

**San José State University**  
**Department of Design / Industrial Design Program**  
**DSID 130, Sustainable Design, Section 01, Spring 2022**

<b>Instructor:</b>	Professor Kohar Scott
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<b>Office Hours:</b>	M/W 11:00am - 12:00pm by appt.
<b>Class Days/Time:</b>	M/W 12:00pm - 2:50pm
<b>Classroom:</b>	Zoom (see canvas) or Art 205
<b>Prerequisites:</b>	DSID 123A or instructor permission
<b>Course Fees:</b>	A percentage of your fees are used in the maintenance of the prototyping facility equipment.

### **Canvas Course Management Website & Course Format**

This course is intended for an in-person format this term, however durations of the course are required to be remote due to Covid-19 surges and safety concerns. Remote instruction will include some synchronous class meetings as well as asynchronous class activities. Course materials such as the syllabus, assignment handouts, reading, grading, etc. may be found on the DSID 130 course Canvas website. You may find your link to this website on MySJSU, along with your login/password info. You are responsible for regularly checking with the messaging system in Canvas for course updates, assignments, etc. All class correspondence and grading will be managed through the class Canvas site. If you do not check Canvas often, you should set up your email forwarding to forward all class correspondence to your preferred email address. Key topics to check on Canvas are the Calendar, Announcements, Modules, Discussions, and Grades. Any last minute updates will be posted to Announcements, the entire semester schedule is detailed in the Syllabus and Calendar, and your progress in the course can be tracked through Grades. Please view Canvas as a tool for Active Learning. You must have access to a computer and the internet to be able to access the Canvas site. You may also use a tablet or your phone. Some assignments will be required to be turned in on Canvas, in which case you will need to have access to some basic software such as [MS Office](#) (MS Word, Powerpoint, Excel) or equivalent (such as G Suite software), Adobe Acrobat (for making pdfs), and basic scanning software for scanning sketches to upload to the assignment portal, [Adobe Creative Cloud](#),

[Autodesk Sketchbook Pro](#), and [Autodesk Fusion360](#). See [University Policy F13-2](#) at <http://www.sjsu.edu/senate/docs/F13-2.pdf> for more details.

## **Course Description:**

DSID130 Sustainable Design explores a variety of issues surrounding the subject of sustainability. The history of sustainability as it applies to Industrial Design and related fields will be covered, along with current trends in the subject. Aspects of sustainability include knowledge of materials, manufacturing techniques, new technologies, whole systems thinking, renewable resources and methodologies, appropriate technology, life cycle analysis methods, and aspects of how sustainability is being approached in other parts of the world.

## **Course Goals:**

### **Student Learning Objectives**

Class assignments will include a number of readings, analysis of the readings through peer discussions, short essays, presentations, classroom activities and exercises, DVD viewings, and design projects. Reading will be required on a weekly basis and the reading assignments (except for one book) will be posted on the web at the course Canvas site. The course will be following the Okala curriculum developed by IDSA along with other support texts, articles, videos and tools.

### **Course Learning Outcomes (CLO)**

In this course students will learn about the factors that contribute to sustainability when it comes to design (L01), the historical foundation of sustainability as it relates to design (L02), leverage tools to achieve sustainable design such as lightweighting, raw materials reduction, and

Upon successful completion of this course, students will be able to:

- (LO1) Discover how industrial design, and the decisions we make, affects the environment.
- (LO2) Discuss the historical development of sustainability practices as it applies to design and manufacturing.
- (LO3) Leverage traditional and cutting edge technologies such as artificial intelligence (generative design) to ideate and consider materials and manufacturing early in the product development process.
- (LO4) Investigate and apply ecodesign and sustainability techniques to design goals.
- (LO5) Translate research into useful design focused needs.
- (LO6) Design a product from concept through to final design prototype that reduces or eliminates environmental impact.
- (LO7) Present design ideas in a clear, concise manner in both 2D and 3D.

