USC Iovine and Young Academy

Arts, Technology and the Business of Innovation

ACAD 245: Designing Products I
Units: 4
Spring 2023
Tues/Thurs
2:00-4:50pm

Location:

Iovine and Young Hall
3780 Watt Way
Los Angeles, 90089
Room: IYH 213

Instructor:

Grant Delgatty
Office Hours: TBD / Call or email for appointment
Contact Info:
Grant – delgatty@usc.edu

IT Help: https://iovine-young.usc.edu/ait/index.html
Hours of Service: 8:30am - 5:00pm
Contact Info: iyhelp@usc.edu, 213-821-6917

Course Description

Designing Products I is an introductory course in learning how to design and develop a range of physical consumer products to solve problems and address market opportunities. The goal of this course is to give students an understanding of what makes successful and unsuccessful products, identify opportunities within a competitive product landscape and create compelling product solutions. Through a process of implementing blue ocean strategy analysis and human centered design principles, student teams will take on different project prompts throughout the semester to develop skills in creating product solutions for a range of product categories that require different methodologies of design, prototyping, and manufacturing processes.

This course heavily emphasizes rapid market analysis, ideation in the form of 2D and 3D sketching and low to medium fidelity prototyping as the process for students to develop desirable, feasible and viable product solutions quickly.

Learning Objectives and Outcomes

Students will be able to demonstrate:

- An understanding of the fundamentals to developing a range of consumer product solutions.
- An ability to determine typical consumer pain points / problems with the competition and create compelling and feasible solutions to address these areas of opportunity.
- Development in skills relating to creative problem solving, rapid visualization and ideation, and techniques in how to create both low and medium fidelity prototypes.
- A familiarity with human centered design principles and the iterative process of creating multiple prototypes based on user insights and feedback.
- An ability to evaluate their work and that of their peers in a critical manner.

Prerequisite(s): ACAD 176 and DES 102

Course Notes

Designing Products I is a studio-based course which very closely mimics the actual work environment of a design studio. The format of the course is highly collaborative and primarily critique based. Learning objectives will come from weekly homework assignments and the feedback of both the professor(s) and fellow classmates. It is expected that students will engage in dialogue during class critiques, and a portion of their grade will be based on their ability and willingness to do so.

Technological Proficiency and Hardware/Software Requirements

Students should have a basic to proficient understanding of Adobe Creative Suite, Keynote and/or PowerPoint, and although not necessary, some basic experience with 3D CAD modeling is beneficial (i.e. - Shapr3D, Solidworks and/or Fusion 360)

Suggested Readings and Supplementary Materials

- The Design of Everyday Things / Donald Norman
- Change by Design / Tim Brown
- Emotional design: why we love (or hate) everyday things / Donald A. Norman
- Research Methods for Product Design / Alex Milton; Paul Rodgers

Description and Assessment of Assignments

Homework will be weekly assignments presented and/or uploaded digitally each week to a shared Miro virtual workspace, with feedback provided in the form of critique from both the professor(s) and fellow classmates. For most of the class, students will work in teams to create a series of product solutions addressing opportunities relating to a range of different product categories. Each of these short 4-week projects will go through a process of analyzing the competitive landscape to determine blue ocean opportunities, determining design criteria to address these opportunities, developing initial ideas through brainstorming techniques and ideation sketches, developing initial low-fidelity prototypes, utilizing user feedback to iterate on initial concepts, and creating medium fidelity prototypes based on this feedback.

The final assignment will be an individual deck synthesizing the three projects created during the semester. This deck should be well designed and should showcase the process you took in developing your three product solutions (i.e. - include market research, user profiles, opportunity analysis, problem/ opportunity statement, ideation, and prototype iterations). This deck should be no more than 10 to 15 pages long and should be formatted as a PDF which is no more than 10-15MB, so it can easily be emailed and viewed by potential employers / interested parties.

Class time may consist of the entire class collectively participating in a large group critique, or the teams may be broken out to have in-class studio time while the instructor(s) give individual critique and feedback to other teams.

Students are responsible for all assignments, including homework, in-class work, critiques, presentations, demos, readings, process documentation, and archiving work. It is the student's responsibility to obtain missed work and information missed if absent. As ACAD 245 is a studio-based class, information is exchanged in group discussion and may not be imparted through handouts or notes, therefore it is critical for students to attend class and be on time to succeed.

