

# ARCH 497d - Architectural Photography

## Professor Gary L. Catchen

### Contact:

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### Meeting times:

Fall Semester 2004  
Tuesdays, Thursdays,  
11:15 AM – 12:30 PM,  
207 Thomas Building;  
Schedule Number 443869  
Prerequisites: none

### Equipment:

35 mm single-lens-reflex camera  
with a 28 mm (or shorter) focal-  
length lens or digital camera  
with a 3+ Megapixel CCD and  
equivalent optics

### Summary:

Presenting technically correct and aesthetically compelling images is a key element in the professional practice of architecture and landscape architecture. Specifically, to their clients and to the scholarly community, these professionals must present photographs of models, buildings and spaces under construction, and finished products. Moreover, the emergence of global architecture practices means that buildings are now more often judged from photographic images than from direct visual experience. Thus,

professional practice requires either photographing architecture or hiring a photographer skilled in the art. To provide the necessary expertise, I am offering this three-credit course in architectural photography. As an elective, this course will serve primarily undergraduate and graduate students who are studying architecture, landscape architecture, architectural engineering, and art history or architectural history. The objectives are for the student to understand the contributions of photography to enhancing the aesthetics of architecture and to develop proficiency in this art using modern photographic techniques.



Berlin: Borsigturm

Week 1:

- A. Overview of course
  - 1. reading materials
    - a. essays about social, historical, and aesthetic aspects of photography
    - b. texts providing technical information
  - 2. equipment: cameras and lenses
    - a. requirements for architectural photographs
    - b. sources of equipment
  - 3. photo-finishing and editing of digital images
    - a. standards for presentation
    - b. sources of photo-finishing services
    - c. available computers, scanners, and editing programs
  - 4. field assignments
  - 5. final project
- B. Field assignment 1: Critique of photographs
- C. Reading assignment: Essays by Susan Sontag, Walter Benjamin, and others

Week 2:

- A. Brief history of photography and architectural photography
  - 1. technical developments
    - a. early recording media and cameras
    - b. improvements in optics and film
    - c. color photography
    - d. rise of small-format photography
    - e. digital representation of images
  - 2. social impact
    - a. war
    - b. public opinion and new legislation
  - 3. aesthetic value and contribution to art
    - a. Pictorialism
    - b. Straight Photography
- B. Enhancing the aesthetics of architecture through photography
  - 1. international nature of contemporary architecture
- C. Reading assignment: Excerpts from "Architecture Transformed: A History of the Photography of Buildings from 1838 to the Present" by Cervin Robinson and Joel Herschman.
- D. Reading assignment: Excerpts from "A World History of Photography, 3<sup>rd</sup> edition, by Naomi Rosenblum.

## Week 3:

- A. Fundamental aspects of camera function
  - 1. optics
    - a. focal length
    - b. aperture
  - 2. control of exposure
    - a. diameter of aperture
    - b. shutter speed
      - (1) monopods and tripods
  - 3. recording medium
    - a. silver halide emulsion
    - b. charge-coupled device
  - 4. introduction to measuring exposure
    - a. operation of exposure meters
      - (1) manual
      - (2) aperture priority
      - (3) shutter-speed priority
      - (4) automatic
    - b. techniques
      - (1) film speed, exposure measurement, and gray scale
      - (2) effects of high contrast
- B. Field assignment 2: Photographing a small rectangular building from different vantage points
- C. Reading assignment: Excerpts from "Photography," Barbara London et al. 7<sup>th</sup> edition

## Week 4:

- A. Types of cameras
  - 1. small-format camera
    - a. rangefinder
    - b. single-lens reflex
  - 2. medium-format camera
    - a. twin-lens reflex
    - b. single-lens reflex
    - c. rangefinder
  - 3. large-format camera
    - a. view
    - b. press

