

Architectural and Engineering Technology (A/ET)

The Architectural and Engineering Technology Department offers vocational and paraprofessional programs in architectural and engineering technology as well as preparation for transfer to four- and five-year architecture programs.

The curriculum provides necessary skills for employment in the design and construction fields. Students may prepare for positions as CAD drafters, surveyor aides, office managers, and other occupations in public and private sector architecture and engineering offices. Supplemental courses offer students a broad architectural, engineering, and general education background and enable them to continue their education in architecture at the university level.

For lower division engineering courses, refer to Engineering Department.

ARCHITECTURAL TECHNOLOGY

Degree Major/Certificate Requirements:

Dept/No.	Title	Units
FIRST SEMESTER		
A/ET 10	Introduction to Design Professions and Architectural Administration	2
A/ET 13	Architectural Drafting and Design I	4
A/ET 107	Architectural History and Theory	3
CONMT 20	Blueprint Reading and Interpretation	3
SECOND SEMESTER		
A/ET 23	Architectural Drafting and Design II	4
A/ET 35	Perspectives, Shades and Shadow I	2
A/ET 103	Materials of Construction	2
A/ET 104A	Beginning Computer-Aided Drafting (CAD)	3
THIRD SEMESTER		
A/ET 33	Architectural Drafting and Design III	4
A/ET 100	Measurements and Plane Surveying I	3
A/ET 104B	Intermediate Computer-Aided Drafting (CAD)	3
PHYS 3A+	General Physics (5) or	
PHYS 4A+	General Physics with Calculus (5)	5
FOURTH SEMESTER		
A/ET 43	Architectural Drafting and Design IV	4
A/ET 105	Introduction to Statics and Structural Mechanics	3
A/ET 110	Introduction to 3D Modeling and Rendering	3
ENGL 1A+	Composition and Reading	4
Total Required Units:		52

+Course may be applied to Associate Degree General Education requirement.
For Associate Degree General Education requirements, refer to page 112.

Recommended:

A/ET 45, 108
Art 60, 70
Comm 1A, 1B or 45
Engl 1B, 53
Photo 10

ENGINEERING TECHNOLOGY

Degree Major/Certificate Requirements:

Dept/No.	Title	Units
FIRST SEMESTER		
A/ET 14	Mechanical Drafting and Design I	4
A/ET 35	Perspective, Shades and Shadows I	2
SECOND SEMESTER		
A/ET 24	Mechanical Drafting and Design II	4
A/ET 100	Measurements and Plane Surveying I	3
THIRD SEMESTER		
A/ET 34	Mechanical Drafting and Design III	4
A/ET 105	Introduction to Statics and Structural Mechanics.	3
FOURTH SEMESTER		
A/ET 44	Mechanical Drafting and Design IV	4
ENGL1A+	Composition and Reading	4
Total Required Units:		28

+Course may be applied to Associate Degree General Education requirement.
For Associate Degree General Education requirements, refer to page 112.

Recommended:

A/ET 104A, 104B, 108
Comm 1A, 1B or 45
Engl 1B or 2

A/ET 10 Introduction to Design Professions and Architectural Administration

2 units, 2 hours lecture (GR)
Acceptable for credit: CSU, UC
Introduction to the history, practice and administration of architecture and related design professions: Operations, coordination and management of an architectural office. 0201.00

Architectural and Engineering Technology

A/ET 13

Architectural Drafting and Design I

4 units, 2 hours lecture, 6 hours laboratory (GR)

Prerequisite: A/ET 211

Acceptable for credit: CSU, UC>

Two- and three-dimensional basic design principles: Freehand sketching and detailing; review of drafting techniques leading to preparation of preliminary architectural drawings of an assigned residential project and its construction systems and materials. 0201.00

A/ET 14

Mechanical Drafting and Design I

4 units, 2 hours lecture, 6 hours laboratory (GR)

Prerequisite: A/ET 211

Acceptable for credit: CSU

Introduction to mechanical and civil engineering graphic procedures, conventions, and industry standards: Preparation of two-dimensional scaled and dimensioned drawings, sectioning, auxiliary views, and assembly drawings. 0953.00

A/ET 17

Structural Steel Detailing

3 units, 2 hours lecture, 4 hours laboratory (GR)

Acceptable for credit: CSU

Introduction to methods and procedures of structural steel detailing: Preparation of shop drawings; introduction to equipment, projections, and fabrication of structural steel; simple frame beams. 0201.00

