

COURSE OUTLINE

Architecture 103 Descriptive Geometry

Catalog Statement

ARCH 103 is a study of the applied science of graphical representation of lines, planes, surfaces, and solids. Architectural applications are used for subject matter including simple shades and shadows.

Total Lecture Units: 1.5

Total Laboratory Units: 1.5

Total Course Units: 3.0

Total Lecture Hours: 24.0

Total Laboratory Hours: 72.0

Total Faculty Contact Hours: 96.0

Prerequisite: ARCH 101 or equivalent

Recommended Preparation: ENGR 109

Note: This course is required for architecture majors. This course may not be taken for credit by students who have completed ENGR 103.

Course Entry Expectations

Prior to enrolling in the course, the student should be able to:

- complete assignments in basic drafting fundamentals;
- complete basic residential working drawings;
- use limited technical vocabulary;
- demonstrate proficiency in an architectural style of lettering;
- demonstrate proficiency in drawing on vellum and in the use of drawing instruments;
- apply a limited portion of the uniform building code.

Course Exit Standards

Upon successful completion of the required coursework, the student will be able to:

- describe the purpose of descriptive geometry and how it relates to the student's field of study;
- create flat pattern developments in relation to architectural design requirements through a series of problems;
- utilize descriptive geometry techniques to solve various architectural drawing tasks.

Course Content

Total Faculty Contact Hours = 96

Projections (**lecture 1.5 hours, lab 4 hours**)

- Review of isometric projection
- Review of orthographic projection
 - Standard views (frontal, horizontal, and profile)
 - Auxiliary views

Drawing Conventions (**lecture 1 hours, lab 3 hours**)

- Problem layout setup
- Naming of views
- Nomenclature of other components

Lines (**lecture 3.5 hours, lab 8 hours**)

- Finding true length of lines
- Angle with planes
- Finding point views of lines
- Calculating distance, bearing, and grade

Points (**lecture 2 hours, lab 6 hours**)

- Definition
- Projection of points

Surfaces (**lecture 5.5 hours, lab 14 hours**)

- Definition
- Curved surfaces
- Finding edge views of surfaces

Solids (**lecture 2 hours, lab 6 hours**)

- Definition
- Determining visibility of edges
- Finding true size of surfaces

Intersections (**lecture 5.5 hours, lab 15 hours**)

- Finding piercing points of a line with surface
- Finding the intersection of two surfaces
- Finding the intersection of a surface and a solid

Pattern Development (**lecture 1 hours, lab 6 hours**)

- Uses of developments
- Assembly methods

Projection of Shadows (**lecture 1 hours, lab 3 hours**)

- Methods of casting shadows
- Imaginary shadows; shadows by line segment method
- Determination of shade and shadow areas on various types of objects
- Determination of shade areas

Presentation of Portfolio (**lecture 1 hours, lab 7 hours**)

- Creation of a portfolio
- Final presentation of projects

Methods of Instruction

The following instructional methodologies may be used in the course:

- lecture;
- multimedia;
- guest speakers.

Out of Class Assignments

The following out of class assignments may be used in the course:

- weekly forum posts (e.g. short written response to weekly forum question);
- individual and group projects (e.g. completion of projects from lab manual);
- written research (e.g. writing a research paper on an assigned topic).

Methods of Evaluation

The following methods of evaluation may be used in the course:

- performance tests (e.g. timed drawing tests);
- midterm examination (e.g. a performance-based drawing project);
- final examination (e.g. a performance-based drawing project);
- portfolio review and critique (e.g. a critique of all of the work that the student has accomplished during the course).

Textbook

Martin, David, *Descriptive Geometry Lab Manual*.
Glendale: Glendale Community College Bookstore, 2014.
10th Grade Textbook Reading Level.

Pare, Eugene G, et al. *Descriptive Geometry*. 9th ed.
San Francisco: Peachpit, 1997. Print.
13th Grade Textbook Reading Level. ISBN: 978-0023913419.
This is the most recent edition of this textbook available

Student Learning Outcomes

Upon successful completion of the required coursework, students will be able to:

- calculate various facts about lines, surfaces, and shapes through only graphical means;
- explain the process of solving a descriptive geometry problem;
- explain the process of creating flat pattern developments in relation to architectural design.