Grading Breakdown

Projects will be graded based on adherence to given guidelines, attention to craft and overall appropriateness. Taking initiative, progression and follow-through will also be considered. Both giving and receiving feedback are critical to your success in the class; therefore, your participation grade is based on your active involvement in class and critiques. Assignments will be docked one full letter grade each week they are late. Absence is not an excuse for late work. Please be sure to communicate with the professors if you miss or are planning to miss a class to arrange for homework submission.

Grades will be assessed according to a point system based on the following:

- Competency in key concepts
- Adhering to prescribed volume of work
- Effort/range of exploration
- Process and methodology
- Presentation/craftsmanship
- Participation in critiques

A **Exceptional** - Going above and beyond with exemplary work both quantitatively and qualitatively.

A- **Excellent** – Meeting all homework requirements with a very high quality of what's expected with regard to content, creativity, attention to detail and craftsmanship.

B+ **Very good** - Completing all assignments with a high level of proficiency but lacking in some areas of competency.

B **Good** - Completing assignments with an above adequate to adequate level of proficiency in the five areas of competency.

B- **Satisfactory** - Completing assignments with a satisfactory level of proficiency in most areas of competency, and below adequate in some areas.

C+ **Unsatisfactory** - Improvement needed in the five areas of competency listed in the grading criteria.

C **Below expectation** - Most likely caused by poor levels of execution, lack of participation incomplete work, and overall lack of performance/effort.

C- **Well below expectation.**

D **Significantly below expectation.**

Assignments	Points	% of Grade
Good Design / Bad Design examples and concept revisions	**50**	**5%**
Project A – Opportunity Analysis: competitive analysis, blue ocean strategy, problem/opportunity statements, design criteria	50	5%
Project A – Initial Ideation: brainstorming, initial concept sketches and concept revision based on user feedback	50	5%
Project A – Initial Prototypes: Low fidelity prototypes	50	5%
Project A – Revised Prototypes: Medium fidelity prototypes	100	10%
Project A – Total	**250**	**25%**
Project B – Opportunity Analysis: competitive analysis, blue ocean strategy, problem/opportunity statements, design criteria	50	5%
Project B – Initial Ideation: brainstorming, initial concept sketches and concept revision based on user feedback	50	5%
Project B – Initial Prototypes: Low fidelity prototypes	50	5%
Project B – Revised Prototypes: Medium fidelity prototypes	100	10%
Project B – Total	**250**	**25%**
Project C – Opportunity Analysis: competitive analysis, blue ocean strategy, problem/opportunity statements, design criteria	50	5%

Project C – Initial Ideation: brainstorming, initial concept sketches and concept revision based on user feedback	50	5%
Project C – Initial Prototypes: Low fidelity prototypes	50	5%
Project C – Revised Prototypes: Medium fidelity prototypes	100	10%
Project C – Total	**250**	**25%**
Individual Synthesis Deck	**150**	**15%**
Participation	**50**	**5%**
TOTAL	**1000**	**100%**

Grading Scale

Course final grades will be determined using the following scale

95 – 100	A = 4.0
90 – 94	A- = 3.7
85 – 89	B+ = 3.3
80 – 84	B = 3.0
75 – 79	B- = 2.7
70 – 74	C+ = 2.3
65 – 69	C = 2.0
60 – 64	C- = 1.7
55 – 59	D = 1.0
0 – 55	F

Assignment Submission and Rubric Policy

Unless otherwise noted, all assignments must be submitted either on the Miro virtual whiteboard or as a PDF presentation. For assignments delivered in class (such as presentations), the work must be completed before the commencement of the class session in which the assignment is due. For assignments that are designated for virtual submission, one team member is expected to submit the assignment to the Google drive (unless otherwise specified) by 6:00pm on the due date.

Grading Timeline

Grades and feedback for all assignments will be returned to students within one week of submission.

Academy Attendance Policy

The Academy maintains rigorous academic standards for its students and on-time attendance at all class meetings is expected. Each student will be allowed two excused absences over the course of the semester for which no explanation is required. Students are admonished to not waste excused absences on non-critical issues, and to use them carefully for illness or other issues that may arise unexpectedly. Except in the case of prolonged illness or other serious issue (see below), no additional absences will be excused. Each unexcused absence will result in the lowering of the final grade by ⅓ of a grade (e.g., an A will be lowered to A-, and A- will be lowered to a B+, etc.). In addition, being tardy to class will count as one-third of an absence. Three tardies will equal a full course absence.