A/ET 23

Architectural Drafting and Design II

4 units, 2 hours lecture, 6 hours laboratory (GR)

Prerequisite: A/ET 13

Acceptable for credit: CSU, UC>

Continuation of A/ET 13: Advanced study and practice in lettering, freehand sketching, and detailing of a self-designed residence; preliminary design and working drawings; simple development of perspectives and rendering of multi-dwelling complex or small commercial buildings; application of the use of reinforced concrete; use of Uniform Building Code in the semester project design. 0201.00

A/ET 24

Mechanical Drafting and Design II

4 units, 2 hours lecture, 6 hours laboratory (GR)

Prerequisite: A/ET 14

Acceptable for credit: CSU

Fundamental principles of research, planning, design and construction of mechanical devices and civil engineering projects: Industry standards for graphic document preparation; two- and three- dimensional drawings. 0953.00

A/ET 33

Architectural Drafting and Design III

4 units, 2 hours lecture, 6 hours laboratory (GR)

Prerequisite: A/ET 23

Acceptable for credit: CSU

Continuation of A/ET 23: Preliminary and final design, and presentation drawings for complex structures such as public or commercial buildings; emphasis on accepted production drafting, rendering techniques, and utilization of applicable structural design systems; freehand drawing in pencil, ink and color media; field trips to construction projects and architects' offices. 0201.00

A/ET 34

Mechanical Drafting and Design III

4 units, 2 hours lecture, 6 hours laboratory (GR)

Prerequisite: A/ET 24

Acceptable for credit: CSU

Application of research, planning and design techniques in the preparation of documents for engineering projects: Industry standards for engineering design and drawing. 0953.00

A/ET 35

Perspective, Shades and Shadows I

2 units, 1 hour lecture, 3 hours laboratory (GR)

Prerequisite: A/ET 211

Acceptable for credit: CSU, UC>

Development of skills in preparing three-dimensional linear illustrations: Principles of isometrics and perspective drawing, casting of shades and shadows on architectural/structural elements, freehand sketching. 0201.00

A/ET 43

Architectural Drafting and Design IV

4 units, 2 hours lecture, 6 hours laboratory (GR)

Prerequisite: A/ET 33

Acceptable for credit: CSU

Design and development of a commercial or public building: Site analysis and design; design and provision for structural, mechanical and electrical systems; adherence to accepted industry production, drafting and rendering practices for design and contract drawing; principles of specification writing and office practice; field trips to construction sites and architects' offices. 0201.00

Architectural and Engineering Technology

A/ET 44

Mechanical Drafting and Design IV

4 units, 2 hours lecture, 6 hours laboratory (GR)

Prerequisite: A/ET 34

Acceptable for credit: CSU

Continuation of basic principles and techniques in the preparation of engineering project documents: Process from planning to complete bidsets, including schematic drawings for subcontractors, partial specifications, and cost estimates. 0953.00

A/ET 45

Perspective, Shades and Shadows II

2 units, 1 hour lecture, 3 hours laboratory (GR)

Prerequisite: A/ET 35

Acceptable for credit: CSU, UC➤

Continued development of skills in preparing three-dimensional linear illustrations: Advanced methods of perspective drawing and casting of shades and shadows; use of various media and techniques used in the preparation of presentation renderings. 0201.00

A/ET 48GA-MZ

Selected Topics in Architectural and Engineering Technology

.5-9 units, 0-9 hours lecture, 0-27 hours laboratory (GR)

Acceptable for credit: CSU, UC◆

See section on Selected Topics. 0953.00

A/ET 100

Measurements and Plane Surveying I

3 units, 2 hours lecture, 3 hours laboratory (GR)

Prerequisite: Math 50 or 52C

Acceptable for credit: CSU, UC

Principles of elementary plane surveying: Leveling, angle measurement, bearings and azimuths, traversing, topographic mapping, and areas and volumes; practice in office and field work. 0957.30

A/ET 101

Measurements and Plane Surveying II

3 units, 2 hours lecture, 3 hours laboratory (GR)

Prerequisite: A/ET 100

Acceptable for credit: CSU, UC

Continuation of A/ET 100: Route and construction surveying, GIS applications, introduction to geodetic surveying, photogrammetry and astronomical observations, continuing practice in office and field work; focus on preparation for the Land Surveyor in Training examination. 0957.30

A/ET 103

Materials of Construction

2 units, 2 hours lecture (GR)

