

SYLLABUS

MCEN 4279/5279 & ATLS 4279/5279

Aesthetics in Design

Spring 2024

MWF 12:20 to 1:10 pm,

MBE/Fleming 33

Zoom link in Canvas and Slack

Prof. Jean Hertzberg

Jeanbzhertzberg.com

Aesdes.org

Design is pervasive. The products of design surround us in all aspects of our man-made environment. More importantly, we also design our lives: every choice we make is an element in that process, whether conscious or not. The goals of design can be merely pragmatic; to optimize for best function, for minimizing time and expense, and many engineering designs are done this way. But how impoverished our lives would be if pragmatic considerations were the only criteria! Instead we use aesthetics to guide our choices to make life better for ourselves and others. Aesthetics add meaning and depth to a design, whether we are designing an artwork, a product, a process, or our very lives.

Course Goals

- To highlight how aesthetics influence design and vice versa.
- To provide the context of modern and historic design movements.
- To encourage an expanded perception of design, motivate use of engineering concepts outside the classroom and enjoyment of design as a discipline and art. The vehicle will be a creative aesthetic experience: you will imagine and execute iterative design-fabrication processes, with design objectives that range from the traditional aspects of functionality, sustainability, manufacturability, and cost to more elusive objectives like aesthetics, beauty, ethics, meaning, emotion, and the relationship of form to function.
- To provide a venue for student work, as a component of a public design portfolio.
- To practice communication of design, and the articulation of aesthetics and design thinking.
- To instill constructive critique techniques.

- To provide experience in sketching by hand, blogging, and presentations
- To provide the opportunity to wholly own a design, and see it from conception to finished project.
- To question the relationships between art, aesthetics, science and engineering and how they apply to our lives and professional aspirations.
- To give you a self-regulated educational experience.
- To remind you of the joy of design and making.

Learning Objectives (things you will be capable of at the end of the course)

1. Students will execute an iterative design-fabrication process.
2. Students will document their design choices, gaining facility in communication and recognition of their own creative processes.
3. Students will demonstrate constructive critique skills in the service of their own and other's creative vision.
4. Students will apply select fundamentals of a traditional industrial design curriculum, including art and design history, hand sketching and fabrication techniques.

Course Format

This course will be a mashup of an engineering projects course, an industrial design course and a studio arts course. Class time will alternate between lectures, student presentations and project work. Topics will include art and aesthetics, the history of design for the past 150 years, and design topics like brainstorming, the documentation process, sketching and perspective drawing, constructive critique, design considerations, and universal principles of design. Like other project courses, there will be design reviews and a final presentation. Differences from other engineering courses will include an emphasis on aesthetics, your freedom in choosing what to create, and your ownership of the design from start to finish.

You will have access to some of the resources of the ITLL (ITLL.colorado.edu) and the Idea Forge (in MBE/Fleming, <http://www.colorado.edu/ideaforge/>) including laser cutting and 3D printing plus access to technician advice. However, making weapons is not permitted in these shops. There are no formal lab sessions; instead students are expected to treat assignments as they would for any other course.

Students are expected to attend all lecture and discussion sessions. Attendance will be required for all guest lectures and critique sessions. Conflicts with other courses (i.e. Senior Projects) will not be accepted as excuses for absences. In Zoom, cameras will be required to be turned on for greetings and goodbyes, breakout sessions and critique sessions. Cameras may be off during screen shares to save bandwidth.

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Each session (except critiques) will be offered in a hybrid format. Some students will be entirely remote, but will be expected to be present at each session via Zoom. All students will have the option to attend via Zoom when they need to (no notice needed), but in-person attendance is recommended whenever possible. All sessions will be recorded and posted on AesDes.org within a day or so.

Critique sessions will be on Zoom unless your Pod agrees to meet in-person. Advance notice is needed so I can get you a meeting space.