## B. Characteristics of lenses

1. Focal length and angle of view
  - a. normal lens
  - b. telephoto lens
  - c. wide-angle lens
  - d. zoom lens
  - e. other types
    - (1) macro-lens
    - (2) enlarging lens
    - (3) perspective-control lens
2. Optical characteristics
  - a. light gathering ability
    - (1) maximum aperture
    - (2) shutter speed and camera shake
  - b. resolution and distortion
    - (1) aberrations
    - (2) format size and enlargement
    - (3) effects of recording medium
  - c. depth of field
    - (1) effect of aperture diameter
    - (2) effect of focal length
    - (3) effect of camera-to-subject distance

## C. Field assignment 3: Perspective and camera-to-subject distance

## Week 5:

### A. Characteristics of recording media

1. film
  - a. black-and-white negative film
    - (1) physical structure
    - (2) sensitivity to light
    - (3) spectral sensitivity
    - (4) graininess
    - (5) contrast
  - b. negative and positive color film
    - (1) physical structure
    - (2) differences in exposure characteristics
    - (3) color balance
2. charge-coupled devices
  - a. physical description
    - (1) binary representation of exposure information
    - (2) picture elements
    - (3) storage of information

- B. Field assignment 4: Depth of field
- C. Reading assignment: Excerpts from "Photography,"  
Barbara London et al. 7<sup>th</sup> edition
- D. Reading assignment: Chapter 2, Leslie Stroebel, "View Camera Technique,"  
7<sup>th</sup> edition

## Week 6:

- A. Perspective
  - 1. single-point perspective
    - (a) examples
    - (b) distortions
    - (c) emphasizing architectural elements
      - (1) effect of camera-to-subject distance
  - 2. two-point perspective
    - (a) examples
    - (b) distortions
    - (c) emphasizing architectural elements
      - (1) effect of camera-to-subject distance
      - (2) effect of oblique angles
  - 3. three-point perspective
    - (a) examples and applications
- B. Methods of correcting distortions
  - 1. using perspective-control (PC) lenses
    - (a) types of PC lenses
    - (b) optical characteristics
    - (c) advantages and limitations
  - 2. qualitative features of view cameras
    - (a) physical description
      - (1) lenses, backs, and bellows
    - (b) movements
      - (1) swings, tilts, and shifts
    - (c) advantages and limitations
- C. Field assignment 5: Photographing a large, northward-facing building  
under different lighting conditions

## Week 7:

- A. External lighting
  - 1. Direction of lighting
    - a. front lighting
    - b. side lighting
    - c. back lighting
    - d. shadows, texture, and effects of clouds
    - e. measuring exposure
    - f. lens flare
  - 2. Diffusivity of lighting
    - a. contrast
    - b. psychological effects
    - c. some historical aspects of lighting
- B. Reading assignment: Chapter 4, "Professional Architectural Photography,"  
M. Harris.
- C. Field assignment 6: Photographing a selected building under different lighting conditions

## Week 8:

- A. External lighting continued
  - 1. using sun-finder charts
    - a. examples
  - 2. Optimum angles for sunlight
    - a. seasonal effects
    - b. direction of facade
  - 3. color temperature
    - a. physical effect
    - b. dependence of color balance on time of day
    - c. use of filters for color photography
      - (1) ultraviolet filter
      - (2) polarizing filter
  - 4. use of filters for black-and-white photography
    - a. ultraviolet filters and neutral-density filters
    - b. colored filters
      - (1) changes in gray scale and darkening of blue skies
      - (2) changes in exposure
      - (3) changes in shadows
- B. Field assignment 7: Photographing a selected building using lighting to emphasize some architectural element

## Week 9:

## A. Interiors

1. composition
  - a. symmetric composition
  - b. applying the law of thirds
  - c. perspective
2. lenses
  - a. distortions produced by wide-angle lenses
  - b. determining depth of field
3. lighting
  - a. types of lighting and their characteristics
    - (1) daylight
    - (2) tungsten
    - (3) fluorescent
    - (4) flash
    - (5) mixed
      - (a) white-point setting on digital cameras
      - (b) filters and multiple exposures
  - b. measuring exposure
    - (1) daylight or tungsten
      - (a) reciprocity failure for long exposures
    - (2) flash
    - (3) combined daylight and flash
      - (a) flash meter
      - (b) weighting of daylight and flash contributions
    - (4) bracketing
    - (5) preview using instant film