### **Course Project Deliverables**

There will be the following deliverables for this course: weekly readings with discussions in and out of class, exercises in and out of class to enhance understanding of lectures and reading, assignments to do outside of class that reinforce lectures and activities done in class, project sketches, mock-ups, exploded views, orthographic drawings, technical product specifications (System Bill of Materials), assembly drawings, LCA Impact Analysis, final CAD models, and project process books. Please come prepared to work in class. Be prepared with any supplies and materials that you might need to work that day in class even though we are meeting virtually for part of this term.

You will be required to:

- Turn in a design project at the end of the semester with interim reviews and progress checks throughout the term.
- Turn in a Project process book that includes *all* work completed during the semester (interim phase deliverables and other work that is important to the project).
- A final visual presentation will take place during the last two weeks of class. - On-time postings of homework and progress on projects on Canvas.

## Required Texts/Readings

### Required Reading

- 1) Various chapters from books as well as articles and podcasts are available on Canvas.

### Other Recommended Readings

- 1) White, P., St. Pierre, L. & Belletaire, S. [\*The Okala Practioner: Integrating Ecological Design Handbook\*](#). The Okala Team, 2013. ISBN 978-0-9851674-0-0.  
Note: This workbook is currently available on Amazon.
- 2) Hawkin, Paul. *Drawdown*. Penguin Putnam Inc, 2017.
- 3) Hawkin, Paul. *The Drawdown Review*. 2020.
- 4) Patrick, Katie. *How to Save the World: How to Make Changing the World the Greatest Game We've Ever Played*. Hello World Labs, 2019.
- 5) Bhamra, T., Hernandez, R., & Mawle, R.. *The Handbook of Design for Sustainability*. London: Bloomsbury Academic, 2013.

Other required and suggesting readings are posted on the Canvas site under the File Menu in the Other Suggested Reading folder.

## Required Equipment & Materials:

### Equipment

You will need a computer to run Autodesk Fusion 360 and Adobe Creative Suite software. Reference the department recommendations included in the Technology Requirements for Industrial Design Related Majors.pdf for technical equipment specifications.

### Required Materials List

Materials that will be required for this course:

One-half ream (250 sheets) of 8.5x11 copy paper	\$8
Pads of 14x17 Marker paper, and drawing tools	
Various mock-up materials: (approximately)	\$250
Various materials for prototyping final model (optional): approx.	(\$200 )
Other	(\$50-150)
The total cost of these materials is estimated to be between	\$550-800

### Library Liaison

Scott, Gareth

Email: [Gareth.Scott@sjsu.edu](mailto:Gareth.Scott@sjsu.edu)

408-808-2094

### Classroom Protocol

Active participation in class activities is a significant factor in a student's success in the Industrial Design program. Active learning facilitates mental growth, skill enhancement, creates a lifelong learner and improves the goals of becoming a good designer. Students are expected to be on time to class and when a class critique is planned, work is to ready by 10 minutes after the official start of the class period. Be ready to start the critique by 15 minutes after the class officially starts. Students are to be respectful of the professor and their peers and any disruptive activities in the classroom will result in the student being asked to leave the class. Attendance is called at the start of class. Arriving late to class without prior arrangement and approval from the professor is disruptive and interrupts the flow of the class activities and more importantly, it disrupts the students' learning success. If the student cannot be in the zoom meeting by the start of class, they might be left in the waiting room until a more convenient time when they can enter the zoom call without as much disruption. If a student encounters any problems that inhibit their ability to participate in the class, please provide as much advance notice as possible to the

instructor via Canvas so that he/she may respond and inform the student in a timely manner. Do not pass a message to the instructor through another student!

Cell phones, tablets, and even laptops can be disruptive and inconsiderate to your classmates and the instructor. Some of these devices may be used in this class and but should be disabled and turned off during times they are not being used. If a device is to be used for a class activity the instructor will inform you in advance. ***Phones for personal use are NOT permitted in this class*** and you will be asked to turn off and store your phone at the start of each class. If you disrupt or withdraw from class activities due to your inability to silence and ignore any of these devices, it will count against the participation portion of your final grade and you will be asked to leave the virtual classroom. If emergency personal issues (documented family, medical, etc) require you to leave your phone on, please make arrangements with the instructor prior to and *in advance* of the start of class.

