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SYLLABUS

MCEN 4228/5228-003 & ATLS 4519/5519-004

Aesthetics of Design

Spring 2016

MWF 12-12:50, ITLL 1B50
Prof. Jean Hertzberg
Jeanbizhertzberg.com

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 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 an iterative design-fabrication process, as both a team member and a team leader, 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 provide the opportunity to wholly own a design, and see it from conception to finished project.

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- To give you a chance to work with students who have different life experiences, and perhaps different disciplines. In this course you will work with a range of colleagues, with a variety of personal and professional interests, and discover your differences and similarities. Hopefully, you'll see value in the range of perspectives.
- To question the relationships between art, aesthetics, science and engineering and how they apply to our lives and professional aspirations.

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

Students will execute an iterative design-fabrication process
Students will document their design choices, gaining facility in communication and recognition of their own creative processes.
Students will demonstrate teamwork skills in the service of their own and other's creative vision.
Students will apply select fundamentals of a traditional industrial design curriculum.

Course Format

This course will be a mashup of an engineering projects course, and 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, and design topics like brainstorming, the documentation process, teamwork, design considerations, and iterative techniques. Like other project courses, there will be a preliminary, a critical and a final design review. Differences from other engineering courses will include an emphasis on aesthetics and your freedom in choosing what to create.

You will have access to the resources of the ITLL (ITLL.colorado.edu) and the Idea Forge (in Fleming, http://www.colorado.edu/ideaforge/) including workshops (to learn welding etc.), machine shops, electronics shops, workspaces, some storage and access to technician advice. There are no formal lab sessions; instead students are expected to treat assignments as they would for any other course. **Team members are expected to make effort to meet with their teams outside of class**. **Students are expected to attend all lecture and discussion sessions,** and to bring their laptops or smartphones to offer online, optionally anonymous comments on each project.

Structure
• Individual warm up project: Upcycle. Create an artifact out of inexpensive and/or recycled materials to demonstrate an aesthetic. Oral presentation of artifact, short written report.
• Three team projects with requirements:
    - Deliverables will be a physical artifact plus documentation (blogs plus PDF, CDR and final report).
    - The artifact (sculpture) must be dynamic and/or complete a task (demonstrate form/function balance)

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- 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 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 your work published. If this is going to make you uncomfortable, this might not be the best course for you. Following an individual warm-up project, you will be divided into teams of three and asked to conceptualize and fabricate three unique projects. You will have ownership of one design, and your teammates will help you with it. In return, you will help them with their projects. We will use CATME (catme.org) to assemble diverse teams to distribute resources and skills.

There will be no textbook required for the course, but you will be expected to contribute around $125 towards any materials needed for your project.

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 a combination of subjective and objective evaluation of your final projects as well as your participation, commitment, and enthusiasm towards your project, your team, and your assignments. If you need a concrete grading structure, this course is probably not going to work for you. While detailed grading of your work will not be done, it 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.

Here is a list of activities that contributed to course grades in when this course was piloted in Maymester 2014. This is given only as an example of the type of activities we will undertake; **this semester will be different from this list:**

Signed syllabus (paper copy)
Signed use agreement (paper copy)
Inspiration submission for our blog (via D2L)
Blog content—at least one blog post per day, including the following topics:
- Initial progress on project
- Top 5 constraints for your project
- Preliminary design review summary (and next steps)
- Your process/workflow/design loop — actual vs. ideal
- Team interactions
- Your desired aesthetic
- Critical design summary (a more public version of your critical presentation)

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The hierarchy of needs for your design
A particular experience you had in the past that taught (or influenced) a particular design decision
The final post announcing your finished project to the world
*Please feel free to post on other subjects or to split these topics up into multiple posts.

Preliminary design review presentation
Preliminary design review feedback (given to everyone else)
Critical design review presentation
Critical design review feedback (given to everyone else)
Final design review presentation
Final design review feedback (given to everyone else)
Course feedback survey x2 (you'll get the 2nd one after the final projects are due)
CATME team feedback surveys
Final written document (see news feed for PDF with instructions)
Final project (the actual object you've designed is the deliverable)
Attendance

Prerequisites and Degree Credits

There are no formal prerequisites, but it is understood that by signing up for this course, you feel you have something to offer a design team—either artistically, computationally, or philosophically. This course counts as a 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 TAM "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 can count towards the Music Technology Certificate, in the College of Music.

Contact Information

Lead Instructor: Prof. Jean Hertzberg
Email: Hertzberg@colorado.edu
Office: ECME 220, 303-492-5092
Personal Webpage: http://jeanbizhertzberg.com
Teaching Assistant: TBD.

