

# COMPUTER AIDED DRAFTING & DESIGN

## Associate in Science Degree (CIP# 1615130202)

This program is designed to train technicians to assist engineers by translating ideas, rough sketches, specifications and calculations into complete and accurate working drawings. In addition, instruction is given in three CADD (Computer Aided Drafting and Design) courses which prepares the student for employment with institutions using computer assisted engineering and design.

Students are strongly encouraged to consult a career program advisor in the department office for assistance in determining the best education plan for their career goals.

Although scheduling may not always provide for the following progression of courses, students should use the foundation, intermediate and advanced course sequence as a guide in program planning.

All degree-seeking students must satisfy entry testing requirements and satisfactorily complete all mandatory courses in reading, student success, mathematics, English, and English for Academic Purposes in which the student is placed.

### Alternative Ways to Earn Credit toward this Degree

Graduates of specific programs at Orange Technical College and Osceola Technical College, as well as other institutions may be eligible to receive college credit for courses in this program. You may also be eligible to receive credit toward this degree if you have earned one of the approved Gold Standard industry certifications or Career Pathways credit. To learn more about Valencia's award of credit options, visit <https://valenciacollege.edu/academics/programs/as-degree/alternative-award-of-credit-agreements.php>. Eligible students should contact the Career Program Advisor in their academic department for more information about the requirements for the award of credit.

### College Credit Technical Certificates

The Drafting and Design A.S. degree also offers the following college credit certificate programs. These certificates can put you on the fast-track to reaching your career goals. They are designed to equip you with a specialized skill set for entry-level employment or to upgrade your skills for job advancement. Most can be completed in one year or less, and all of the courses in the certificates are embedded in the A.S. degree. You can earn the certificates as you progress through your A.S. Degree or as a separate, stand-alone credential. Click on the Certificate tab at the top of the page for more information about the certificates that are offered.

- Advanced Computer-Aided Design with Specializations in: (24 credits)
  - Architectural Drafting (CIP # 0615130200)
  - Mechanical Drafting (CIP # 0615130200)
  - Surveying Drafting (CIP # 0615130200)
- Computer-Aided Design (15 credits) (CIP # 0615130204)
- Rapid Prototyping Specialist - 3-D Printing (12 credits) (CIP # 0615130211)

### Start Right

Degree-seeking students enrolling at Valencia for the first time will have a limited range of courses from which to choose for their first 18

college-level credits. Within the first 18 college credit hours, you will be required to take ENC1101 (3 credits), and if applicable, SLS 1122 (3 credits) and a mathematics course appropriate to your selected meta-major (3 credits). The remaining courses will be chosen from the General Education Core Courses in humanities (3 credits), science (3 credits), or social science (3 credits), and/or the introductory courses within the A.S. degree programs. For specific courses see the *Foundation Courses* on the "Program Requirements" tab. For course sequencing recommendations, see your Career Program Advisor or create an education plan by logging into Atlas, clicking on the LifeMap tab and clicking My Education Plan.

### Potential Careers

- Drafting and Design Technician
- Mechanical Engineering Assistant
- CADD Operator/Specialist
- CADD Drafting Technician/Specialist
- Mechanical Drafter
- Architectural Drafter
- Drafting Designer
- Tooling Drafter

### Salary & Earnings Information

For career information related to this program, please visit O\*Net OnLine (<https://www.onetonline.org/>).

## Contacts

### Future Students

To learn more about this program, contact Enrollment Services at [enrollment@valenciacollege.edu](mailto:enrollment@valenciacollege.edu) or 407-582-1507 or visit [valenciacollege.edu/drafting](https://valenciacollege.edu/drafting) (<https://valenciacollege.edu/drafting/>).

### Current Students

Contact the Career Program Advisor below for more information.

Andrew Ray, R.A, Program Chair, West Campus: 407-582-1847  
[aray@valenciacollege.edu](mailto:aray@valenciacollege.edu)

Heidi Shugg, Career Program Advisor: 407-582-1461  
[hshugg1@valenciacollege.edu](mailto:hshugg1@valenciacollege.edu)

### Internship and Workforce Services

If you need assistance with job resources or in locating an internship, please visit: [valenciacollege.edu/internship](https://valenciacollege.edu/internship) (<https://valenciacollege.edu/internship/>).

### Program Outcomes

- Accept professional and ethical responsibilities required by industry.
- Communicate effectively with technical and non-technical audiences.
- Analyze systems and processes used to create the built environment.
- Solve design problems using algebraic and trigonometric functions.
- Efficiently utilize current professional software to generate 2D and 3D drawings.