The COVID-19 pandemic has created a worldwide disruption to business as usual. That can be seen solely as an inconvenience or, potentially, as an opportunity. Telecommuting work-from-home has become the new normal in business and education creating both challenges and new opportunities. It is accelerating the transformation of business from an office bound workday to work that can be conducted from anywhere there is a decent Wifi connection. This class is an opportunity to learn how to work in an online community of your instructors and fellow peers in a similar manner as you may be called upon to telecommute occasionally upon graduation. With that in mind, you should conduct yourself in a professional manner that is respectful to your instructor and peers while collaborating in the Zoom environment. That means being present with your camera on (audio should be muted except when asking questions and contributing in class), wearing appropriate classroom attire, avoiding anything in your video environment that may be offensive to others and, behaving like a respectful member of the class.

## **Assignments and Grading Policy**

Students will be engaged in lectures, research and design activities, and lab time during class meeting times and they will be assessed on engagement in those activities in their Participation grade (LO 1-10). Students will have homework assignments to do outside of class (at least 9 hours per week) that include reading, exercises, sketching in their sketchbook, mocking up concepts in 3D (LO 3, 5, 6, 7, 9). Students will be required to turn in a their final projects at the end of the semester (LO 8). They will be required to turn in their final process book on the final date (LO 9). Grading will follow the standard SJSU A-F system.

All grades are assessed on the following three criteria: Quality, Effort, and Completeness. Each assignment, presentation and deliverable will be graded on these three criteria, with each criteria holding equal value (33.33%).

A+, A, A- / 100+ - 91% / Excellent

B+, B, B- / 90 – 81% / Above Average  
C+, C, C- / 80-71% / Average  
D / 70-61% / Below Average  
F / Below 61% / Failure

Grading is weighted during the semester as follows:

Assignments:	20%
Activities/Exercises/Discussions:	20%
Project Progress Reviews:	30%
Final Project Deliverables:	30%

More guidelines on grading information and class attendance can be found from the following two university policies:

- [University Syllabus Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>)
- [University Attendance and Participation Policy F15-12](http://www.sjsu.edu/senate/docs/F15-12.pdf) (<http://www.sjsu.edu/senate/docs/F15-12.pdf>)
- [University Grading System Policy F18-5](#)

All assignments are due on time. No late work is accepted. Project work for critiques must be complete in order to receive in-class feedback. A passing grade for this course is a D- but that type of a grade on your semester work will usually not show well in your design portfolio and could pose problems with passing your next portfolio review. The Participation grade in this course will be assessed through your engagement in Activities/Exercise sessions, discussions in class, and critiques each week. Actively engaging and exhibiting life-long learning skills during class are the mode by which participation is assessed.

“Success in this course is based on the expectation that students will spend, for each unit of credit, a minimum of 45 hours over the length of the course (normally three hours per unit per week) for instruction, preparation/studying, or course related activities, including but not limited to internships, labs, and clinical practica. Other course structures will have equivalent workload expectations as described in the syllabus.”

## University Policies

### Academic integrity

Per [University Policy S16-9](http://www.sjsu.edu/senate/docs/S16-9.pdf) (<http://www.sjsu.edu/senate/docs/S16-9.pdf>), relevant university policy concerning all courses, such as student responsibilities, academic integrity, accommodations, dropping and adding, consent for recording of class, etc. and available student services (e.g. learning assistance, counseling, and other resources) are listed on [Syllabus Information web page](#) (<http://www.sjsu.edu/gup/syllabusinfo>), which is hosted by the Office of

Undergraduate Education. Make sure to visit this page to review and be aware of these university policies and resources.

