has strategies to practice self-care. https://one.uf.edu/whole-gator/topics

Health and Wellness:

- U Matter, We Care: If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit U Matter, We Care website to refer or report a concern and a team member will reach out to the student in distress.
- Counseling and Wellness Center: Visit the Counseling and Wellness Center website or call 352-392-1575 for information on crisis services as well as non-crisis services.
- Student Health Care Center: Call 352-392-1161 for 24/7 information to help you find the care you need, or visit the Student Health Care Center website.
- University Police Department: Visit UF Police Department website or call 352-392-1111 (or 9-1-1 for emergencies).
- UF Health Shands Emergency Room / Trauma Center: For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; Visit the UF Health Emergency Room and Trauma Center website.
- GatorWell Health Promotion Services: For prevention services focused on optimal wellbeing, including Wellness Coaching for Academic Success, visit the GatorWell website or call 352-273-4450.
- Student Success Initiative, <u>http://studentsuccess.ufl.edu</u>

Academic Resources:

• E-learning technical support: Contact the UF Computing Help Desk at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

- Career Connections Center: Reitz Union Suite 1300, 352-392- 1601. Career assistance and counseling services.
- Library Support: Various ways to receive assistance with respect to using the libraries or finding resources. Call 866-281-6309 or email ask@ufl.libanswers.com for more information.
- Teaching Center: 1317 Turlington Hall, 352-392-2010 or to make an appointment 352- 392-6420. General study skills and tutoring.
- Writing Studio: Daytime (9:30am-3:30pm): 2215 Turlington Hall, 352-846-1138 | Evening (5:00pm-7:00pm): 1545 W University Avenue (Library West, Rm. 339). Help brainstorming, formatting, and writing papers.
- Academic Complaints: Office of the Ombuds; Visit the Complaint Portal webpage for more information.
- Enrollment Management Complaints (Registrar, Financial Aid, Admissions): View the Student Complaint Procedure webpage for more information.

Student Complaints:

- Residential Course: https://www.ombuds.ufl.edu/complaint-portal/
- Online Course: <u>https://pfs.tnt.aa.ufl.edu/state-authorization-status/#student-complaint</u>