

ARCH103 : Descriptive Geometry

General Information

Author:	<ul style="list-style-type: none">David D Martin
Course Code (CB01) :	ARCH103
Course Title (CB02) :	Descriptive Geometry
Department:	ARCH
Proposal Start:	Spring 2025
TOP Code (CB03) :	(0201.00) Architecture and Architectural Technology
CIP Code:	(04.0901) Architectural Technology/Technician.
SAM Code (CB09) :	Clearly Occupational
Distance Education Approved:	No
Will this course be taught asynchronously?:	No
Course Control Number (CB00) :	CCC000165869
Curriculum Committee Approval Date:	05/22/2024
Board of Trustees Approval Date:	07/16/2024
Last Cyclical Review Date:	05/22/2024
Course Description and Course Note:	ARCH 103 is an applied science treating of graphic representation of lines, planes, surfaces, and solids. Students will use architectural applications including use of simple shades and shadows. Note: This course is required for architecture majors. This course may not be taken for credit by students who have completed ENGR 103.
Justification:	Mandatory Revision
Academic Career:	<ul style="list-style-type: none">Credit
Author:	<ul style="list-style-type: none">David D Martin

Academic Senate Discipline

Primary Discipline:	<ul style="list-style-type: none">Architecture
Alternate Discipline:	No value
Alternate Discipline:	No value

Course Development

Basic Skill Status (CB08) Course is not a basic skills course. <input type="checkbox"/> Allow Students to Gain Credit by Exam/Challenge	Course Special Class Status (CB13) Course is not a special class. Pre-Collegiate Level (CB21) Not applicable.	Grading Basis <ul style="list-style-type: none">Grade with Pass / No-Pass Option Course Support Course Status (CB26) Course is not a support course
--	--	--

Transferability & Gen. Ed. Options

General Education Status (CB25)

Not Applicable

Transferability

Transferable to both UC and CSU

Transferability Status

Approved

Units and Hours

Summary

Minimum Credit Units (CB07)	3
Maximum Credit Units (CB06)	3
Total Course In-Class (Contact) Hours	108
Total Course Out-of-Class Hours	54
Total Student Learning Hours	162

Credit / Non-Credit Options

Course Type (CB04)

Credit - Degree Applicable

Noncredit Course Category (CB22)

Credit Course.

Noncredit Special Characteristics

No Value

Course Classification Code (CB11)

Credit Course.

Variable Credit Course

Funding Agency Category (CB23)

Not Applicable.

Cooperative Work Experience
 Education Status (CB10)

Weekly Student Hours

	In Class	Out of Class
Lecture Hours	1.5	3
Laboratory Hours	4.5	0
Studio Hours	0	0

Course Student Hours

Course Duration (Weeks)	18
Hours per unit divisor	0
Course In-Class (Contact) Hours	
Lecture	27
Laboratory	81
Studio	0
Total	108
Course Out-of-Class Hours	
Lecture	54
Laboratory	0
Studio	0
Total	54

Time Commitment Notes for Students

No value

Units and Hours - Weekly Specialty Hours

Activity Name	Type	In Class	Out of Class
No Value	No Value	No Value	No Value

Pre-requisites, Co-requisites, Anti-requisites and Advisories

Prerequisite

ARCH101 - Drafting And Basic Design (in-development)

Objectives

- Demonstrate proficiency in drawing on vellum and in the use of drawing instruments by the completion of various drawing assignments.

AND

Advisory

ENGR109 - Computer Aided Design AutoCAD I (in-development)

Objectives

- Create a complete set of CAD drawings that communicates technical information for a complex geometric part or assembly.
- Evaluate CAD designs to determine clarity and manufacturability.

Entry Standards

Entry Standards

Course Limitations

Cross Listed or Equivalent Course

Specifications

Methods of Instruction

Methods of Instruction Lecture

Methods of Instruction Laboratory

Methods of Instruction Multimedia

Methods of Instruction Guest Speakers

Out of Class Assignments

- 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

Rationale

Exam/Quiz/Test

Performance tests (e.g. timed drawing tests)

Exam/Quiz/Test

Midterm examination (e.g. a performance-based drawing project)

Exam/Quiz/Test

Final examination (e.g. a performance-based drawing project)

Project/Portfolio

Portfolio review and critique (e.g. a critique of all of the work that the student has accomplished during the course)

Textbook Rationale

No Value

Textbooks

Author	Title	Publisher	Date	ISBN
--------	-------	-----------	------	------

No Value	No Value	No Value	No Value	No Value
----------	----------	----------	----------	----------

Other Instructional Materials (i.e. OER, handouts)

Description	Descriptive Geometry Lab Manual.
Author	Martin, David
Citation	No value
Online Resource(s)	

Materials Fee

No value

Learning Outcomes and Objectives

Course Objectives

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.