Students remain responsible for any missed work from excused or unexcused absences. Immediately following an absence, students should contact the instructor to obtain missed assignments or lecture notes and to confirm new deadlines or due dates. Extensions or other accommodations are at the discretion of the instructor.

Automatically excused absences normally many not be used for quiz, exam or presentation days. Using an excused absence for a quiz, exam or presentation, such as in the case of sudden illness or other emergency, is at the discretion of the instructor.

In the case of prolonged illness, family emergencies, or other unforeseen serious issues, the student should contact the instructor to arrange for accommodation. Accommodation may also be made for essential professional or career-related events or opportunities. All accommodations remain at the discretion of the instructor, and appropriate documentation may be required.

Spring 2023 addendum:

- Unless students provide an accommodation letter from USC's Office of Student Accessibility Services (OSAS) or a letter from IYA Student Services detailing visa or travel restrictions, attendance and active participation is expected in the classroom. Any student with such accommodations should submit their accommodation document to the instructor as soon as possible to discuss appropriate accommodations. Either classroom recordings or live remote access to the class via Zoom will be provided.
- Students who are experiencing illness should not attend class in person. Please inform the instructor in advance of any class sessions that you can't attend for medical reasons, and accommodations will be arranged to view recorded lectures and submit alternatives to any missed class participation. Students will not be penalized for not attending class in person under these circumstances.
- In the event that you find yourself experiencing COVID-19 related symptoms, in keeping with university recommendations, you should Stay home! This is the best way to prevent spreading COVID-19 as supported by scientific evidence; Please do not come to an in-person class if you are feeling ill, particularly if you are experiencing symptoms of COVID-19.

Additional Policies

It is expected that students will conduct themselves in a professional manner. Use of connected devices such as cell phones, tablets, etc. during class critique is not allowed, and should only be used during class for the purpose of taking notes or researching information pertinent to the project at hand.

Although the focus of this class is to develop consumer products, it is also expected that much thought and care be put into every component of the project. This includes spelling, punctuation, and grammar, as well as attention to detail such as design layout, cleanliness and craftsmanship, and formatting of homework assignments. Not adhering to these professionalism standards will be reflected on the student's final grade.

HOW TO PURCHASE SOFTWARE AT THE DISCOUNTED ACADEMY RATE THROUGH THE USC BOOKSTORE:

The following first year software are now available for purchase **online** through the USC Bookstore at the Academy discounted rate:

Software	**IYA Short-Term License at USC Bookstore**
Adobe Creative Cloud	$70 2021-2022 annual license
Apple Logic Pro	$35 semester license
Solidworks	$35 semester license
Apple Final Cut Pro	$35 semester license

1. Visit the USC Bookstore online: https://www.uscbookstore.com/usciyasoftware
2. Select the software license(s) you would like to purchase.
3. When you proceed to checkout, add the Promo Code "IYASoftware" (This will override the listed taxes).
4. For shipping, select FedEx Home Delivery (free).
5. Once you complete your online purchase, you will receive a confirmation email/receipt. *(Note that even if a shipping charge appears on your invoice, it will not be charged to your credit card. This relates to a known technical problem with the Bookstore's online store.)*
6. Upload your receipt here to receive access to your purchased license.
7. You will be notified by email when the license has been activated