Structure

- Individual warm up project: Upcycle. Create an artifact out of inexpensive and/or recycled materials to demonstrate an aesthetic. Deliverables: oral presentation of artifact, blog posts detailing design and fabrication process. All students are required to participate in oral and written critiques of others' work.
- One main project which you own (and pay for). Requirements:
 - Deliverables will be a functional artifact that satisfies an aesthetic of your choice, plus documentation (weekly blogs, including design review and final reports).
 - The artifact (sculpture) must be dynamic; have a moving part or interact with the user in a time-varying way.
 - A purely virtual design is acceptable, provided documentation is complete, so it could actually be built.
 - Art for art's sake is OK!
 - The artifact can be desk toy scale, lobby scale or Burning Man scale, provided work space can be found. Emphasis will be on aesthetics and documentation. For example, a rough finish would need to be justified by an articulated aesthetic.

This is still an experimental course. We will be studying how to improve the course for the future as well as its effect on you, so you will be asked to participate in surveys and interviews, and have all your work published. If this is going to make you uncomfortable, this might not be the best course for you.

There will be no textbook required for the course, but you will be expected to contribute around \$200 towards any materials needed for your project, in lieu of buying a textbook.

There is a small budget for the class. I'll be happy to purchase tools or resources that can be used again in future offerings.

Assignments, Assessment and Grading

While you will get ongoing feedback about your progress, it will not be in the form of points to be accumulated towards a grade. **There will be no concrete grading structure for this course.** Your final grade will be determined by your completion of assignments and your participation in

class and pod activities. If you need a more concrete grading structure, this course is probably not going to work for you. While detailed grading of your work will not be done, you will receive detailed critiques from other students, and you will be trained to give such critiques. Your work will be checked for completeness and quality, and you will be expected to revise and resubmit your work if requested. **It is our hope that you will be motivated to achieve excellence by the actual meaning, context and quality of your work, and its publication on the course website.** In rare cases, substandard work such as poorly executed projects and reports that grievously fail spell and grammar checks will result in lowered course grades. At the end of the semester, you'll be asked to assess your own grade; this input will be seriously considered.

Expectations for students in the graduate sections are higher, for project quality, blog writing, and leadership. Grad students will be asked to coordinate their pods, facilitate the critique sessions and will be expected to give a short presentation to the class on a design movement or current designer sometime during the semester.

Here is a list of activities that contributed to course grades last year. This is given only as an example of the type of activities we will undertake; **this semester will be a bit different from this list:**

Signed syllabus (paper copy)

Blog content—at least one blog post per week, including the following topics:

Aesthetic Exploration

Initial progress on upcycle project

Upcycle inspiration

Upcycle final report

Skill sets and personal aspirations

Main project inspirations

Top 5 constraints for your project, including aesthetics

Design review summary (and next steps)

Your aesthetic: relationship to 20th century movements. Alternate aesthetics.

Main project construction timeline

Construction update

Final project Part 1: What and How

Final project Part 2: Why and What Next

Summing Up

*Please feel free to post on other subjects or to split these topics up into multiple posts.

Detailed critiques of classmates' blogs

Design review presentation

Design review critique (presented to everyone in your pod, and recorded and posted)

Final design review presentation

Final design review critique (presented to everyone in your pod, and recorded and posted)

Presentation at our class Expo, and optionally the ATLAS and CEAS Expos

Course feedback survey x2 (you'll get the 2nd one after the final projects are due)

Final project (the actual object you've designed is the deliverable; but it is yours to take home)

Participation in skills exchanges

Attendance; regular classes, critiques and guest lectures

Prerequisites and Degree Credits

There are no formal prerequisites, but it is understood that by signing up for this course, you feel you are capable of creating your projects: having or acquiring the needed skills and materials and of committing the time. This course counts as an upper division technical elective towards engineering degrees in the College of Engineering and Applied Science (specifically as an enrichment course for the MS in ME Design Track), as a Creative Technology & Design "Focused Elective" course, and may be petitioned as studio or production credit towards fine arts degrees in the College of Arts and Sciences or as an upper division science credit towards any A&S degree. If your project incorporates a musical element, it may count towards the Music Technology Certificate, in the College of Music.

Contact Information

Instructor: Prof. Jean Hertzberg

Email: Hertzberg@colorado.edu

Office: ECME 220, 303-492-5092

Personal Webpage: <http://jeanbzhertzberg.com>

Teaching Assistants: Shrey Solanki (Shrey.Solanki@colorado.edu)

plus one or two more TBD

Shrey is happy help with all things Wordpress and Canvas.