## **Student Technology Resources**

Keep in mind that some on-campus resources may be closed or require advanced protocols to connect. Be sure to call or email in advance to make sure you can be accommodated *before* on visiting campus. Though it is not anticipated that you will need any of this for this class, computer labs for student use are available in the [Academic Success Center](http://www.sjsu.edu/at/asc/about_asc) ([http://www.sjsu.edu/at/asc/about\\_asc](http://www.sjsu.edu/at/asc/about_asc)) located on the 1<sup>st</sup> floor of Clark Hall and on the 2<sup>nd</sup> floor of the Student Union. Computers are also available in the Martin Luther King Library. A wide variety of audio-visual equipment is available for student checkout from [Media Services](http://www.sjsu.edu/at/ms/reservations/) (<http://www.sjsu.edu/at/ms/reservations/>) located in IRC 112. These items include digital and VHS camcorders, VHS and Beta video players, 16mm, slide, overhead, DVD, CD, and audiotape players, sound systems, wireless microphones, projection screens and monitors.

### **Free software access**

Adobe Creative Suite licenses are available at no cost to students through the SJSU Adobe software program for faculty, staff, and students found here: <https://www.sjsu.edu/ecampus/teaching-tools/adobe/students/index.html>. Please be sure to install Adobe Acrobat, Photoshop, InDesign, and Illustrator prior to the first day of instruction. Autodesk Sketchbook Pro is available for free here: <https://www.autodesk.com/products/sketchbook/free-download>. Autodesk Fusion360 can be downloaded here: <https://www.autodesk.com/education/edu-software/overview?sorting=featured&page=1> and detailed instructions are found here: <https://drive.google.com/file/d/1DPtWKH5Tpb-3KVtMz8g5cEio8aXcCGCq/view>.

## DSID 130 / Sustainable Design, Sec 2 / Spring 2022 Course Schedule

*Schedule is subject to change with fair notice (one week) in class or via notice on Canvas. Please check Canvas a few days before class to be informed about class activities, materials and reading required for class, homework, and presentations.*

Week	Date	Topics, Readings, Demos, Assignments, Deadlines	Meeting
1	1/26	<p><b>Sustainable Design Intro</b></p> <p><i>Lecture:</i> Review syllabus, Canvas overview, project overview  <i>Assignment:</i> Install Fusion (if you haven't already), Discussion 1+reading, and 24 hour log &amp; Behavioral Study &amp; Analysis</p>	zoom
2	1/31  2/02	<p><b>Sustainable Design Intro</b></p> <p><i>Due:</i> Discussion week 2 reading  <i>Activity:</i> Sustainability Around the World  <i>Lecture:</i> Environmental factors</p> <p><i>Due:</i> 24 Hour Log &amp; Behavioral Study &amp; Analysis</p> <p><i>Lecture/Activity:</i> Process tree of items from the 24 hour Log  <i>Assignment:</i> Start thinking of 3 different problem statements from the following categories (designing for aging populations, PPE, food packaging, ?)</p>	zoom
3	2/07  2/09	<p><b>Circular design and Systems Thinking</b></p> <p><i>Due:</i> Discussion week 3 reading  <i>Lecture/Activity:</i> Fusion introduction/why generative design  <i>Assignment:</i> Fusion 360 water bottle tutorial assignment</p> <p><i>Activity/Discussion:</i> systems thinking exercise, Product purchase survey</p>	zoom
4	2/14  2/16	<p>History San Jose tour (TBD)</p> <p><i>Due:</i> Discussion week 4 reading  <i>Assignment:</i> Start think about what you're redesigning and (3) different problem statements.. Research for your project begins.</p> <p><b>Ecodesign Strategies</b></p> <p><i>Activity:</i> Brainstorm ecodesign strategies</p>	in-person tour at History San Jose

