

COURSE OUTLINE

**Architecture 103**  
**Descriptive Geometry**

**I. Catalog Statement**

Architecture 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: 2.0

Total Laboratory Units: 1.0

**Total Course Units: 3.0**

Total Lecture Hours: 32.0

Total Laboratory Hours: 64.0

**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.

**II. Course Entry Expectations**

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

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

### III. Course Exit Standards

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

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

### IV. **Course Content**

**Total Faculty Contact Hours = 96**

A. Projections	Lecture 2 hours
1. Review of isometric projection	Lab 4 hours
2. Review of orthographic projection	
a. Standard views (frontal, horizontal, and profile)	
b. Auxiliary views	
B. Drawing Conventions	Lecture 1 hours
1. Problem layout setup	Lab 3 hours
2. Naming of views	
3. Nomenclature of other components	
C. Lines	Lecture 4 hours
1. Finding true length of lines	Lab 8 hours
2. Angle with planes	
3. Finding point views of lines	
4. Calculating distance, bearing, and grade	
D. Points	Lecture 2 hours
1. Definition	Lab 6 hours
2. Projection of points	
E. Surfaces	Lecture 6 hours
1. Definition	Lab 12 hours
2. Curved surfaces	
3. Finding edge views of surfaces	
F. Solids	Lecture 2 hours
1. Definition	Lab 6 hours
2. Determining visibility of edges	
2. Finding true size of surfaces	

G. Intersections	Lecture 6 hours
1. Finding piercing points of a line with surface	Lab 14 hours
2. Finding the intersection of two surfaces	
3. Finding the intersection of a surface and a solid	
H. Pattern Development	Lecture 2 hours
1. Uses of developments	Lab 6 hours
2. Assembly methods	
I. Projection of Shadows	Lecture 1 hours
1. Methods of casting shadows	Lab 3 hours
2. Imaginary shadows; shadows by line segment method	
3. Determination of shade and shadow areas on various types of objects	
4. Determination of shade areas	
J. Presentation of Portfolio	Lecture 2 hours
1. Creation of a portfolio	Lab 6 hours
2. Final presentation of projects	

**V. Methods of Instruction**

The following instructional methodologies may be used in the course:

1. lecture;
2. multimedia;
3. guest speakers;
4. field trips.

**VI. Out of Class Assignments**

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

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

**VII. Methods of Evaluation**

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

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

### **VIII. Textbook**

Martin, D., *Descriptive Geometry Lab Manual*, Current edition.  
Glendale: Glendale Community College Bookstore, 2014.  
10<sup>th</sup> Grade Textbook Reading Level.

Pare, E.G. *Descriptive Geometry*. 9<sup>th</sup> ed.  
San Francisco: Peachpit, 1996. Print.  
13<sup>th</sup> Grade Textbook Reading Level. ISBN: 978-0023913419.  
*This is the most recent edition of this textbook available*

### **IX. Student Learning Outcomes**

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

1. calculate various facts about lines, surfaces, and shapes through only graphical means.
2. develop an ability to evaluate a descriptive geometry problem to determine the method of finding the solution.
3. demonstrate the ability to create flat pattern developments in relation to architectural design.