Course Website

<http://aesdes.org> is a Wordpress blog site that will be co-created by students and instructors. You will receive a login as an author. You will be expected to make regular posts throughout the semester, documenting your design process and reflecting on it. Weekly topics will be specified, but you are not restricted to these topics; additional posts are encouraged. You will also be expected to comment on other students' work, live, in class during presentations and asynchronously as well. This blog will be the publication venue for your work, and will contain updated course information as well. The TAs will monitor the blog and update your 'grades' in Canvas accordingly. This website is reasonably high-visibility, receiving an average of 200 views per day from around the world. When you or an employer google your name in future years, your work published on this site will be near the top of the list (try googling a student from a couple of years ago and see).

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All course materials will be posted on AesDes.org, including lecture notes, lecture recordings, course schedule and assignment expectations. Links to these materials will be provided in Canvas.

Textbooks

No textbooks are required for this course. Instead, students are expected to research background information online and in the archival literature (yes, you might have to go to the library!). Specific readings will be provided via a Zotero group library (aedes). Instructions for access: <https://www.aesdes.org/2021/01/14/zotero-library-access/>.

The following texts are recommended. All are available online from Amazon.com or other booksellers. Additional texts are listed in the Zotero library. I own most of these, and you can preview them in my office or check them out. Many are available in the Engineering and/or MathPhysics Libraries on campus. **Several cost less than a pizza, and will serve you well both this semester and in years to come:**

[*Universal Principles of Design, Revised and Updated: 125 Ways to Enhance Usability, Influence Perception, Increase Appeal, Make Better Design Decisions.*](#) Lidwell, William, Kritina Holden, and Jill Butler. Rockport Publishers, 2010. ISBN 978-1-61058-065-6. Kindle edition :\$17. A PDF is available in our Zotero library. The book is alphabetically arranged two-page articles on a range of design topics. A number of videos based on the book are available at LinkedIn Learning.com (formerly Lynda.com), available through myCUinfo; we will view some in class. You may be able to access it through [Linkedin.com/learning](https://www.linkedin.com/learning).

[*Sketching: The Basics.*](#) Amsterdam: BIS Publishers, 2011. Steur, Roselien, and Koos Eissen. ISBN 978-90-6369-253-7. Used \$20 to \$40. This is the text we'll draw our sketching curriculum from.

[*Critical Response Process: A Method for Getting Useful Feedback on Anything You Make, from Dance to Dessert.*](#) Lerman, Liz. EBook. \$9.50, 2002. This short book describes the critique process we'll be using this semester. It's a helpful process that can be applied in any feedback situation.

[*Emotional Design: Why We Love \(or Hate\) Everyday Things.*](#) Norman, Don. New York: Basic Books, 2003. 978-0-465-05135-9. Available used from \$3.00. Attractive things really do work better, and this book discusses the research behind this and how to use this fact in improving designs.

The Aesthetics of Design. Jane Forsey. Oxford Press. 2013. ISBN 978-0199964369. \$44.96. A thorough analysis of current and historical philosophy and psychology of aesthetic design. An academic read, but it reveals with great clarity the most current trends in aesthetic analysis.

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Phaidon Design Classics Volumes 1,2 and 3. London ; New York: Phaidon Press, 2006. ISBN 978-0-7148-4399-5

Available as an app for iPad, \$15 (hardcopy is \$160) <http://www.phaidon.com/apps/phaidon-design-classics/>.

“The three-volume book is an authoritative collection of design classics, which includes 999 industrially manufactured products, carefully selected by a group of experts. From cars to furniture, from tableware to cameras, from everyday objects to aeroplanes, this breadth of classic design has never before been collated. These volumes will be the sourcebooks on design from the early 1800's to the present, bringing together patents, prototypes, old advertisements, original drawings, images showing the process of manufacture, as well as rare archival photographs. Over fifty authors ranging from designers to curators, critics, and academics, have contributed with short texts for each objects, providing detailed research and precise information. Each artifact gets 2 pages”

[*Design of the 20th Century*](#). Fiell, Charlotte & Peter. Taschen America, 2012. \$23

A-Z plus timeline. 2 page spread per artifact. We will discuss timeline in lecture after universal aesthetics. Taschen publishes an amazing collection of books on art for very reasonable prices.

[*1000 Chairs*](#). TASCHEN Books (Bibliotheca Universalis).