		<i>Assignment:</i> Start research and shop for and purchase/find your product to redesign. Find a current product to tear down and deconstruct (bring your product to class 2/21) It doesn't have to be new - it can but used.	
5	2/21	<p><b>Product tear down</b>  <i>Due:</i> Discussion week 5 reading, research start</p> <p><i>Activity:</i> Product deconstruction (<b>bring your product to class</b>)  <i>Due:</i> Stakeholder matrix and product focus strategy</p>	<i>in-person</i>
	2/23	<p><i>Activity:</i> Continue product deconstruction and documentation  <i>Due:</i> Designing with the ecodesign strategy wheel (Phase I)</p>	<i>in-person</i>
6	2/28  3/02	<p><b>Lifecycle Strategies: Implementation</b>  <i>Due:</i> Discussion week 6 reading,  <i>Activity:</i> (TBD) Fusion 360 workshop in class  <i>Assignment:</i> Concepts for your Product Redesign (Phase 1)</p> <p><i>Lecture:</i> Life Cycle Assessment  <i>Activity:</i> LCA example and worksheet</p>	<i>in-person</i>
7	3/07  3/09	<p><b>Life Cycle Strategies: Case Studies</b>  <i>Due:</i> Discussion week 7 reading,  <i>Discussion:</i> sBOM Draft</p> <p><i>Due:</i> sBOM Draft  <i>Activity:</i> Introduce Gantt chart</p>	<i>in-person</i>
8	3/14  3/16	<p><b>Life Cycle Strategies: Implementation</b>  <i>Due:</i> Discussion week 8 reading  <i>Activity:</i> Phase 1 discussion  <i>Assignment:</i> Phase II Development Design (narrow down to 3-5 concepts)</p> <p><i>Activity:</i> Fusion360 workshop  <i>Due:</i> Concepts for your Product Redesign (Phase 2)</p>	<i>in-person</i>

9	3/21  3/23	<b>Sustainable Design Implementation</b> <i>Due:</i> Discussion week 9 reading  <i>Due:</i> Phase II Design solutions <i>Activity:</i> (TBD) guest critique <i>Assignment:</i> Start Phase III	<b>in-person</b>
10	3/28  3/30	<b>SPRING BREAK</b>	<b>NONE</b>
11	04/04  04/06	<b>Sustainable Design Implementation</b> <i>Activity:</i> TBD (Biodesign activity)  <i>Assignment:</i> Continue to work on Phase III	<b>in-person</b>
12	04/11  04/13	<b>Sustainable Design Implementation</b>  <i>Activity:</i> Desk critique / work on projects in class <i>Assignment:</i> Continue to work on Phase III  <i>Due:</i> Mock-ups and presentation drawings of design project; Draft LCA <i>Activity:</i> Desk critique / work on projects in class <i>Assignment:</i> Continue to work on projects	<b>in-person</b>
13	04/18  04/20	<b>Sustainable Design Implementation</b> <i>Lecture:</i> Poster design <i>Activity:</i> Phase III presentations <i>Assignment:</i> Finalize projects and start poster design  In-class work day	<b>in-person</b>
14	04/25  04/27	<b>Sustainable Design Implementation</b> <i>Activity:</i> Desk critique / work on projects in class <i>Assignment:</i> Continue to work on projects  <i>Due:</i> Refined Mock-ups of product and 2 <sup>nd</sup> draft of LCA <i>Activity:</i> Desk critique / work on projects in class <i>Assignment:</i> Continue to work on projects	<b>in-person</b>
15	05/02	<b>Sustainable Design Implementation</b> <i>Activity:</i> Desk critique / work on projects in class <i>Assignment:</i> Continue to work on projects	<b>in-person</b>

	05/04	<b>* Non-Instructional Day: No Class, Campus Closed</b>	
<b>16</b>	<b>05/09</b>  <b>05/11</b>	<b>Sustainable Design Implementation</b>  <i>Due:</i> Sustainable Product Redesign Presentation (Phase IV) <i>Activity:</i> Review models and final design solutions <i>Assignment:</i> Develop final presentation  <i>Activity:</i> Class presentations	<b>in-person</b>
Final Exam	05/23 9:45 am	<i>Due:</i> Final Process Book for project <i>Due:</i> Final LCA Impact Analysis on original and new design.	<b>in-person</b>