COLUMBIA UNIVERSITY

GRADUATE SCHOOL OF ARCHITECTURE,

PLANNING AND PRESERVATION SPRING TERM, 2013 Tuesdays, 4:00 – 6:00

A6728 CONSERVATION SEMINAR; WOOD: ITS PROPERTIES, USE & CONSERVATION

John D Childs, Adjunct Assistant Professor

COURSE DESCRIPTION

Students will examine the structure of wood and its physical characteristics, and learn to identify specific wood species commonly used in historic architecture. The history of woodworking, joinery, wood products, clear finishes and fasteners used in architecture and interior woodwork will be reviewed. Mechanisms of physical and biological deterioration, including fungal and insect attack will be covered. Finally, students will learn historical and contemporary techniques used in the conservation and restoration of architectural wood. The course will include a field trip to a restoration project.

COURSE REQUIREMENTS

During the semester, course participants will each prepare a sample of a wood finish for inclusion in a wood finish sample display. Course participants will prepare an annotated bibliography on any aspect of wood or its use in architecture (anatomy, fabrication, history of use, or conservation.)The bibliography will be at least 10 pages, and include at least 30 references. Bibliography will be due on the last day of class, April 29, 2014. A final open book exam will emphasize historic construction technology, mechanisms of deterioration, and methodology of repair. The exam will be distributed April 29, 2014 and will be due by 11:59 PM Tuesday, May 13, 2014.

COURSE OUTLINE

Class 1. (January 21, 2014) Introduction & Wood Anatomy.

Discussion of content and goals of course, course requirements, and available resources. Discussion of existing knowledge of course participants. Distribution of select bibliography. Introduction to the structure of wood on a macro and microscopic level.

Class 2. (January 28, 2014) Wood identification

Introduction to microscopic identification of wood. Description of identifying characteristics used to distinguish wood species. Sample preparation of wood identification reference set, including cutting, staining and mounting of samples.

Class 3. (February 4, 2014) Wood performance, deterioration, pests and preservatives

Examination of wood strength and moisture characteristics. Methods of determining moisture content. Relative characteristics between species. Discussion of primary modes of wood deterioration, with identification of common wood pests and other modes of biological attack. Discussion of relative resistance of various wood species to deterioration. Examination of historic and contemporary techniques for preserving wood.

Class 4. (February 11, 2014) History of woodworking technology

Woodworking tools and machinery from the ancient world to today, with a concentration on the 17th through 19th century in America. Demonstration of splitting and riving.

Class 5. (February 18, 2014) History and technology of timber framing

Techniques and terminology of timber framing, including identification of framing elements and joinery. Evolution of framing from timber-frame through balloon-frame to platform-frame, including truss-frame. Discussion of framing fasteners (pegs, nails, screws) Demonstration of hewing.

Class 6. (February 25, 2014) History and technology of interior woodwork

Techniques and terminology of interior paneling and stair construction. History of paneling and stair design. Discussion of interior joinery (mortise and tenon, dovetail, screw, dowel, biscuit). Demonstration of mortise and tenon joint construction.

Class 7. (March 4, 2014) Structural characteristics of wood joinery

Relative strength of mortise and tenon, dovetail, nail, screw, dowel, biscuit, butt-joint gluing, edge-gluing. Likely areas of failure in various types of joinery.

Class 8. (March 11, 2014) History and technology of wood finishes (coatings)

Materials and techniques of clear coating manufacture and application. Examination of coating samples. Techniques of coating identification. Demonstration of polishing.

March 17 – March 21 Spring Break

Class 9. (March 25, 2014) Restoration and conservation of timber framing

Structural repair of deteriorated framing elements (replacement-in-kind, piecing-in, additional reinforcement, epoxy fills). Restoration and reintegration of damaged visual

elements wooden architecture, including replacement, consolidation, reinforcement and cleaning.

Class 10. (April 1, 2014) Restoration and conservation of interior woodwork

Repair of breaks, splits and failed joints. Consolidation of deteriorated wood. Cleaning of bare wood.

Class 11. (April 8, 2014) Conservation of clear surface coatings.

Cleaning of clear finishes, and removal of over-finishes. Consolidation and reintegration of clear finishes.

Class 11. (April 15, 2014) Restoration and conservation of furniture-Case Histories

Class 12. (April 22, 2014) Field trip (Location TBD)

Class 13. (April 29, 2014) Review of Course

Recapitulation of major topics. Discussion of student bibliographic research. Discussion of final exam.