Chairs are the typical object whenever design is discussed. Here are 1000 famous chairs of the 20th Century. \$25.00

[*Industrial Arts Design :a Textbook of Practical Methods for Students, Teachers, and Craftsmen*](#)

Varnum, William Harrison. Peoria, Ill. c1916. A free eBook on details, recipe and tutorial of Arts and Crafts style design.

[*Why Is That Art?: Aesthetics and Criticism of Contemporary Art*](#). Barrett, Terry. 2nd edition. New York: Oxford University Press, 2011. A slim volume that goes over major art theories without extraneous detail; a good introduction, engagingly written.

Additional texts and resources are listed in our Zotero online library. Instructions for how to gain access are at <https://www.aesdes.org/2021/01/14/zotero-library-access/>

Publications and Public Presentations

This course has the potential to attract a great deal of attention. Student projects from this course may be published in articles about the course in professional journals and on the web, with the instructors as co-authors. All web content is published under a Creative Commons Attribution-NonCommercial license. Students who supply contact information will be kept informed of all future publications of their work. Any images and reports produced for the course will be published on the course website.

You will be required to display your work at the AesDes Expo, held during our final exam timeslot (snacks provided, invite family and friends), and optionally in the CEAS and/or ATLAS spring design expos. Your final presentations for critique will be in class, last week of the semester.

Professionalism Expectations

A primary objective of the Mechanical Engineering Department is to prepare each of our students for careers in the engineering profession. As professionals, engineers must meet high standards of technical competence and ethical behavior. According to the Accreditation Board of Engineering and Technology (ABET) code of ethics, engineers uphold and advance the integrity, honor and dignity of the engineering profession by:

1. Using their knowledge and skill for the enhancement of human welfare;
2. Being honest and impartial, and serving with fidelity the public, their employers and clients;
3. Striving to increase the competence and prestige of the engineering profession.

The Department of Mechanical Engineering (ME) believes that it is essential for each of you to learn the professional behavior that will prepare you for your career after college. Therefore, in each mechanical engineering course you will be required to practice the professional behavior that will be expected by your future employers. This syllabus clearly outlines the ME policy regarding academic integrity and academic climate. These policies will be upheld in each of your courses throughout the mechanical engineering curriculum. However, we also expect that this culture of professionalism will pervade all of your University of Colorado experiences.

Academic Integrity in Aes Des

It is possible to cheat in this class, like any other. However, because your work is public, if you cheat you will be harming more than just yourself. The reputation of everybody associated with the class and the University of Colorado itself is at stake. In a previous semester, a student did not complete their project, and posted an image of a similar design that they found online, pretending it was theirs. The author of the design ran a Google image search, found the deception and was outraged. He wrote to me, demanding that something be done. In truth, I could have revoked the student's course grade and even their diploma.

At the same time, design is not done in a vacuum. Instead, everybody's designs build on others' designs. The key here is that the influences of designs must be given credit, via proper citations. The author of every bit of image, design, text or idea that is not originally yours must be cited. To

do any less is plagiarism, and will not be tolerated. If you can't find the proper author for something then avoid using it, or at least call out the thieves that preceded you. I'll be happy to help you trace original authors; please ask.

Diversity, Equity and Inclusion

I personally commit to making you welcome in this class, especially if you are not sure you belong. Please help me in this goal by chatting with me before or after class, or in office hours.

Official Boilerplate

Here are the official syllabus statements from the University. I support them.

Classroom Behavior

Both students and faculty are responsible for maintaining an appropriate learning environment in all instructional settings, whether in person, remote or online. Those who fail to adhere to such behavioral standards may be subject to discipline. Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with race, color, national origin, sex, pregnancy, age, disability, creed, religion, sexual orientation, gender identity, gender expression, veteran status, political affiliation or political philosophy. For more information, see the [classroom behavior](#) policy, the [Student Code of Conduct](#), and the [Office of Institutional Equity and Compliance](#).

Requirements for COVID-19

As a matter of public health and safety, all members of the CU Boulder community and all visitors to campus must follow university, department and building requirements and all public health orders in place to reduce the risk of spreading infectious disease. CU Boulder currently requires COVID-19 vaccination and boosters for all faculty, staff and students. Students, faculty and staff must upload proof of vaccination and boosters or file for an exemption based on medical, ethical or moral grounds through the MyCUHealth portal.

