

**SUR 4350**  
**Advanced Photogrammetry**  
**Fall 2012 Syllabus**

**INSTRUCTOR:** Bon Dewitt  
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Email: bon@ufl.edu

**OFFICE HOURS:** Period 4 (10:40) Mon, Wed, Fri; Period 7 (1:55) Wed

**TEXTBOOK:** Wolf, P.R., and B.A. Dewitt, Elements of Photogrammetry: with Applications in GIS, 3rd Ed., McGraw-Hill, 2000.

**COURSE GRADING:** The course grade will be based on lab assignments and three exams. The percentage breakdown is as follows:

EXAM I	: 20%
EXAM II	: 20%
Labs	: 35%
FINAL	: 25%

(Final grades are based on a curve.)

**FINAL EXAM:** The final exam is scheduled for Thursday, December 13th from 3:00 – 5:00 PM. Be sure to take this into consideration when making plans. There will be no arrangements for early or late exams.

**LATE POLICY:** Due dates will be announced when lab assignment is given. A deduction of 25% will be made for each day it is late.

**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 their theoretical bases.

**ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES:** "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."

**HONESTY POLICY:** All students are required to abide by the Student Honor Code and Student Conduct Code, which have been accepted by the University.  
(<http://www.dso.ufl.edu/sccr/honorcodes/conductcode.php>)

## LECTURE TOPICS

Lec	Topic
1	Introduction
2	Coordinate systems for Photogrammetry - Map projections, Datums and conversions READ: Sections 5-6, 5-7, F-5, F-6
3	3D angles and angular conversion READ: Section C-7 (Step 1, only), D-6, D-8
4-5	2D Coordinate transformations READ: App C - Sections C-1 ... C-6, C-8
6	Collinearity and Space resection READ: Sections 11-1 - 11-7, D-1 - D-5, D-7
7-8	Analytical stereomodel and relative orientation READ: Sections 11-8 - 11-10
9-11	Coordinate transformations - three dimensional READ: App C - Section C-7
12-13	Principles of LiDAR READ: Section 13-9
14	Aerotriangulation - Independent Models READ: Ch. 17 - Sections 17-1 - 17-7
15-18	Aerotriangulation - Simultaneous bundle adjustment READ: Ch 17 - Sections 17-8 ... 17-10
19-20	Analytical self-calibration READ: Ch 11 - Section 11-12
21	Digital photogrammetry - Modulation transfer, image model, and spatial frequency READ: Ch 3 - Section 3-13, Ch 14 - Sections 14-1, 14-2, 14-3
22	Digital resampling READ: Appendix E
23-24	Softcopy operations - Systems, image matching, digital orthophoto generation READ: Ch 15
25-26	Aerotriangulation - Airborne GPS, line perspective, efficiency READ: Ch 17 - Sections 17-11 ... 17-13
27	Digital Mapping Cameras

## **SUR4350 LABS**

<b>LAB</b>	<b>TOPIC</b>
1	Introduction
2	Omega-Phi-Kappa — Tilt-Swing-Azimuth Conversion
3	Coordinate Transformations - Digital Image Registration
4	Single Photo Space Resection
5	Stereoplotter Mapping
6	Stereoplotter Mapping (continued)
7	Terrestrial LIDAR
8	Simultaneous Bundle Adjustment - Aerotriangulation
9	Simultaneous Bundle Adjustment - Aerotriangulation (continued)
10	Close Range Photogrammetry/Analytical self-calibration
11	Close Range Photogrammetry/Analytical self-calibration (continued)
12	Digital Terrain Models
13	Close range photogrammetry demonstration Gary Johanning, Geodetic Systems, Inc. ( <a href="http://www.geodetic.com">www.geodetic.com</a> )
14	Digital Orthophotos

## FALL 2012

Monday	Tuesday	Wednesday	Thursday	Friday
8/20	8/21	8/22	8/23 Lec. 1 Lab 1	8/24
8/27	8/28 Lec. 2	8/29	8/30 Lec. 3 Lab 2	8/31
9/3 <b>Labor Day</b>	9/4 Lec. 4	9/5	9/6 Lec. 5 Lab 3	9/7
9/10	9/11 Lec. 6	9/12	9/13 Lec. 7 Lab 4	9/14
9/17	9/18 Lec. 8	9/19	9/20 Lec. 9 Lab 5	9/21
9/24	9/25 Lec. 10	9/26	9/27 <b>EXAM I</b> (Lec. 1-8) Lab 6	9/28
10/1	10/2 Lec. 11	10/3	10/4 Lec. 12 Lab 7	10/5
10/8	10/9 Lec. 13	10/10	10/11 Lec. 14 Lab 8	10/12
10/15	10/16 Lec. 15	10/17	10/18 Lec. 16 Lab 9	10/19
10/22	10/23 Lec. 17	10/24	10/25 Lec. 18 Lab 10	10/26
10/29	10/30 Lec. 19	10/31	11/1 Lec. 20 Lab 11	11/2
11/5	11/6 <b>EXAM II</b> (Lec. 9-18)	11/7	11/8 Lec. 21 Lab 12	11/9 <b>Homecoming</b>
11/12 <b>Veteran's Day</b> (observed)	11/13 Lec. 22	11/14	11/15 Lec. 23 Lab 13	11/16
11/19	11/20 Lec. 24	11/21 <b>Thanksgiving</b> <b>Break</b>	11/22 <b>Thanksgiving</b>	11/23 <b>Thanksgiving</b> <b>Break</b>
11/26	11/27 Lec. 25	11/28	11/29 Lec. 26 Lab 14	11/30
12/3	12/4 Lec. 27	12/5	12/6 <b>Reading Day</b>	12/7 <b>Reading Day</b>
12/10	12/11	12/12	12/13 <b>FINAL EXAM</b> <b>3:00 – 5:00 PM</b>	12/14