

# BACHELOR OF SCIENCE IN INDUSTRIAL DESIGN: CONCENTRATION IN PRODUCT DESIGN AND DEVELOPMENT

The Bachelor of Science in Industrial Design addresses the creation of industrial goods and services. The program is concentrated on three principle aspects of design – process, people, and product – and incorporates the study of user-centered needs, relative to the responsible and resourceful implementation of technology innovation, materials, marketing principles, and aesthetic values.

## Program Learning Outcomes

1. Students are able to apply a structured design process to varied problems of different scope and complexity.
2. Students understand how design is shaped by and contributes to its contexts: social, cultural, technological, economic, and environmental.
3. Students have an understanding of design vocabulary, visual literacy, design history, design professions, and adjacent topics.
4. Students are able to apply critical thinking, research, and writing to the design problem at different stages of the process.
5. Students have skills with contemporary tools, technologies, and materials relevant to the design professions, including 2D and 3D concept development and execution in physical and digital realms.
6. Students can apply a variety of design methods, including user-centered approaches, universal design, usability testing, and collaborative design.
7. Students are familiar with the professional practices common to design and can document, present, and manage their work in a professional manner.
8. Collaborative learning approaches are encouraged, both within and beyond the classroom. This may include interdisciplinary collaborations with external partners such as community organizations, institutions, and industry partners.

## Admission

At the time of admission to the University, all students may elect to be Industrial Design majors. No special permission, application, or portfolio is required. Before advancing to courses at the 300 level or higher, however, all majors must:

- Complete the foundation (or equivalent transfer) courses DES 200, and DES 222 or DES 221 with a grade of C or better.
- Have upper-division standing.
- Complete the lower-division General Education requirements at SF State or the equivalent at another institution.

## Industrial Design (B.S.): Concentration in Product Design and Development – 59 Units

All courses for the major must be completed with a grade of C or better, except for DES 305, DES 370, and DES 576, which must be completed with a CR grade.

## General Education Requirements Met in the Major

The requirements below are deemed “met in the major” upon completion of the courses listed (even though the courses and their prerequisites are not approved for GE). This is true whether or not the student completes the major.

- Upper-Division General Education, Arts and/or Humanities (UD-C) is satisfied upon completion of DES 356.

## Foundation Requirements (6 units)

Code	Title	Units
DES 200	Visual Design Literacy	3
Select One:		3
DES 221	Introduction to 3D Digital Design	
DES 222	Introduction to 2D Digital Design	

## Core Courses (13 Units)

Code	Title	Units
DES 300	Design Process	3
DES 322	Computer Graphic Imaging	3
DES 324GW	Research and Writing for Design - GVAR	3
DES 356	A History of Design and Technology	3
DES 370	Introduction to The School of Design	1

## Major Requirements (28 units)

Code	Title	Units
DES 305	Lab Safety Basics	1
DES 310	Product Design I	3
DES 320	Drafting and Sketching for Design	3
DES 321	Technical Drawing I: Introduction to CAD	3
DES 340	Design and Materials	3
DES 360	Model Development Laboratory	3
DES 410	Product Design II	3
DES 420	Rapid Visualization	3
DES 421	Technical Drawing II: 3-D Solid Modeling	3
DES 460	Rapid Prototyping and Manufacturing Systems	3

## Major Electives (6 units)

Note: Students may choose DES 576 or DES 699 but may not choose DES 576 and DES 699.

Select two:

Code	Title	Units
DES 325	Graphic Design I	3
DES 327	Interactive Design I	3
DES 332	Electricity and Electronics	3
DES 405	How to Develop, Patent, and Market an Idea	3
DES 475	Topics in Design	3
DES 510	Product Design III	3
DES 521	Technical Drawing III: Advanced Modeling and Rendering	3
DES 523	Information Design I: Data Visualization	3
DES 560	Prototyping Smart Devices	3
DES 576	Practical Experience: Internship	3

DES 628	Design Gallery: Exhibitions and Communications	3
DES 685	Projects in the Teaching of Design	1-4
DES 699	Independent Study in Design	3
or Elective Approved by Advisement		3