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 a contributor. You will be expected to make regular posts throughout the semester, documenting your design process and reflecting on it. Sometimes topics will be

specified. You will also be expected to comment on other students' work, live, in class during presentations and perhaps asynchronously as well. This blog will be the publication venue for your work, and will contain updated course information as well. The TA will monitor the blog and update your 'grades' in D2L accordingly

Textbooks

No textbooks are required for this course. Instead, students are expected to research background information online and in the archival technical literature (yes, you might have to go to the library!). Specific readings will be provided via a Zotero group library. Go to Zotero.org and make a login for yourself. You will get an invitation email from me, or go to www.zotero.org/groups/aedes and request membership.

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. 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. $15. 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 Lynda.com, which CU students have free access to; we may view some in class. Sign in to Lynda.colorado.edu with your Identikey, then search for the title.

Emotional Design: Why We Love (or Hate) Everyday Things. Norman, Don. New York: Basic Books, 2003. 978-0-465-05135-9. Available used from $3.50. http://www.jnd.org/books/emotional-design-why-we-love-or-hate-everyday-things.html. Attractive things really do work better, and this book discusses the research behind this and how to use this fact in improving designs.

Design in the USA. Jeffrey L. Meikle. Oxford Press. 2005. ISBN 978-0192842190. $27.74. A brief but thoughtful look at the aesthetics of design in America, from the 1790s to the 1990s. Lots of pictures and examples.

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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Publications

This course has the potential to attract a great deal of attention. Student projects from this course may be published in professional journals and on the web, with the instructors as co-authors. **Thus, students will be asked to submit high resolution digital files of any photos or videos and release a non-exclusive copyright to the instructors.** 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.

Your work will be displayed at the Spring 2016 Design Expo in the ITLL, on April 23. Your final presentations will be in class, last week of the semester, and there will be no final exam.

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

You will be asked to complete individual homework assignments in this course. Though you may work in groups to discuss and solve problems, it is expected that you will abide by the University of Colorado at Boulder honor code at all times. Therefore, you may <u>not</u> plagiarize images or reports or allow another student to plagiarize your work. Examples of plagiarism include: copying from a solution manual, copying from Internet sites, copying from previous academic year homework sets, and copying directly from classmates. However, in your reports

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for this course you can (and should!) use direct quotes and paraphrased information from the Internet and other published sources ***as long as you properly cite the source.*** If you have any doubt about how to cite, or whether you are using sanctioned materials, please ask. Citation techniques will be covered in lecture. Plagiarism detection will be used randomly.

Any instances of dishonesty on homework or tests will result in a minimum sanction for your first violation of the honor code of a zero score and an entry in your department file. Additional sanctions will be imposed by the ME Department for subsequent violations, possibly including expulsion from the ME program. You may contest any accusation according to the campus honor code system.

University of Colorado at Boulder Honor Code Policy:

All students of the University of Colorado at Boulder are responsible for knowing and adhering to the academic integrity policy of this institution. Violations of this policy may include: cheating, plagiarism, aid of academic dishonesty, fabrication, lying, bribery, and threatening behavior. All incidents of academic misconduct shall be reported to the Honor Code Council (honor@colorado.edu; 303-725-2273). Students who are found to be in violation of the academic integrity policy will be subject to both academic sanctions from the faculty member and non-academic sanctions (including but not limited to university probation, suspension, or expulsion). Other information on the Honor Code can be found at http://www.colorado.edu/policies/honor.html and at http://www.colorado.edu/academics/honorcode/

Mechanical Engineering Graduate Program Integrity Policy:

All students in the Mechanical Engineering Graduate Program are expected to uphold the Honor Code. The purpose of CU's Honor Code is to secure an environment in which academic integrity is valued and students and faculty act accordingly. The following principles are to be upheld: honesty, trust, fairness, respect, and responsibility. Below are excerpts from the policy. More information on the policy can be found at http://www.colorado.edu/mechanical/programs/graduate/current/index.html.

If a faculty member suspects a student of cheating, the faculty member is expected to document the event(s) in writing. Documentation should be submitted to the Graduate Committee within two weeks of the event. The Graduate Committee will review the event(s) and documentation and recommend an academic sanction to the faculty member. This review can include an interview with the faculty member and/or the student. The recommended academic sanction should be implemented within four weeks of the event. Minimum sanctions could include a zero score for homework or a zero score for an exam. If the faculty member invokes an academic sanction, the faculty member shall communicate the decision to the student in writing and include a brief summary of the faculty member's reasoning.

