

**PALOMAR COLLEGE**  
**COURSE OUTLINE OF RECORD FOR**  
**DEGREE CREDIT COURSE**

  X   Transfer Course   X   A.A. Degree applicable course  
(check all that apply)

**COURSE NUMBER AND TITLE:** DT 135 Architectural Materials and Methods of Construction

**UNIT VALUE:** 3

**MINIMUM NUMBER OF SEMESTER HOURS:** 96

**BASIC SKILLS REQUIREMENTS:**

Appropriate language and computational skills.

**ENTRANCE REQUIREMENTS**

**PREREQUISITE:** None.

**COREQUISITE:** None.

**RECOMMENDED PREPARATION:** None.

**SCOPE OF COURSE:**

An introduction to the use and application of building construction materials and processes.

**SPECIFIC COURSE OBJECTIVES:**

Successful students will be able to:

1. compare and contrast various wood, steel, and concrete building materials and structural systems in a series of quizzes and examinations;
2. demonstrate an understanding of the structural analysis of simple wood beams by correctly diagramming and solving a series of structural problems;
3. demonstrate an understanding of the safe use and application of several power and hand wood-working tools by preparing an assigned wood project;
4. develop an understanding of the safe use of several welding processes by attending demonstrations and lectures;

5. demonstrate an understanding of the forming, mixing, and casting of concrete by participating in a group concrete project; and,
6. demonstrate an in-depth understanding of a selected building material by preparing a semester-long report and notebook which includes the description, history, environmental implications, architectural applications, and construction installation of that material.

**CONTENT IN TERMS OF SPECIFIC BODY OF KNOWLEDGE:**

- I. Wood Materials and Structural Systems
  - A. History of Use in Construction
  - B. Species and Characteristics
  - C. Structural Lumber Sizes
  - D. Beam Diagramming & Calculation
  - E. Manufactured Lumber Products
    1. Glued laminated beams
    2. "I" joists
    3. Plywood laminated beams
    4. Parallel strand lumber beams
    5. Trusses
  - F. Heavy Timber Construction
  - G. Hands-on Wood Project
- II. Steel Components and Structural Systems
  - A. History of Use in Construction
  - B. Light Steel Framing
    1. Steel stud construction
    2. Steel bar joists
  - C. Structural Steel & Framing Systems
    1. Welding
    2. Riveting
  - D. Welding Demonstration
- III. Concrete Construction
  - A. History of Use in Construction
  - B. Concrete with Steel Reinforcing (Ferroconcrete)
  - C. Concrete Block
    1. Block types & finishes
    2. Retaining and restraining walls
    3. Modular construction
  - D. Precast Concrete Products
  - E. Cast-in-Place Concrete
    1. Formwork systems
    2. Post-tensioning
    3. Thin-shell construction
  - F. Group Concrete Project
- IV. Composite & Alternative Structural Systems
  - A. Tilt-up Systems
  - B. Geodesic Domes & Related Systems
  - C. Architectural Fabrics

**REQUIRED READING:**

Ching, Francis D.K. Building Construction Illustrated. 3<sup>rd</sup> Edition. New York: John Wiley & Sons, 2000.

**SUGGESTED READING:**

Jefferis, Alan and David A. Madsen. Architectural Drafting and Design. 3<sup>rd</sup> Edition. Albany: Delmar Publishers Inc., 1996.

Ramsey/Sleeper. Architectural Graphic Standards. 10<sup>th</sup> Edition. New York: John Wiley & Sons, 2000.

**REQUIRED WRITING:**

Semester-long building material research notebook that includes a minimum ten double-spaced page report on the application and installation of the selected material.

**OUTSIDE ASSIGNMENTS:**

**Students are expected to spend a minimum of three hours per unit per week in class and on outside assignments, prorated for short-term classes.**

Textbook reading and class handouts in preparation for examinations and class exercises.  
Visit various construction and manufacturing/supply sites.

**INSTRUCTIONAL METHODOLOGY:**

**Check all that apply:**

- lecture
- laboratory
- lecture-laboratory combination
- directed study

**DISTANCE LEARNING:**

**This course may be offered as a distance learning course and meets Title 5 regulations 55370, 55372, 55374, 55376, 55378, and 55380.**

Yes  No

**If yes, check all that apply:**

- Television Course (Video one-way, e.g. ITV, video cassette, etc.)
- Online Course (Text one-way, e.g. newspaper, correspondence, electronic file, etc.)
- Two-Way Video Conferencing (Two-way interactive video and audio)
- One-Way Video Conferencing (One-way interactive video and two-way interactive audio)
- Computer Assisted Instruction (A specialized form of mediated instruction relying

primarily on student access to information and prepared lessons or teaching materials through a computer terminal, but not under immediate supervision of a qualified instructor.)

**GRADING POLICY AND STANDARDS** (include methods of determining whether the stated objectives have been met by students):

20% Building material research notebook.

30% Three hands-on material projects.

50% Three examinations, covering each of the main material areas.

**IS COURSE REPEATABLE FOR REASON(S) OTHER THAN DEFICIENT GRADE?**

Yes \_\_\_\_ No X Number of times course may be taken for credit: \_\_\_\_

If yes, identify specific provision of Title 5 Division 2 section(s), 55761-55763 and 58161 which qualifies course as repeatable:

**CONTACT PERSON:** Ken Swift, ext: 2559

<b>SIGNATURES ON FILE:</b>
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