Design Technology Degree and Certificate

The ARC Design Technology degree and certificate emphasizes the basic skills needed for success in architectural, mechanical, and engineering occupations. These include the design process, drafting standards and practices, technical communication, material sciences, and design critique. The use of computers and various computer aided design and drafting (CADD) softwares are emphasized throughout the program.

Requirements for Degree or Certificate 39 Units

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<th>Course</th>
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<tr>
<td>DESIGN 100</td>
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<td>DESIGN 102</td>
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<td>DESIGN 308</td>
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<td>DESIGN 360</td>
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<td>DESIGN 405</td>
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Associate Degree Requirements: The Design Technology Associate in Arts (A.A.) Degree may be obtained by completion of the required program, plus general education requirements, plus sufficient electives to meet a 60-unit total. See ARC graduation requirements.

Engineering Technology Degree

The Engineering Technology degree gives students a basic preparation in physics, mathematics, computer aided design and drafting (CADD), chemistry, manufacturing processes, engineering materials and other subjects necessary for the well trained engineering technician.

Career Opportunities

Upon completion of the A.S. degree the engineering technician will be prepared to go directly into employment as a technical assistant to engineers, or other technical employment. The two-year A.S. degree program provides options for special concentration: engineering technology, architectural engineering technology, civil engineering technology, electrical engineering technology, mechanical engineering technology. Engineering technicians are needed in the fields of manufacturing, architecture, construction, materials testing, public utilities and many other fields.

Requirements for Certificate 41-44 Units

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<th>Course</th>
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<td>or CHEM 310</td>
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<tr>
<td>CISA 315</td>
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<td>CISA 316</td>
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<td>DESIGN 102</td>
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<td>DESIGN 102</td>
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<td>or ENGR 316</td>
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<td>or CHEM 310</td>
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<td>or ENGR 312</td>
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<td>or ENGR 316</td>
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Engineering: Transfer Degree

The purpose of the program is to provide academic preparation for transfer to California State University, Sacramento for the Engineering Construction Management Program or the Mechanical Engineering Technology Program. At the completion of the courses in the option, a student will obtain an A.S. Degree and have many of the courses required for transfer. Please check the current Articulation Agreement by Major at www.assist.org.

### Construction Management Option 70-71.5 Units

**ACCT 301** Financial Accounting 4
**ACCT 311** Managerial Accounting 4
**BIOL 305** Survey of Biology 4
**BUS 340** Business Law 3
**CISA 305** Beginning Word Processing 2
**CISA 315** Introduction to Electronic Spreadsheets 2
**CISC 320** Operating Systems 1
**DESGN 100** Introduction to Computer Aided Drafting and Design (CADD) 3
**DESGN 102** Intermediate Computer Aided Drafting and Design (CADD) 3
**DESGN 310** Graphic Analysis 3
**DESGN 340** Architecture and Construction (5) 5
**DESGN 360** Commercial Engineering Design and Drafting (5) 5
**DESGN 370** Manufacturing Processes 3
**MATH 350** Calculus for the Life and Social Sciences I 3
**MATH 351** Calculus for the Life and Social Sciences II 3
**PHYS 350** General Physics 4
**PHYS 360** General Physics 4
**STAT 301** Introduction to Probability and Statistics 3

And a minimum of 3 units from the following: 3

- One or more transfer level Humanities course (numbered 300-499)
- One or more transfer level Language and Rationality course (numbered 300-499)
- Transfer level Social Science courses (numbered 300-499)

**DESGN 100** Introduction to Computer Aided Drafting and Design (CADD) 3 Units

Hours: 36 hours LEC; 72 hours LAB

This course is an introduction to computer-assisted drafting and design (CADD) and basic technical drawing. It covers orthographic and isometric projection concepts, utilizing CADD to produce basic technical drawings and applies the editing commands available in the software. It introduces basic drawings from architecture, mechanical design, electronics and space planning. This course may be taken four times using different software releases.

**DESGN 102** Intermediate Computer Aided Drafting and Design (CADD) 3 Units

Prerequisite: DESGN 100 with a grade of “C” or better. Hours: 36 hours LEC; 72 hours LAB

This course emphasizes advanced CADD commands and design graphics drawing principles. Orthographic and isometric projection principles are used for solving missing view problems with CADD as the tool for producing the drawings. Section views for mechanical and architectural applications are covered. Topics encompass architectural design, mechanical design, 3D-drawing, orthographic and isometric projection, sections, developments, attributes, civil drafting, and interior design and space planning. This covers the preparation for professional work skills and advanced design courses. This course may be taken four times using different software releases.