Prerequisite: A/ET 13

Acceptable for credit: CSU

Description and demonstration of various construction/structural and finish materials: Characteristics and qualities necessary for proper selection and use. 0201.00

A/ET 104A

Beginning Computer-Aided Drafting (CAD)

3 units, 2 hours lecture, 4 hours laboratory (GR)

Prerequisite: A/ET 23 or 24

Acceptable for credit: CSU

Basic computer drafting skills using current software: Use of computer and software, drawing and modifying objects layers, linetypes, colors and properties, dimensioning, blocks, hatching, views and scaling, printing and plotting. 0953.00

AA/AS area 4c

A/ET 104B

Intermediate Computer-Aided Drafting (CAD)

3 units, 2 hours lecture, 4 hours laboratory (GR)

Prerequisite: A/ET 104A

Acceptable for credit: CSU, UC

Continuation of A/ET 104A: Multiview and isometric drawing, three-dimensional modeling and rendering, software customization, file types, file transfer and management, introduction to current software design features including quantity database creation and management, GIS applications. 0953.00

AA/AS area 4c

A/ET 105

Introduction to Statics and Structural Mechanics

3 units, 3 hours lecture (GR)

Prerequisite: Math 203 or 211D

Acceptable for credit: CSU, UC➤

Basic principles of statics and structural mechanics: Effects of loads and loading on building frames, determining preliminary sizes of key building elements, various elements in framing system. 0201.00

Architectural and Engineering Technology

A/ET 107

Architectural History and Theory

3 units, 3 hours lecture (GR)

Offered Spring Semester.

Acceptable for credit: CSU, UC➤

Survey of the evolution of architectural styles from primitive architecture to the contemporary: Systems-engineered building complexes; relationship that these architectural periods have to present-day construction methods. 0201.00

A/ET 108

Civil Engineer Drafting

4 units, 2 hours lecture, 6 hours laboratory (GR)

Prerequisite: A/ET 100

Acceptable for credit: CSU

Introduction to civil engineering practice and calculations: Angle measurement, maps and site plans, traversing, leveling and profiles, road and pipeline design, and earthwork drawing and calculation. 0953.00

A/ET 110

Introduction to 3D Modeling and Rendering

3 units, 1.5 hours lecture, 4.5 hours laboratory (GR)

Recommended preparation: A/ET 104A or equivalent professional experience

Acceptable for credit: CSU

Creation of 3D visualization/animation drawings from plans, elevations and sections using the latest 3D computer software: Computer-generated/rendered modeling drawings of a design project; image/video/lighting elements and techniques, resulting in the creation of an advanced, state-of-the-art rendering and/or animation. 0953.00

A/ET 111

Introduction to Sustainable Architectural Design Applications

3 units, 3 hours lecture (GR)

Acceptable for credit: CSU, UC (pending)

Introduction to sustainable architectural and environmental design applications: Survey of green building precedents, trends in contemporary architectural design, and new sustainable technologies; creation of customized Green Building Standards Reference Guide; product and system selection; impact of new technologies as well as cultural, socioeconomic, and regulatory systems on green building design. 0201.00

A/ET 200

Special Projects Laboratory

1-2 units, 3-6 hours laboratory (GR)

Course study under this section may be repeated three times.

Open laboratory for working on selected projects: Provides an opportunity for development of advanced projects of individual interest. 0953.00

A/ET 204

Computer-Aided Drafting Laboratory–CAD Lab

1 unit, 4 hours laboratory (GR)

Prerequisite or corequisite: A/ET 104A or 104B

Course study under this section may be repeated one time.

Supervised computer-aided drafting laboratory: Designed as an adjunct to A/ET 104A and 104B focusing on computer drafting skills using current software. 0953.00

A/ET 211

Fundamentals of Drafting Techniques

4 units, 2 hours lecture, 6 hours laboratory (GR)

Fundamentals of drafting; Selection and use of standard instruments; lettering, sketching, and dimensioning conventions; principles of applied geometry underlying orthographic and pictorial drawings; and examples of drafting disciplines including architectural, civil, structural, mechanical, and electrical. 0953.00

A/ET 248GA-MZ

Selected Topics in Architectural and Engineering Technology

.5-9 units, 0-9 hours lecture, 0-27 hours laboratory (GR)

See section on Selected Topics. 0953.00

COPED 466B

Occupational Work Experience in Architectural Technology

1-4 units, hours to be arranged (GR) 0201.00

COPED 466J

Occupational Work Experience in Engineering Technology

1-4 units, hours to be arranged (GR) 0953.00