### Foundation Courses

ETD 1031C	SURVEY OF BUILT ENVIRONMENT TECHNOLOGY	3
ENC 1101	FRESHMAN COMPOSITION I <sup>++*</sup>	3
ETD 1103C	ENGINEERING GRAPHICS WITH CAD	3

Humanities	See Gen. Ed. Core or Institutional Requirement ~	3
Social Science	See Gen. Ed. Core Requirement ~	3
Gen. Ed. Elective	See Gen. Ed. Requirement ~	3
Science or Mathematics	See Gen. Ed. Core Requirement <sup>++~</sup>	3
<b>Intermediate Courses</b>		
BCN 2405	STATICS AND STRENGTH OF MATERIALS *	3
BCN 1303C	BUILDING INFORMATION MODELING (REVIT W/ DYNAMO) *	3
ETC 1251C	ENGINEERING MATERIALS AND PROCESSES	3
ETD 1340C	ADVANCED CADD *	3
ETD 1701C	MECHANICAL DRAFTING I *	3
MTB 2321C	TECHNICAL MATH	3
SUR 1101C	BASIC SURVEYING MEASUREMENTS *	3
TAR 1120C	ARCHITECTURAL DRAWING I *	3
<b>Advanced Courses</b>		
ETD 2355C	3-D CADD	3
ETD 2614C	ELECTROMECHANICAL DRAFTING *	3
ETD 2731C	MECHANICAL DRAFTING II *	3
Drafting Design Technology Electives		8
<b>Total Credit Hours</b>		<b>62</b>

### Drafting and Design Technology Electives

The Electives requirement may be satisfied with any course(s) in the Course Descriptions section of the Valencia Catalog with the subject prefix of BCN, BCT, ETC, ETD, ETM, SUR or TAR.

- + This course must be completed with a grade of C or better.
- \* This course has a prerequisite; check description in Valencia catalog.
- ~ This is a general education course.
- (GR) Denotes a Gordon Rule course.

### Notes:

All specialized program courses are offered on the West Campus and may not be offered every session; some specialized courses are offered at other locations.

Expand your career opportunities with a Bachelor's Degree in Business and Organizational Leadership (BASBOL) from Valencia. This degree builds on your skills, and prepares you for a supervisory or management role within your respective field. For more information, go to: Bachelor's Degree in Business & Organizational Leadership (<http://catalog.valenciacollege.edu/degrees/bachelorofscience/bas/>). Students who wish to continue their education should consult with a Career Program Advisor to determine the best education plan for their career goals.

Students wishing to transfer credits from this program to another institution must accept responsibility for securing approval from the transfer institution for acceptance of this degree.

## Advanced Computer Aided Design with Specializations in

- Architectural Drafting
- Mechanical Drafting
- Surveying Drafting

### Technical Certificate

This program is designed to prepare individuals for entry-level positions in architectural, mechanical, and surveying drafting that require computer-aided drafting skills. The content prepares the student to draw, dimension, and print drawings by computer in the respective specialization area.

### Foundation Courses

ETD 1340C	ADVANCED CADD *	3
ETD 1103C	ENGINEERING GRAPHICS WITH CAD	3
BCN 1303C	BUILDING INFORMATION MODELING (REVIT W/ DYNAMO) *	3
MTB 2321C	TECHNICAL MATH	3
Specialization Electives (All from the same Specialization)		12
<b>Total Credit Hours</b>		<b>24</b>

## Architectural Drafting Specialization

### Program Outcomes

- Efficiently utilize current professional software to generate 2D and 3D drawings.
- Solve design problems using algebraic and trigonometric functions.
- Analyze systems and processes used to create the built environment.

### Architectural Drafting Specialization Electives

BCN 1272	CONSTRUCTION BLUEPRINT READING	3
BCN 2941	INTERNSHIP EXPLORATION IN CONSTRUCTION *	1-4
BCT 2770C	BUILDING CONSTRUCTION ESTIMATING (FORMERLY BCT 2600) *	3
ETD 2355C	3-D CADD	3
ETC 1251C	ENGINEERING MATERIALS AND PROCESSES	3
SUR 2390C	INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS	3
TAR 1120C	ARCHITECTURAL DRAWING I *	3
TAR 2033C	ARCHITECTURAL DESIGN *	3

- \* This course has a prerequisite; check description in Valencia catalog.