**DESGN 110** Drafting for Design Majors 1 Unit

Hours: 9 hours LEC; 27 hours LAB

Basic drafting techniques for interior design and theatre arts majors. Not recommended for drafting or engineering majors.

**DESGN 300** Introduction to Design Resources 3 Units

Advisory: ENGW 102 or 103 and ENGRD 116; or ESLR 320 and ESLW 320.

Course Transferable to CSU

Hours: 54 hours LEC

This course is a survey of the resources that are used in the architectural and engineering professions for design planning, evaluation, and selection. It covers the methods and techniques used to determine human resources, evaluate and select materials for design, and disseminate design information.

**DESGN 308** Three Dimensional Design-Solids Modeling 3 Units

Prerequisite: DESGN 300, DESGN 100, and DESGN 320 with a grade of “C” or better.

Course Transferable to CSU

Hours: 36 hours LEC; 72 hours LAB
This course will cover the concepts and applications of three-dimensional graphic design using AutoCAD solid modeling, mechanical desktop, and solid works software. Topics include the development and techniques for producing wire frame, surface, and solid models and their application in architectural and mechanical design. This course may be taken 4 times on different software releases.

**DESGN 310 Graphic Analysis** 3 Units
Prerequisite: DESGN 100 with a grade of “C” or better.
Advisory: Design Technology 102.
Course Transferable to CSU
Hours: 36 hours LEC, 72 hours LAB
This course covers CADD applications of the orthographic projection and geometric construction principles to solve technical problems as well as graphical analysis of the true length, true shape, true angle in the solution of engineering and architectural problems. This course satisfies the transfer requirements to CSUS for engineering, engineering technology, and design technology students.

**DESGN 320 Three Dimensional Graphics and Design** 3 Units
Advisory: ENGWR 102 or 103, ENGRD 116 or ESLR 320 and ESLW 320 or placement through assessment process.
Course Transferable to CSU
Hours: 36 hours LEC, 72 hours LAB
This course includes instruction and practice in freehand engineering and architectural technical expression in various graphic media. Additionally, students will develop design solutions represented in freehand perspectives and 3-D CADD solutions.

**DESGN 330 Machine Design** 4 Units
Prerequisite: DESGN 310.
Advisory: DESGN 100.
Course Transferable to CSU
Hours: 54 hours LEC; 54 hours LAB
This course covers instruction in machine design and dimensioning of engineering machine drawings. Basic dimensioning of orthographic, sections, auxiliaries, forging, and casting drawings will be studied as well as basic manufacturing techniques. Emphasis will be placed on the latest ANSI Standard for Geometric Dimensioning and Tolerancing and its application to working drawings. Satisfies the transfer requirement for machine drawing to CSUS Mechanical Engineering Technology Program.

**DESGN 340 Architecture and Construction** 5 Units
Prerequisite: DESGN 102, 310, and 320.
Course Transferable to CSU
Hours: 54 hours LEC; 108 hours LAB
This course covers individual and group exercises simulating typical design, drafting and procedures in architecture and construction. The course focuses on residential design and light commercial wood frame construction.

**DESGN 350 Surveying and Construction Measurement Techniques** 4 Units
Prerequisite: DESGN 102, DESGN 310 with a grade of “C” or better.
Advisory: Math 120.
Course Transferable to CSU
Hours: 54 hours LEC, 54 hours LAB
This course covers basic measurement and alignment techniques used in light and heavy construction for design technology analysis. Additionally, the course includes site, road staking, cut and fill calculations, and elementary surveying principles.

**DESGN 360 Commercial Engineering Design and Drafting** 5 Units
Prerequisite: DESGN 102 and 310 with a grade of “C” or better.
Advisory: Design Technology 320.
Course Transferable to CSU
Hours: 54 hours LEC; 108 hours LAB
This course employs individual and group exercises simulating typical design and engineering problems in structures, land planning, and environmental systems in buildings. Design solutions are presented by freehand, manual drafting, and CADD application. The course includes both individual and team design problems.

**DESGN 405 Advanced Computer-Aided Drafting and Design (CADD)** 3 Units
Prerequisite: DESGN 340 or 360 with a grade of “C” or better.
Course Transferable to CSU
Hours: 36 hours LEC; 72 hours LAB
This course emphasizes the study of electronic graphical data development, manipulation techniques, and research data retrieval within the areas of architectural and mechanical, and civil engineering applications. Data base development is applied to various technical design problems incorporating the design process. This course may be taken four times on different software versions.