B. Reading assignment: Chapters 5 & 6, "Professional Interior Photography,"  
M. Harris.

C. Field assignment 8: Photographing a selected interior space

## Week 10:

## A. Determining exposure

1. Types of exposure meters
  - a. reflected-light meter
    - (1) exposure values
      - (a) f-stops, shutter speeds, and exposure
    - (2) film speed
      - (a) ISO, ASA, DIN standards
      - (b) relation between film speed and exposure
    - (3) Kodak gray card
    - (4) angle of acceptance
  - b. incident-light meter
    - (1) applications
  - c. spot meter
    - (1) applications
  - d. behind-the-lens meter
    - (1) average values of exposure
    - (2) common errors
2. Techniques based on the zone system
  - a. definition of zones
  - b. relation between zones and exposure values
    - (1) responses of recording media
  - c. aesthetic goals visualized using zones
    - (1) examples
  - d. control of contrast
    - (1) examples of contrast-limited scenes
    - (2) exposure and development conditions
      - (a) effects on shadow detail and highlights
      - (b) compressing and expanding the gray scale
  - e. application of techniques to color photography
    - (1) characteristics of color negative film
    - (2) characteristics of color reversible film

- B. Reading assignment: Excerpts from: "The practical zone system,"  
C. Johnson, second edition

- C. Field assignment 9: Photographing a selected building  
under high-contrast conditions

## Week 11:

- A. Overview of the digital process
  - 1. formats for storing data
    - a. non-compressed and lossless-compressed formats
      - (1) TIFF
      - (2) Photoshop
      - (3) RAW
    - b. lossy-compressed formats
      - (1) jpeg
      - (2) others
  - 2. scanning images
    - a. characteristics of scanners for negatives and positives
      - (1) resolution and memory requirements
    - b. characteristics of scanners for prints
      - (1) resolution and memory requirements
    - c. correcting the effects of scanning
      - (1) gray scale
      - (2) color balance
      - (3) sharpness
  - 3. editing digital images
    - a. brightness and contrast
    - b. sharpness
    - c. size and resolution
- B. Photographing architectural models
  - 1. lighting and perspective
  - 2. depth-of-field
- C. Field assignment 10: Photographing an architectural model
- D. Proposal for a final project is due.

## Week 12:

- A. Overview of the silver-halide process
  - 1. chemistry of black-and-white silver images
    - a. developing silver-halide grains
      - (1) effects of developing on graininess
      - (2) effects of "push" and "pull" developing
    - b. fixing the image
    - c. washing film and prints
  - 2. chemistry of color images
    - a. structure of color-sensitive emulsions
    - b. developing silver-halide grains and coupling products to dyes
    - c. commercial processes
      - (1) C-41, E-6, and Kodachrome
  - 3. printing techniques
    - a. contact printing
      - (1) proof sheets
    - b. projection printing
      - (1) types and characteristics of enlargers
        - (a) condenser enlargers
        - (b) diffusion enlargers
      - (2) types and characteristics of photographic paper
        - (a) resin-coated paper
        - (b) baryta-based paper
        - (c) cool and warm toned papers
      - (3) techniques for contrast control
        - (a) dodging and burning
      - (4) toning
- B. Approval of proposal for the final project

## Week 13:

- A. Presenting photographs
  - 1. mounting, mats, and frames
  - 2. permanence of photographs
- B. Final project

## Week 14:

- A. Final project

## Week 15:

- A. Oral presentation of final project
- B. Written report of final project is due.

## Course Requirements:

Field assignments	50%
Mid-term quiz	15%
Final quiz	15%
Final project	20%