Calculate various facts about lines, surfaces, and shapes through only graphical means.

SLOs

Calculate various facts about lines, surfaces, and shapes through only graphical means.

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Demonstrate depth of knowledge in a course, discipline, or vocation by applying practical knowledge, skills, abilities, theories, or methodologies to solve unique problems.
	Use quantitative and/or analytical mathematical skills to solve problems and to interpret, evaluate, and process information and data to draw logical conclusions and support claims.

<i>ARCH</i> Architectural Drafting & Design - Certificate	Demonstrate skills in the production of working drawings of residential and commercial structures; discuss how design/drawing techniques, application of the International Building Code (IBC), building construction techniques, and other standards affect the design of their structure.
--	---

<i>ARCH</i> Architectural Drafting and Design	Demonstrate skills in the production of working drawings of residential and commercial structures; discuss how design/drawing techniques, application of the International Building Code (IBC), building construction techniques, and other standards affect the design of their structure.
--	---

Explain the process of solving a descriptive geometry problem.

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.
	Use quantitative and/or analytical mathematical skills to solve problems and to interpret, evaluate, and process information and data to draw logical conclusions and support claims.

<i>ARCH</i> Architectural Drafting & Design - Certificate	Demonstrate skills in the production of working drawings of residential and commercial structures; discuss how design/drawing techniques, application of the International Building Code (IBC), building construction techniques, and other standards affect the design of their structure.
--	---

<i>ARCH</i> Architectural Drafting and Design	Demonstrate skills in the production of working drawings of residential and commercial structures; discuss how design/drawing techniques, application of the International Building Code (IBC), building construction techniques, and other standards affect the design of their structure.
--	---

Explain the process of creating flat pattern developments in relation to architectural design.

Expected Outcome Performance: 70.0

<i>ILOs</i> Core ILOs	Communicate clearly, ethically, and creatively; listen actively and engage respectfully with others; consider situational, cultural, and personal contexts within or across multiple modes of communication.
--------------------------	--

<i>ARCH</i> Architectural Drafting and Design	Demonstrate skills in the production of working drawings of residential and commercial structures; discuss how design/drawing techniques, application of the International Building Code (IBC), building construction techniques, and other standards affect the design of their structure.
--	---

<i>ARCH</i> Architectural Drafting & Design - Certificate	Demonstrate skills in the production of working drawings of residential and commercial structures; discuss how design/drawing techniques, application of the International Building Code (IBC), building construction techniques, and other standards affect the design of their structure.
--	---

Course Content

Lecture Content

Projections (1 Hour)

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

Drawing Conventions (2 Hours)

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

Lines (3 Hours)

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

Points (2 Hours)

- Definition
- Projection of points

Surfaces (6 Hours)

- Definition
- Curved surfaces
- Finding edge views of surfaces

Solids (4 Hours)

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

Intersections (4 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 (2 Hours)

- Uses of developments
- Assembly methods

Projection of Shadows (1 Hour)

- 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 (2 Hours)

- Creation of a portfolio
- Final presentation of projects

Total Hours: 27

Laboratory/Studio Content

Projections (5 Hours)

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

Drawing Conventions (5 Hours)

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

Lines (10 Hours)

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

Points (8 Hours)

- Definition
- Projection of points

Surfaces (15 Hours)

- Definition
- Curved surfaces
- Finding edge views of surfaces

Solids (6 Hours)

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

Intersections (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 (6 Hours)

- Uses of developments
- Assembly methods

Projection of Shadows (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 (8 Hours)

- Creation of a portfolio
- Final presentation of projects

Total Hours: 81

Additional Information

Is this course proposed for GCC Major or General Education Graduation requirement? If yes, indicate which requirement in the two areas provided below.

No

GCC Major Requirements

No Value

GCC General Education Graduation Requirements

No Value

Repeatability

Not Repeatable

Justification (if repeatable was chosen above)

No Value

Resources

Did you contact your departmental library liaison?

No

If yes, who is your departmental library liaison?

No Value

Did you contact the DEIA liaison?

No

Were there any DEIA changes made to this outline?

No Value

If yes, in what areas were these changes made:

No Value

Will any additional resources be needed for this course? (Click all that apply)

No Value

If additional resources are needed, add a brief description and cost in the box provided.

No Value