

**ENVIRONMENTAL RESOURCE SCIENCE 185:
AERIAL PHOTO INTERPRETATION AND REMOTE SENSING**

Lecturer: Mike Whiting (mwhiting@ucdavis.edu) Lecture: 168 Hoagland Hall
Phone: 304-2864; Office: rm 121 Veihmeyer Hall M, W, 9-9:50 am
Office Hours: M, W, 2:00 pm in lab Lab: PES 1147 & Hunt 253 (as noted)
and by appointment M, W, 10-11:50 am (CRN 33774);
12:10-2:00 pm (CRN 33775)

TA: Sean Hogan (sdhogan@ucdavis.edu), Office Hours: Tues, 9:00 -10:00 am, and
by appointment. Office: CSTARS Lab, rm 120, Veihmeyer Hall

Textbook: Jensen, John R. *Remote Sensing of the Environment: An Earth Resource
Perspective. Second Edition*, Upper Saddle River, NJ: Prentice Hall, 2007.

Lab Supplies: 0.3-0.5 mm mechanical pencil (2H, HB lead); fine (0.3 mm) black
permanent ink pen; plastic 30 centimeter scale (ruler).

Lecture slides, announcements, lab exercises, and references materials will be
available on the SmartSite "ERS 185 A01-A02 WQ 2010". Print the exercises for
use during the lab sessions, and download additional references from this site.

Additional books on reserve:

Avery, T.E. and G.L. Berlin. 1985. *Fundamentals of Remote Sensing and Airphoto
Interpretation*. Edition 5, Macmillian Publishing Co. (Physical Sci, TR810 .A9 1992)

Lillesand, T.M. and R.M. Kiefer, et al., 1994+ *Remote Sensing and Image Interpretation*.
John Wiley & Sons, Inc. New York, editions > 3rd (Shields, G70.4 .L54 2000)

Mikhail, E.M., J.S. Bethel, and J.C. McGlone. 2001. *Introduction to Modern
Photogrammetry*. John Wiley & Sons, Inc. New York (Shields, TR693 .M55 2001)

Grading:

Homework is not assigned. Concentrate on lab and reading assignments, and
actively participate in class and lab.

Exams: 50 minute mid-term exam (25% of grade), covering the prior lectures, and a
comprehensive two hour final exam (50% of grade) for two hours.

Laboratory exercises: Lab exercises (25% of grade) are due at the beginning of the
following lab period, unless notified otherwise, and are worth 10 points. Some
exercises require two lab periods, in these cases the labs are due the lab following
the second lab session. These assignments are worth 20 points.

Submit completed lab assignments:

Submit lab assignments to the SmartSite or as hardcopy at following lab sessions, as
appropriate. Upload assignment to SmartSite as Word or .PDF file with file name as
LastnameFirstinitial_Lab#_date.[doc, pdf] , for example,
WhitingM_Lab1_01052010.doc.

Lecture

| <i>Numbers</i> | <i>Dates</i> | <i>Topics</i> | <i>Reading Assignments</i> |
|--|--------------------|--|-------------------------------------|
| 1. | January 3 | Remote Sensing for Mapping | Chapter 1 |
| | | Lab #1: Map, Photo, and Publication Resources. Carol La Russa, Librarian, Map Room, Shields Library. | |
| 2. | January 5 | Getting Started with Photo Interpretation | Chapter 5 |
| | | Lab #2: (1147 PES) PI campus/Davis using stereo viewing | pg. 162-169 Chap 6 |
| 3. | January 10 | Urban Photography | Chapter 13 |
| | | Lab #3: (1147 PES) Photo interpretation for mapping | |
| 4. | January 12 | Camera and Film/Digital Basics | Chapter 4 |
| | | Lab #4: (1147 PES) Filters, film, digital band determinations | |
| | January 17 | No class: Martin Luther King, Jr. Holiday | |
| 4. | January 19 | Camera and Film/Digital Basics Continued | |
| | | Lab #5 (253 Hunt): scan resolutions | |
| 5. | January 24, 26, 31 | Multispectral Digital Camera Systems | Chapter 7 |
| | | (satellites, pg. 193-211; aircraft & satellite scanners, pg. 220-248) | |
| | | Lab #6 (253 Hunt): rectification and scaling of scanned images (three lab periods) | |
| | February 2 | MIDTERM | |
| | | Lab (253 Hunt): Open lab from completing #6. | |
| 6. | February 7, 9 | Photogrammetry | Chapter 6 |
| | | Lab #7 (PES 1147): Photo distance, relief displacement (two lab sessions) | |
| 7. | February 14, 16 | Vegetation Photography | Chapter 11 |
| | | (leaf characteristics, pg. 355-364; BRDF, pg. 366-371; temporal, pg. 373-382, and vegetation indexes NDVI through EVI pg. 382-391) | |
| | | Lab #8 (253 Hunt): field id and softcopy veg life form in images (two lab periods) | |
| | February 21 | No class: Presidents' Holiday | |
| 8. | February 23, 28 | Soils and Geomorphology Photography | Chapter 14 |
| | | (soil characteristics, pg. 507-517; geology pg. 521-568) | |
| | | Guest Lecturer, February 23: Sean Hogan, Watershed boundary delineation | |
| | | Lab #9 (PES 1147): stereo mapping streams and watersheds | |
| 9. | March 2 | Water Photography | Chapter 12 (pg 409-423) |
| | | Lab #10: (1147 PES) Glint, vegetation and sediments, stream profile creation | |
| 10. | March 7, 9 | Fundamentals of EMR | Chapter 2 |
| | | Lab #11 (253 Hunt): Spectra measurement--reflected light, indexes, and phenological calendar (two lab sessions). | |
| 11. | March 14 | Wrap up | |
| | | Open Lab (253 Hunt): complete #11 and open question study session | |
| <hr/> March 19, Saturday FINAL EXAMINATION (code Y) | | | 6:00-8:00 p.m. 168 Hoagland Hall |