Any academic or non-academic sanction that has been applied to a student in the ME department must be documented in their department file. This includes sanctions and cases of cheating found in other programs and departments at the University of Colorado. The student's

advisor will also be notified when such an event has occurred and has been documented in their file.

Academic Climate

In Class Expectations:

It is our expectation that each of you will be respectful to your fellow classmates and instructors at all times. In an effort to create a professional atmosphere within the classroom, it is requested that you:

- Arrive to class on time
- Turn off your cell phone
- Limit use of your laptop computer to class purposes
- Put away newspapers and magazines
- Refrain from having disruptive conversations during class
- Remain for the whole class, or if you must leave early do so without disrupting others
- Display professional courtesy and respect in all interactions related to this class

Compliance with these expectations will assist us with the creation of a learning community and a high quality educational experience. The University of Colorado Classroom behavior policy will complement the outlined classroom expectations. The University of Colorado Classroom Behavior policy is stated below.

University of Colorado Classroom Behavior Policy:

Students and faculty each have responsibility for maintaining an appropriate learning environment. 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 differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records. See polices at http://www.colorado.edu/policies/classbehavior.html and at http://www.colorado.edu/studentaffairs/judicialaffairs/code.html#student_code

Discrimination and Harassment:

Discriminatory and harassing behavior will not be tolerated in the Department of Mechanical Engineering. A safe and inclusive environment will be created and maintained by the students and instructing faculty member. Students with concerns about discrimination or harassment actions should immediately contact the instructor, the Department Chair or their academic advisor, or contact the Office of Discrimination and Harassment (below).

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Examples that may be considered harassment:

A teaching assistant or instructor asking a student for a date.

Displaying sexually explicit material in an academic setting (including laptop wallpaper).

Persisting in asking a classmate for a date after being turned down.

Using degrading terminology in referring to others, including peers.

The University of Colorado at Boulder policy on Discrimination and Harassment, the University of Colorado policy on Sexual Harassment and the University of Colorado policy on Amorous Relationships apply to all students, staff and faculty. Any student, staff or faculty member who believes s/he has been the subject of discrimination or harassment based upon race, color, national origin, sex, age, disability, religion, sexual orientation, or veteran status should contact the Office of Discrimination and Harassment (ODH) at 303-492-2127 or the Office of Judicial Affairs at 303-492-5550. Information about the ODH, the above referenced policies and the campus resources available to assist individuals regarding discrimination or harassment can be obtained at http://www.colorado.edu/odh

Out of Class Expectations:

Though many of the above stated policies address academic climate within the classroom, these policies should also be upheld outside of the classroom. As a member of the ME community you are expected to consistently demonstrate integrity and honor through your everyday actions. Furthermore, faculty and staff members are very willing to assist with your academic and personal needs. However, multiple professional obligations make it necessary for us to schedule our availability. Suggestions specific to interactions with faculty and staff include:

- Respect posted office hours. Plan your weekly schedule to align with scheduled office hours
- Avoid disrupting ongoing meetings within faculty and staff offices. Please wait until the meeting concludes before seeking assistance. Respect faculty and staff policies regarding use of email and note that staff and faculty are not expected to respond to email outside of business hours. Send emails to faculty and staff using a professional format. Tips for a professional email include:
    - Always fill in the subject line with a topic that indicates the reason for your email to your reader.
    - Respectfully address the individual to whom you are sending the email (e.g., Dear Professor Smith).
    - Avoid email, chat room or text message abbreviations.
    - Be brief and polite.
    - Add a signature block with appropriate contact information.
    - Reply to emails with the previously sent message. This will allow your reader to quickly recall the questions and previous conversation.

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Accommodation of Disabilities or Religious Commitments

If you qualify for accommodations because of a disability, please submit to me a letter from Disability Services in a timely manner so that your needs can be addressed. Disability Services determines accommodations based on documented disabilities. Contact: 303-492-8671, Willard 322, and http://www.Colorado.EDU/disabilityservices

If you have a temporary medical condition or injury, see guidelines at http://www.colorado.edu/disabilityservices/go.cgi?select=temporary.html

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, attendance is required for critique sessions and guest lectures, so please check the posted schedule, and let me know of any conflicts within the first two weeks of the semester.*

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_____ SIGNATURE PAGE _____

I, the undersigned, agree that I have read and understood the policies described in the syllabus for MCEN 4228/5228 & ATLS 4519-001, Aesthetics of Design. I hereby agree to comply with these policies.

PRINT NAME_____

SIGNATURE_____

DATE_____