The CU Boulder campus is currently mask-optional. However, if public health conditions change and masks are again required in classrooms, students who fail to adhere to masking requirements will be asked to leave class, and students who do not leave class when asked or who refuse to comply with these requirements will be referred to Student Conduct and Conflict Resolution. For more information, see the policy on classroom behavior and the Student Code of Conduct. If you require accommodation because a disability prevents you from fulfilling these

safety measures, please follow the steps in the “Accommodation for Disabilities” statement on this syllabus.

If you feel ill and think you might have COVID-19, if you have tested positive for COVID-19, or if you are unvaccinated or partially vaccinated and have been in close contact with someone who has COVID-19, you should stay home and follow the further guidance of the Public Health Office (contacttracing@colorado.edu). If you are fully vaccinated and have been in close contact with someone who has COVID-19, you do not need to stay home; rather, you should self-monitor for symptoms and follow the further guidance of the Public Health Office (contacttracing@colorado.edu). {Faculty: insert your procedure here for students to alert you about absence due to illness or quarantine. Because of FERPA student privacy laws, do not require students to state the nature of their illness when alerting you. Do not require "doctor's notes" for classes missed due to illness; campus health services no longer provide "doctor's notes" or appointment verifications.}

Accommodation for Disabilities

If you qualify for accommodations because of a disability, please submit your accommodation letter from Disability Services to your faculty member in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities in the academic environment. Information on requesting accommodations is located on the [Disability Services website](#). Contact Disability Services at 303-492-8671 or dsinfo@colorado.edu for further assistance. If you have a temporary medical condition, see [Temporary Medical Conditions](#) on the Disability Services website.

Preferred Student Names and Pronouns

CU Boulder recognizes that students' legal information doesn't always align with how they identify. Students may update their preferred names and pronouns via the student portal; those preferred names and pronouns are listed on instructors' class rosters. In the absence of such updates, the name that appears on the class roster is the student's legal name.

Honor Code

All students enrolled in a University of Colorado Boulder course are responsible for knowing and adhering to the [Honor Code](#). Violations of the Honor Code may include, but are not limited to: plagiarism, cheating, fabrication, lying, bribery, threat, unauthorized access to academic materials, clicker fraud, submitting the same or similar work in more than one course without permission from all course instructors involved, and aiding academic dishonesty. All incidents of academic misconduct will be reported to Student Conduct & Conflict Resolution (honor@colorado.edu); 303-492-5550). Students found responsible for violating the [Honor Code](#) will be assigned resolution outcomes from the Student Conduct & Conflict Resolution as well as be subject to academic sanctions from the faculty member. Additional information regarding the Honor Code academic integrity policy can be found on the [Honor Code website](#).

Sexual Misconduct, Discrimination, Harassment and/or Related Retaliation

CU Boulder is committed to fostering an inclusive and welcoming learning, working, and living environment. University policy prohibits sexual misconduct (harassment, exploitation, and assault), intimate partner violence (dating or domestic violence), stalking, protected-class discrimination and harassment, and related retaliation by or against members of our community on- and off-campus. These behaviors harm individuals and our community. The Office of Institutional Equity and Compliance (OIEC) addresses these concerns, and individuals who believe they have been subjected to misconduct can contact OIEC at 303-492-2127 or email cureport@colorado.edu. Information about university policies, [reporting options](#), and support resources can be found on the [OIEC website](#).

Please know that faculty and graduate instructors have a responsibility to inform OIEC when they are made aware of any issues related to these policies regardless of when or where they occurred to ensure that individuals impacted receive information about their rights, support resources, and resolution options. To learn more about reporting and support options for a variety of concerns, visit [Don't Ignore It](#).

Religious Holidays

Campus policy regarding religious observances requires that faculty make every effort to deal reasonably and fairly with all students who, because of religious obligations, have conflicts with scheduled exams, assignments or required attendance. In this class you can miss regular or guest lectures by watching the videos later and let Eileen know to put a note in Canvas. If you must miss a critique session, you can make it up by coordinating with your pod to give your presentation not on the holiday, and by watching the recordings of the presentations and enter your feedback comments online.

See the [campus policy regarding religious observances](#) for full details.