

Fall 2019

SET 303-101: Photogrammetry and Aerial Photo Interpretation

Huiran Jin

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SET 303 – Photogrammetry and Aerial Photo Interpretation

Fall 2019

LECTURE	Wed. 6–9 pm at CKB 214
LAB	Thurs. 6–9 pm at GITC 2315A
INSTRUCTOR	Dr. Huiran Jin
CONTACT	huiran.jin@njit.edu (973) 596-3249
OFFICE HOURS	Wed. 11 am –2 pm at GITC 2514 (or by appointment)
COURSE STRUCTURE	(3-3-4) (lecture hr/wk - lab hr/wk - course credits)
COURSE DESCRIPTION	This course reviews the principles of photogrammetry and remote sensing as they relate to engineering, land surveying and geographic information systems (GIS). This includes developing an understanding of the necessary optics, mathematics, image processing, and computer science fundamentals. Photographic and digital photogrammetry will be covered with an emphasis placed on the process of designing and establishing the required data for the acquisition of photogrammetric information according to standards and procedures.
PREREQUISITE(S) CO REQUISITE(S)	SET 200 or equivalent
TEXTBOOK & REQUIRED MATERIALS	A. <i>P.R. Wolf, B.A. DeWitt, & B.E. Wilkinson. (2014). <u>Element of Photogrammetry with Applications in GIS (4th Edition)</u>. McGraw-Hill Education.</i> B. Technical Journal Articles. C. Federal, State and Professional Standards/Procedures.
COMPUTER USAGE	ERDAS Imagine, Microsoft Word, etc.
CLASS TOPICS	Photogrammetric principles and optics, mathematics of photogrammetry and photographic systems. Geometry and properties of vertical and tilted photographs, photographic measurements, refinements and parallax. Fundamentals of analytical photogrammetry and aerotriangulation. Project planning and standards. Digital photogrammetry and digital image processing. Sensing systems. Orthophotography and topographic mapping.

GRADING POLICY	Lab	25 %
	Homework	20 %
	Quiz	10 %
	Midterm	20 %
	Final	25 %

A	> 90
B+	82–89.9
B	75–81.9
C+	70–74.9
C	65–69.9
D	60–64.9
F	< 60

IMPORTANT NOTES:

- A. Attendance to every lab is required. Each student will be given a score by the Instructor of the lab session at the end of the semester based on the overall performance.
- B. Homework should only be submitted electronically through CANVAS. Details on how you derived your answers must be shown.
- C. Each homework is due ONE week from assignment. Answers and key steps to solve the problems will be posted after the due date. Unless approved by the Instructor before the deadline, late submission will not be accepted/graded and a zero will be assigned automatically.
- D. Quizzes will consist of five (5) T/F or multiple choice questions. Students need to come to class to take the quizzes.
- E. No makeup Midterm/Final exams will be provided unless students' absence is approved by the Dean of Students.
- F. Adjustments on the letter grade assignment and/or curving of the final scores might be applied based on the overall performance of the class.

ACADEMIC INTEGRITY

NJIT has a zero-tolerance policy regarding cheating of any kind and student behavior that is disruptive to a learning environment. Any incidents will be immediately reported to the Dean of Students. In the cases the Honor Code violations are detected, the punishments range from a minimum of failure in the course plus disciplinary probation up to expulsion from NJIT with notations on students' permanent record. Avoid situations where honorable behavior could be misinterpreted. For more information on the honor code, go to <http://www.njit.edu/academics/honorcode.php>.

STUDENT BEHAVIOR

- Cellular phones must be turned off during the class hours – if you are expecting an emergency call, leave it on vibrate.
- Unless the Instructor allows the use of electronic devices (i.e. iPad, Computer) these should be closed/turn-off during lecture.
- You should try to be part of a discussion.

MODIFICATION TO COURSE The Course Outline below may be modified at the discretion of the Instructor in the event of extenuating circumstances. Students will be notified in advance of any changes to the outline.

COURSE OUTLINE

<i>Week</i>	<i>Date</i>	<i>Topic of Lecture</i>	<i>Reading</i>	<i>Assignment</i>
1	9/4	<ul style="list-style-type: none"> • Introduction • Applications of Aerial Photography 	Ch. 1,	#1
2	9/11	<ul style="list-style-type: none"> • Principles of Photography and Imaging • Imaging Devices 	Ch. 2,3 App. A	#2
3	9/18	<ul style="list-style-type: none"> • Image Measurements and Refinements • Object Space Coordinate Systems 	Ch. 4,5	#3
4	9/25	<ul style="list-style-type: none"> • Vertical Photographs 	Ch. 6	#4
5	10/2	<ul style="list-style-type: none"> • Stereoscopic Viewing • Stereoscopic Parallax 	Ch. 7,8	#5
6	10/9	<ul style="list-style-type: none"> • Elementary Methods of Planimetric Mapping 	Ch. 9	
7	10/16	<ul style="list-style-type: none"> • Tilted and Oblique Photographs • Review for Midterm 	Ch. 10	#6
8	10/23	<ul style="list-style-type: none"> • Midterm Exam 		
9	10/30	<ul style="list-style-type: none"> • Analytical Photogrammetry • Topographic Mapping and Spatial Data Collection 	Ch. 11,12,13	
10	11/6	<ul style="list-style-type: none"> • Digital Image Processing 	Ch. 15	
11	11/13	<ul style="list-style-type: none"> • Project Planning 	Ch. 18	#7
12	11/20	<ul style="list-style-type: none"> • Laser Scanning Systems • Airborne LiDAR 	Ch. 14	
13	11/27	<ul style="list-style-type: none"> • Friday Classes Meet 		
14	12/4	<ul style="list-style-type: none"> • Visit GEOD Corporation 		
15	12/11	<ul style="list-style-type: none"> • Digital Resampling • Drones • Review for Final 		
16	12/18	<ul style="list-style-type: none"> • Final Exam 		