## Mechanical Drafting Specialization

### Program Outcomes

- Efficiently utilize current professional software to generate 2D and 3D drawings.
- Solve design problems using algebraic and trigonometric functions.

### Mechanical Drafting Specialization Electives

ETD 1701C	MECHANICAL DRAFTING I *	3
ETD 2355C	3-D CADD	3

ETD 2614C	ELECTROMECHANICAL DRAFTING (Course was reduced to 3 Credits) *	3
ETD 2731C	MECHANICAL DRAFTING II *	3
ETD 2941	*	
SUR 2390C	INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS	3

\* This course has a prerequisite; check description in Valencia catalog.

## Surveying Drafting Specialization

### Program Outcomes

- Efficiently utilize current professional software to generate 2D and 3D drawings.
- Solve design problems using algebraic and trigonometric functions.
- Perform basic civil/surveying techniques and related calculations.

### Surveying Drafting Specialization Electives

SUR 1101C	BASIC SURVEYING MEASUREMENTS (Surveying I) *	3
SUR 2202C	HIGHWAY DRAFTING AND ROUTE DESIGN *	3
SUR 2390C	INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS	3
SUR 2460C	SUBDIVISIONS *	3
SUR 2941	INTERNSHIP EXPLORATION IN SURVEYING *	1-4

\* This course has a prerequisite; check description in Valencia catalog.

### Notes:

All certificate courses are offered on the West Campus; some courses are offered at other locations.

Specialized courses may not be offered every session or on every campus.

This certificate program is eligible for Financial Aid.

## Computer Aided Design

### Technical Certificate

This program is designed for a professional or entry-level individual in a technical area that requires computer-aided design and drafting skills. The content prepares the student to draw, dimension, and print technical drawings by computer.

### Program Outcomes

- Solve design problems using algebraic and trigonometric functions.
- Efficiently utilize current professional software to generate 2D and 3D drawings.

### Foundation Courses

ETD 1340C	ADVANCED CADD *	3
ETD 1103C	ENGINEERING GRAPHICS WITH CAD	3
BCN 1303C	BUILDING INFORMATION MODELING (REVIT W/ DYNAMO) *	3

Drafting Electives	6
<b>Total Credit Hours</b>	<b>15</b>

### Drafting-AutoCAD Electives

ETD 1701C	MECHANICAL DRAFTING I *	3
ETD 2355C	3-D CADD	3
ETD 2614C	ELECTROMECHANICAL DRAFTING *	3
ETD 2731C	MECHANICAL DRAFTING II *	3
ETD 2942	INTERNSHIP IN DRAFTING AND DESIGN TECHNOLOGY *	1-4
MTB 2321C	TECHNICAL MATH	3
SUR 1101C	BASIC SURVEYING MEASUREMENTS (Surveying I) *	3
SUR 2202C	HIGHWAY DRAFTING AND ROUTE DESIGN *	3
SUR 2390C	INTRODUCTION TO GEOGRAPHIC INFORMATION SYSTEMS	3
TAR 1120C	ARCHITECTURAL DRAWING I *	3
TAR 2033C	ARCHITECTURAL DESIGN *	3

\* This course has a prerequisite; check description in Valencia catalog.

### Notes:

All certificate courses are offered on the West Campus; some courses are offered at other locations.

Specialized courses may not be offered every session or on every campus.

## Rapid Prototyping Specialist

### Technical Certificate

This certificate is intended for students to learn the fundamentals of rapid prototyping to analyze designs and create 3D models using a variety of 3D scanners and printers. The basics of solid modeling software, primarily Solidworks, will be explored in the creation of STL (StereoLithography) files for 3D printing. Design Analysis techniques will be used to analyze models for appropriate design concepts and material usage. Working in a collaborative team environment, students will learn to effectively analyze model results for successfully achieving design parameters.

### Program Outcomes

- Efficiently utilize current professional software to generate 3D digital models.
- Demonstrate understanding of the concepts, applications, and hardware used in digital manufacturing processes.

ETD 1340C	ADVANCED CADD *	3
ETD 2355C	3-D CADD	3
ETD 2371C	INTRODUCTION TO 3D PRINTING *	3
ETD 2372C	ADVANCED RAPID PROTOTYPING *	3

<b>Total Credit Hours</b>	<b>12</b>
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\* This course has a prerequisite; check description in Valencia catalog.

**Notes:**

All certificate courses are offered on the West Campus; ETD 1340C is also offered on East Campus. Specialized courses may not be offered every session or on every campus.