Course Schedule: A Weekly Breakdown

	Topics/Daily Activities	Homework Assignments	Deliverable/Due Dates
Week 1a (Tues) 1/10	**Course Introduction** - Introductions - Lecture on product design process/human centered design, and what makes a successful / unsuccessful product	- 3 examples of 'good' design products (1-2 products / slide) - 3 examples of 'bad design products (1-2 products / slide) - Pages should include photos/images of products, MSRP, and pros and cons (bullet points) of each product to support your opinion.	- 3 examples of good design - 3 examples of bad design – **Due Week 1b**
Week 1b (Thurs) 1/12	**Good Design / Bad Design** - Class presentations of good and bad design examples	- Redesign three products to address opportunities for improvement - Should be presented on three separate slides – each slide should show the original product along with a sketch or image of your proposed improved design.	- Product redesigns (3) – **Due Week 2a**
Week 2a (Tues) 1/17	**Design Improvements** - Class presentations of good/bad redesigns - Project A kickoff (framing and parameters) - Team formation	- Determine a product category your team wishes to pursue based on the given project prompt	- Product category proposal – **Due Week 2b**
Week 2b (Thurs) 1/19	**Project A: Opportunity Analysis** - Discussion on competition and problem/opportunity analysis - Work in class (break-out session)	- Identify a target user profile - Identify a minimum of 10 competitor products (include name of product, MSRP, Amazon star review, and list of pros and cons for each) - Produce a list of design criteria in order of importance - Create a positioning matrix to determine your product's blue ocean opportunity - Develop a concise problem/opportunity statement	- Opportunity Analysis – **Due Week 3a**
Week 3a (Tues) 1/24	**Project A: Initial Ideation** - Team presentations of opportunity analysis - Lecture on problem framing and brainstorm techniques - Mind maps (break-out session)	- Create a mind-map showcasing different potential problems and touch points for your product category. - Create minimum of 15-20 'How might we' framing questions	Initial Ideation: - Mind-map - 15-20 framing questions **– Due Week 3b**

Week 3b (Thurs) 1/26	**Project A: Initial Ideation (cont)** - Work in class - perform 'what if' brainstorming exercise - Demo on vis com / sketching techniques	- Produce a minimum of 10 sketches per team member of initial ideation concepts based on design criteria / 'what if' exercise	Initial Ideation: - 30-60 'what if' post-its - 10 sketches per team member **– Due Week 4a**
Week 4a (Tues) 1/31	**Project A: Initial Prototypes** **-** Group presentations (initial concepts) - Demo on producing low-fidelity prototypes for given product category	- Run initial concepts by target users to obtain feedback - Produce a minimum of three revised sketches based on feedback, and one low-fidelity prototype per team member	Initial Prototypes: - User feedback - Revised concept sketches (3 per team member) - Initial low-fidelity prototype (1 per team member) **– Due Week 5a**
Week 4b (Thurs) 2/2	- Work in class (break-outs) - Individual team feedback		
Week 5a (Tues) 2/7	**Project A: Revised Prototypes** **-** Group presentations (initial prototypes) - Demo on producing medium-fidelity prototypes for given product category	- Run initial prototypes by target users to obtain feedback - Produce one medium-fidelity prototype per team member	Revised Prototypes: - Medium-fidelity prototype (1 per team member) **– Due Week 6a**
Week 5b (Thurs) 2/9	- Work in class (break-outs) - Individual team feedback		Team presentations of Project A: - Brief review of prior steps with individual work briefly highlighted. Primary focus is on both sets of prototypes. Team presentation should be no longer than 20min. **– Due Week 6a**
Week 6a (Tues) 2/14	**Project A: Team presentations** (primary focus on prototypes) **Project B: Opportunity Analysis** - Project B kickoff via email (framing and parameters) - New team formation	- Same as Week 2b	Opportunity Analysis: **– Due Week 7a**
Week 6b (Thurs) 2/16	- Work in class (break-outs) - Individual team feedback		
Week 7a (Tues) 2/21	**Project B: Initial Ideation** - Team presentations of opportunity analysis - Mind maps (break-out session)	- Same as Week 3a	Initial Ideation: - Mind-map - 15-20 framing questions **– Due Week 7b**
Week 7b (Thurs) 2/23	**Project B: Initial Ideation (cont)** - Work in class - perform 'what if' brainstorming exercise	- Same as Week 3b	Initial Ideation: - 30-60 'what if' post-its - 10 sketches per team member **– Due Week 8a**

