ENGINEERING DESIGN GRAPHICS, LEVEL 2 CERTIFICATE

Shaping concepts into engineered solutions

The Engineering Design Graphics pathway prepares students for technical careers that support engineering, manufacturing, construction, and product design industries. Through progressive coursework, students develop skills in technical drawing, computer-aided design (CAD), 3D modeling, and industry-standard design practices used to communicate complex engineering concepts. The pathway emphasizes hands-on learning and real-world applications, allowing students to build a strong foundation in design visualization, documentation, and problem-solving. Designed for flexibility, the pathway supports multiple credential options —certificates and an associate degree—allowing students to gain workforce-ready skills while advancing toward higher levels of technical expertise.

Career Opportunities and Income

Visit sanjac.edu (https://www.sanjac.edu/programs/areas-of-study/stem/engineering-design-graphics/) for information regarding career opportunities and potential earnings in the Greater Houston region.

Learning & Career Pathway

This learning pathway - a series of related and "stacked" certificates and degrees - includes the following awards. You can start at any point on the path and earn certificates on your way to completing the degree

- Engineering Design Graphics, Certificate of Technology (https://publications.sanjac.edu/areas-study/science-technology-engineering-math/edg-certificate-technology/) (2 years)
- Engineering Design Graphics, Level 2 Certificate (https://publications.sanjac.edu/areas-study/science-technology-engineering-math/edg-certificate-technology/) (2 years)
- Engineering Design Graphics, Associate of Applied Science (https://publications.sanjac.edu/areas-study/science-technology-engineering-math/edg-aas/) (2 years)

Learning Outcomes and Career Skills

A student completing the last award in the pathway will be able to:

- Students will use industry standards to communicate graphically.
- Students will be able to develop architectural working drawings using architectural standards.
- Students will be able to apply critical thinking to a drawing to determine the best graphical solution.
- Students will be able to utilize National Electric Codes (NEC) safety codes to create plans and diagrams.
- Students will be able to develop and employ industry recognized piping symbols and mechanical equipment in creating flow diagrams, isometrics, piping arrangements, elevation drawings, and/or 3D models.

External Learning Experiences

This program includes external learning experiences outside of the classroom, e.g., an internship, externship, clinical, practicum, or cooperative learning experience. Those experiences are typically on-site at a business or organization.

All students participating in external learning experiences are required to comply with the immunization requirements and policies of the external learning sites. Some learning sites outside the college have their own vaccination requirements. These rules come from those facilities and are not mandated by the college. Failure to meet those immunization requirements may limit a student's ability to complete the program and/or may delay the student's graduation date. San Jacinto College does not process exemptions, and students should address potential vaccination exemptions directly with the external learning site.

Locations

- Central (https://www.sanjac.edu/about/locations/central/)
- North (https://www.sanjac.edu/about/locations/north/)
- South (https://www.sanjac.edu/about/locations/south/)

College Admission

San Jacinto College is an open admission institution. All students are welcome to apply and will be admitted to the College. You may begin the process on the College's "How to Apply (https://www.sanjac.edu/admissions/how-to-apply/)" webpage.

Program Admission

There are no additional admission requirements for the Engineering Design Graphics program; students only need to complete the application to the College, as noted in "College Admission" above, and follow the enrollment steps.

PLAN OF STUDY

5EDG

First Year		
First Term		**Credits**
DFTG 1305	Introduction to Technical Drawing	3
DFTG 1409	Basic Computer-Aided Drafting	4
ENGL 1301 or ENGL 2311	Composition I [1] or Technical and Business Writing	3
	Credits	**10**
Second Term		
DFTG 1417	Architectural Drafting-Residential	4
DFTG 1445	Parametric Modeling and Design	4
DFTG 2423	Pipe Drafting	4
	Credits	**12**

Second Year		
First Term		
DFTG 2407	Electrical Drafting	4
Select one (1) course from the three (3) Specializations:		4
Architectural/Civil/Structural Specialization		
Mechanical Specialization		
Energy/Industrial Specialization		
DFTG 2317	Descriptive Geometry	3
MATH 1332 or MATH 1314	Contemporary Mathematics (Quantitative Reasoning) [1] or College Algebra	3
	Credits	**14**
Second Term		
Select three (3) courses from the three (3) Specializations not previously selected:		12
Architectural/Civil/Structural Specialization		
Mechanical Specialization		
Energy/Industrial Specialization		
DFTG 2386 or DFTG 2338	Internship-Drafting and Design Technology/ Technician [2] or Final Project - Advanced Drafting	3
	Credits	**15**
	Total Credits	**51**

Capstone Experience: DFTG 2386 Internship-Drafting and Design Technology/Technician or DFTG 2338 Final Project - Advanced Drafting

1 Courses do not have to be taken in this order unless a course has a prerequisite.

2 The course selected to satisfy the Capstone Experience (DFTG 2386 Internship-Drafting and Design Technology/Technician or DFTG 2338 Final Project - Advanced Drafting) can only be taken during, or after, the term in which the last required engineering design graphics courses are completed.

Courses may be applied to earn the Certificate of Technology, then the Level 2 Certificate, and finally the Associate of Applied Science (AAS) degree .

For the four (4) semester credit hours of the Second Year/First Term, students follow one (1) of the three (3) specializations: Architectural/ Civil/Structural Specialization, Mechanical Specialization or Energy/ Industrial Specialization taking the courses listed under each specialization below this Plan of Study.

For the 12 semester credit hours of the Second Year/Second Term, students follow one (1) of the three (3) specializations: Architectural/ Civil/Structural Specialization, Mechanical Specialization or Energy/ Industrial Specialization taking the courses listed under each specialization below this Plan of Study.

For more detailed information on this program, contact the Department Chair or full-time faculty.

Electives

Code	Title	Credits
Architectural/Civil/Structural Specialization		3
ARCE 1415	Structural Steel Detailing	
ARCE 1421	Architectural Illustration	
ARCE 1452	Structural Drafting	
DFTG 1430	Civil Drafting I	
DFTG 2421	Topographic Drafting	
DFTG 2428	Architectural Drafting-Commercial	
DFTG 2431	Advanced Technologies in Architectural Design and Drafting	
Mechanical Specialization		
DFTG 1433	Mechanical Drafting	
DFTG 2402	Machine Drafting	
DFTG 2406	Machine Design	
DFTG 2435	Advanced Technologies in Mechanical Design and Drafting	
DFTG 2440	Solid Modeling/Design	
DFTG 2450	Geometric Dimensioning and Tolerancing	
DFTG 2458	Advanced Machine Design	
Energy/Industrial Specialization		
ARCE 1452	Structural Drafting	
DFTG 1430	Civil Drafting I	
DFTG 2408	Instrumentation Drafting	
DFTG 2421	Topographic Drafting	
DFTG 2445	Advanced Pipe Drafting	
DFTG 2457	Advanced Technologies in Pipe Design and Drafting	