### Culminating Requirements (6 units)

Code	Title	Units
DES 505	Senior Design Project (to be taken in the last semester)	3
DES 570	Professional Practices for Designers	3

### General Education Requirements

Requirement	Course Level	Units	Area Designation
Oral Communication	LD	3	A1
Written English Communication	LD	3	A2
Critical Thinking	LD	3	A3
Physical Science	LD	3	B1
Life Science	LD	3	B2
Lab Science	LD	1	B3
Mathematics/Quantitative Reasoning	LD	3	B4
Arts	LD	3	C1
Humanities	LD	3	C2
Arts or Humanities	LD	3	C1 or C2
Social Sciences	LD	3	D1
Social Sciences: US History	LD	3	D2
Lifelong Learning and Self-Development (LLD)	LD	3	E
Ethnic Studies	LD	3	F
Physical and/or Life Science	UD	3	UD-B
Arts and/or Humanities	UD	3	UD-C
Social Sciences	UD	3	UD-D

#### SF State Studies

Courses certified as meeting the SF State Studies requirements may be upper or lower division in General Education (GE), a major or minor, or an elective.

American Ethnic and Racial Minorities	LD or UD	3	AERM
Environmental Sustainability	LD or UD	3	ES
Global Perspectives	LD or UD	3	GP
Social Justice	LD or UD	3	SJ

Note: LD = Lower-Division; UD = Upper-Division.

### First-Time Student Roadmap (4 Year)

1. In order to choose your English Composition A2 course and your QR/Math B4 course, please complete the online advising activities at [writingadvising.sfsu.edu](https://writingadvising.sfsu.edu) (<https://writingadvising.sfsu.edu/>) and [mathadvising.sfsu.edu](https://mathadvising.sfsu.edu) (<https://mathadvising.sfsu.edu/>). Questions? Contact Gator Smart Start. (<https://gatorsmartstart.sfsu.edu/>)
2. Select the row that matches your English course choice for A2.\*
3. Select the column that matches your QR/Math course choice for B4.
4. Click the Roadmap that lines up with your row and column.

For example, if you select ENG 104/ENG 105 and a multi-semester QR/math sequence for your first year, then choose Roadmap D.

Course Choice	One-Semester Course	Two-Semester Sequence or Support Course
ENG 114	Roadmap A ( <a href="http://bulletin.sfsu.edu/colleges/liberal-creative-arts/design-industry/bs-industrial-design-concentration-product-design-development/roadmap-i-ii-eng/">http://bulletin.sfsu.edu/colleges/liberal-creative-arts/design-industry/bs-industrial-design-concentration-product-design-development/roadmap-i-ii-eng/</a> )	Roadmap C ( <a href="http://bulletin.sfsu.edu/colleges/liberal-creative-arts/design-industry/bs-industrial-design-concentration-product-design-development/roadmap-iii-iv-eng/">http://bulletin.sfsu.edu/colleges/liberal-creative-arts/design-industry/bs-industrial-design-concentration-product-design-development/roadmap-iii-iv-eng/</a> )
ENG 104/ENG 105	Roadmap B ( <a href="http://bulletin.sfsu.edu/colleges/liberal-creative-arts/design-industry/bs-industrial-design-concentration-product-design-development/roadmap-i-ii-stretch/">http://bulletin.sfsu.edu/colleges/liberal-creative-arts/design-industry/bs-industrial-design-concentration-product-design-development/roadmap-i-ii-stretch/</a> )	Roadmap D ( <a href="http://bulletin.sfsu.edu/colleges/liberal-creative-arts/design-industry/bs-industrial-design-concentration-product-design-development/roadmap-iii-iv-stretch/">http://bulletin.sfsu.edu/colleges/liberal-creative-arts/design-industry/bs-industrial-design-concentration-product-design-development/roadmap-iii-iv-stretch/</a> )

\* Composition for Multilingual Students: If taking ENG 209 as your first English course, choose the ENG 114 row. If taking ENG 201 or ENG 212 for your first English course, choose the ENG 104/ENG 105 row.