Week 8a (Tues) 2/28	**Project B: Initial Prototypes** **-** Group presentations (initial concepts) - Demo on producing low-fidelity prototypes for given product category	- Same as Week 4a	Initial Prototypes: - User feedback - Revised concept sketches (3 per team member) - Initial low-fidelity prototype (1 per team member) **– Due Week 9a**
Week 8b (Thurs) 3/2			
Week 9a (Tues) 3/7	**Project B: Revised Prototypes** **-** Group presentations (initial prototypes) - Demo on producing medium-fidelity prototypes for given product category	- Same as Week 5a	Revised Prototypes: - Medium-fidelity prototype (1 per team member) **– Due Week 10a**
Week 9b (Thurs) 3/9	- Work in class (break-outs) - Individual team feedback		Team presentations of Project B: - Brief review of prior steps with individual work briefly highlighted. Primary focus is on both sets of prototypes. Team presentation should be no longer than 20min. **– Due Week 10a**
3/12 – 3/19	**Spring Recess**		
Week 10a (Tues) 3/21	**Project B: Team presentations** (primary focus on prototypes) **Project C: Opportunity Analysis** - Project C kickoff via email (framing and parameters) - New team formation	- Same as Week 2b	Opportunity Analysis: **– Due Week 11a**
Week 10b (Thurs) 3/23	- Work in class (break-outs) - Individual team feedback		
Week 11a (Tues) 3/28	**Project C: Initial Ideation** - Team presentations of opportunity analysis - Mind maps (break-out session)	- Same as Week 3a	Initial Ideation: - Mind-map - 15-20 framing questions **– Due Week 11b**
Week 11b (Thurs) 3/30	**Project C: Initial Ideation (cont)** - Work in class - perform 'what if' brainstorming exercise	- Same as Week 3b	- 30-60 'what if' post-its - 10 sketches per team member **– Due Week 12a**
Week 12a (Tues) 4/4	**Project C: Initial Prototypes** **-** Group presentations (initial concepts) - Demo on producing low-fidelity prototypes for given product category	- Same as Week 4a	Initial Prototypes: - User feedback - Revised concept sketches (3 per team member) - Initial low-fidelity prototype (1 per team member) **– Due Week 13a**

Week 12b (Thurs) 4/6	- Work in class (break-outs) - Individual team feedback		
Week 13a (Tues) 4/11	**Revised Prototypes** **-** Group presentations (initial prototypes) - Demo on producing medium-fidelity prototypes for given product category	- Same as Week 5a	Revised Prototypes: Medium-fidelity prototype (1 per team member) – **Due Week 14a**
Week 13b (Thurs) 4/13	- Work in class (break-outs) - Individual team feedback		Team presentations of Project C: - Brief review of prior steps with individual work briefly highlighted. Primary focus is on both sets of prototypes. Team presentation should be no longer than 20min. **– Due Week 14a**
Week 14a (Tues) 4/18	**Project C: Team presentations** **-** (primary focus on prototypes) **Individual Project Synthesis** - Discussion about final presentation deliverables	- Produce final deck (individual) synthesizing the work you have created from the semester.	- Individual synthesis deck presentation – **Due Week 15b (Final Presentation)**
Week 14b (Thurs) 4/20	- Work in class - Individual feedback		
Week 15a (Tues) 4/25	- Work in class - Individual feedback		
Week 15b (Thurs) **4/27**	**Final Presentation review**		

Statement on Academic Conduct and Support Systems

Academic Conduct:

Plagiarism – presenting someone else's ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in SCampus in Part B, Section 11, "Behavior Violating University Standards" policy.usc.edu/scampus-part-b. Other forms of academic dishonesty are equally unacceptable. See additional information in SCampus and university policies on scientific misconduct, policy.usc.edu/scientific-misconduct.

Support Systems:

Student Health Counseling Services - (213) 740-7711 – 24/7 on call
engemannshc.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org
Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention Services (RSVP)
-213-740-9355 (WELL
https://studenthealth.usc.edu/sexual-assault/
Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Relationship and Sexual Violence Prevention and Services provides immediate therapy services for situations related to gender- and power-based harm (e.g., sexual assault, domestic violence, stalking).

Office of Equity and Diversity (OED) | Title IX - (213) 740-5086
equity.usc.edu, titleix.usc.edu
Information about how to get help or help a survivor of harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following protected characteristics: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations.

USC Policy Reporting to Title IX (213) 740-5086
https://policy.usc.edu/reporting-to-title-ix-student-misconduct/
The university encourages individuals to report prohibited conduct to the *Title IX Office*. Individuals can report to the university *Title IX Coordinator* in the *Office of Equity and Diversity.*

Bias Assessment Response and Support - (213) 740-2421
studentaffairs.usc.edu/bias-assessment-response-support
Avenue to report incidents of bias, hate crimes, and microaggressions for appropriate investigation and response.

The Office of Disability Services and Programs - (213) 740-0776
dsp.usc.edu
Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710
studentaffairs.usc.edu/ssa
Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101
diversity.usc.edu
Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 – 24/7 on call
dps.usc.edu, emergency.usc.edu
Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 – 24/7 on call
dps.usc.edu
Non-emergency assistance or information.