### SF State Scholars

The San Francisco State Scholars program provides undergraduate students with an accelerated pathway to a graduate degree. Students in this program pursue a bachelor's and master's degree simultaneously. This program allows students to earn graduate credit while in their junior and/or senior year, reducing the number of semesters required for completion of a master's degree.

This roadmap opens in a new tab. (<http://bulletin.sfsu.edu/colleges/liberal-creative-arts/design-industry/bs-industrial-design-concentration-product-design-development/scholars-roadmap/>)

### General Advising Information for Transfer Students

1. Before transfer, complete as many lower-division requirements or electives for this major as possible.
2. The following courses are not required for admission but are required for graduation. Students are strongly encouraged to complete these units before transfer; doing so will provide more flexibility in course selection after transfer.

- a course in U.S. History
- a course in U.S. & California Government

For information about satisfying the requirements described in (1) and (2) above at a California Community College (CCC), please visit <http://www.assist.org> (<http://assist.org>). Check any geographically accessible CCCs; sometimes options include more than one college. Use ASSIST to determine:

- Which courses at a CCC satisfy any lower-division major requirements for this major;
- Which courses at a CCC satisfy CSU GE, US History, and US & CA Government requirements.

Remedial courses are not transferable and do not apply to the minimum 60 semester units/90 quarter units required for admission.

Additional units for courses that are repeated do not apply to the minimum 60 units required for upper-division transfer (for example, if a course was not passed on the first attempt or was taken to earn a better grade).

Before leaving the last California Community College of attendance, obtain a summary of completion of lower-division General Education units (IGETC or CSU GE Breadth). This is often referred to as a GE certification worksheet. SF State does not require delivery of this certification to Admissions, but students should retain this document for verifying degree progress after transfer.

Credit for Advanced Placement, International Baccalaureate, or College-Level Examination Program courses: AP/IB/CLEP credit is not automatically transferred from the previous institution. Units are transferred only when an official score report is delivered to SF State. Credit is based on the academic year during which exams were taken. Refer to the University Bulletin in effect during the year of AP/IB/CLEP examination(s) for details regarding the award of credit for AP/IB/CLEP.

Students pursuing majors in science, technology, engineering, and mathematics (STEM) disciplines often defer 6-9 units of lower-division General Education in Areas C and D until after transfer to focus on preparation courses for the major. This advice does not apply to students pursuing associate degree completion before transfer.

## Transferring From Institutions Other Than CCCs or CSUs

Review SF State's lower-division General Education requirements. Note that, as described below, the four basic skills courses required for admission meet A1, A2, A3, and B4 in the SF State GE pattern. Courses that fulfill the remaining areas of SF State's lower-division GE pattern are available at most two-year and four-year colleges and universities.

Of the four required basic skills courses, a course in critical thinking (A3) may not be widely offered outside the CCC and CSU systems. Students should attempt to identify and take an appropriate course no later than the term of application to the CSU. To review more information about the A3 requirement, please visit [bulletin.sfsu.edu/undergraduate-education/general-education/lower-division/#AAEL](http://bulletin.sfsu.edu/undergraduate-education/general-education/lower-division/#AAEL).

Waiting until after transfer to take a single course at SF State that meets both US and CA/local government requirements may be an appropriate option, particularly if transferring from outside of California.

## All Students Must Meet the Transfer Eligibility Requirements Outlined Below for Admission.

For more information, visit the Undergraduate Admissions section (<http://bulletin.sfsu.edu/undergraduate-admissions/>).

- Complete 60 or more transferable semester units or 90 or more quarter units.
- Earn a college grade point average of 2.0 or better in all transferable courses. Non-local area residents may be held to a higher GPA standard.
- Be in good standing at the last college or university attended.
- Complete 30-semester units (45-quarter units) of General Education, including four basic skills courses:
  - a. One course in oral communication (same as CSU GE Area A1)
  - b. One course in written composition (same as CSU GE Area A2)
  - c. One course in critical thinking (same as CSU GE Area A3)
  - d. One course in mathematics or quantitative reasoning (same as CSU GE Area B4)
- The four basic skills courses and a minimum of 60 transferable semester units (90-quarter units) must be completed by the spring semester prior to fall admission, or by the fall semester prior to spring admission. Earn a C- or better grade in each basic skills course.