

Syllabus

(Extra)ordinary Materials

Fall 2011

Instructor: *Daniela K. Rosner*

This course is about thinking and experimenting with materials that have extraordinary properties around ordinary practices as an entry point for identifying new affordances in form-giving work. From piezoresistive fabrics to leather and wood, we will look at material as both raw stuff and skilled undertakings, engaging ideas of mutability, reproduction, age and belonging. To what degree do materials trace and redefine our environments? How do they wear, grow and recombine? What do they stabilize or set off balance, make strange or familiar, highlight or obscure? By diving into a particular set of materials through both theoretical and hands-on work, we will think through new design opportunities in the domain of 2D, 3D and interaction design.

PHASE 1 PROPERTIES

Sept 14 materials that retain heat

In-class exercise: basic circuitry and switches no Reading

Sept 21 materials that change color

In-class exercise: exploring thermochromic ink

Reading: The blackness of black by Charles Goodwin

Sept 28 materials that change shape

In-class exercise: exploring muscle wire (nitinol) and shape memory plastics and polymers

Reading: Material Factors, chapter by Tom Fisher

PHASE 2 INTERACTIONS

Oct 5 mixing fabric and sound

In-class exercise: creating a fabric speaker (cf. kobakant)

Reading: Transformation of a Line by Tim Ingold

Oct 12 mixing wood and light

In-class exercise: capacitive sensing with light

Reading: Diffusion, Diversity and Lighting, excerpt by Elizabeth Shove

Oct 19 mixing paper and movement

In-class exercise: movable origami with nitinol (cf. jie qi)

Reading: Rudiments 1 2 & 3 by J. Helms, A. Taylor, et al.

PHASE 3 TRANSFORMATIONS

Oct 26 customization and re-use

In-class exercise: oobleck transitions (cf. hiro yoshida)

Reading: Re-use Practices & Design, chapter by Tom Fisher

Nov 2 wear, breakage, decay

In-class exercise: experiments in molecular gastronomy

Reading: Observed decay by Caitlin DeSilvey

Nov 9 restoration, preservation, repair

In-class exercise: re-bind old books with electronics (cf. TEI)

Reading: The Things that Matter by Peter-Paul Verbeek & Petran Kockelkoren

GUEST LECTURES & DEMOS

Nov 16 Patrick Buckley lecture

Founder & CEO of DODOcase (iPad cases), and inventor of magnetically activated shape changing polymer.

Nov 23 Hannah Perner-Wilson lecture

Nov 30 Adrian Freed lecture

E-textiles expert and Research Director at the Center for New Music and Audio Technology (CNMAT)

FINAL

Dec 7 In-Class Critique

Dec 14 Final Exhibition

Course Overview

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Overview

Approximately one hour of each meeting will be devoted to discussion and in-class exercises: the first half-hour will be allocated to discussions of weekly readings and material investigations brought into the class, during which participation by each of you is mandatory; the following half-hour will be dedicated to exercises in which a material or set of materials will be introduced by the instructor and explored in class. Major shifts in material topics—e.g., use, mixing, and transformation—will be introduced by the instructor.

Material investigations

Each week one student will bring in a familiar material with uncanny or radical properties. The material should relate to the weekly topic by virtue of its form, use or content. Try to acquire as much of the material, and in as many forms, as reasonably possible so that the rest of the class can also examine it over the following week. During class you will be asked to introduce the material and demonstrate its relevance to the weekly topic, (i.e., how it opens up new questions for our material explorations)

Readings

Everyone will be expected to discuss and apply the readings and lectures within a studio-based material investigation (see Assignments description); others in the class should be able to trace ideas stemming from our group reading discussions through the individual student's presentation of work, which includes its verbal framing. Periodic in-class exercises will further extend ideas from readings and discussions. Thus, full conversance with the readings is essential to the student's progress and success in the class.

In-class exercises

In addition to reading discussions and material investigations, students will work with new materials each week in an exploratory, investigative way. These exercises will be directed in three stages: for the first third of the semester, full immersion and engagement with material properties and their possibilities; for the second third of the semester, an exploration of material interactions – between new and old materials; for the remainder of the semester, a look at transformations of material through intentional interventions and less intended aging and wear. A final presentation of made/exploratory material work will conclude the semester.. More information about the main Project (material exploration) of the class is available below.

Relevant Learning Outcomes

Interdisciplinarity: the ability to draw from multiple fields of study or to define new fields, expanding and bridging disciplines, transgressing boundaries; *Methods of Critical Analysis*: proficiency in manners of engaged, rigorous, and careful evaluation, interpretation, and explication; *Verbal Communication*: the ability to articulate one's ideas verbally.

Grading Overview

The following aspects of student performance will determine student mid-term and final grades:

10% Attendance. Three unexcused absences will incur a failing grade for the class.

10% Presentation of Material Investigation; Linking of Ideas from Readings with Material Processes

(Properties and Qualities)

20% Participation in Discussions + Miscellaneous In-Class Assignments

50% Final Presentation (Metaphor & Metonymy in Materials)

15% Final Documentation of Material Process, Made Work and Writings

Please Note: At the instructor's discretion, a single missing or incomplete assignment may result in a failing grade for the class regardless of percentages achieved in other assignments.

Grades:

For the purposes of this class, grades will be distributed according to the students' overall performance, as follows:

A: excellent (90 – 100%)

B: above average (80 – 89%)

C: average (70 – 79%)

D: below average (60 – 69%)

F: inadequate performance and/or attendance

Assignments

Material Explorations

On each day of class, you will be assigned a material to work with for the in-class exercise. Begin experimenting with it immediately with your hands and – if it is not toxic or dangerous to do so – with the full range of your six senses. Throughout the exercise try to understand what the material is capable of: what you can do with it. Often you need to go too far (i.e. to learn what it can't do) to fully answer this question. Leave no stone unturned.

In the following week, try develop ideas about what it may be used for (in which case, please try using it that way, just to be sure) or how it might lend itself to a composition or form (in which case, please try lending it), or even how it might impact someone or something else (in which case, try impacting them with it). Consider extending your efforts through hand- and power-tools or subjecting your material to natural forces

(air/wind, water, fire, gravity, etc.) as well as “unnatural” forces (traffic, opera, the washing machine...). In order to keep track of your exploratory path and its “progress,” please document your process through writing, drawing, photography, video or the material itself. You will share your explorations in class the following week using this documentation, which you will also present at the mid-term and final reviews.

Mid-Term Review

At the mid-term review, we will look at your work in a site of your choosing; be prepared to summarize your findings and any questions raised by your material investigation. Phase Two: By now you should be thoroughly familiar with the physical and, to some extent, aesthetic properties of your material. The next stage of work assumes such an intimate knowledge that the stuff you’ve worked with may even figure in your dreams.

Finally, think about how what you’ve come to appreciate in your material might best be apprehended by others. How might the placement, location or context of this material positively dispose an audience to see it as you do, to experience its special properties?

Final Project

The final project will extend the first, second or third phase of the course with a more resolved material study. Specifically, it should consist of one the following:

- 1) Examining materials that change in texture
- 2) Mixing familiar & unfamiliar material for a product
- 3) Building a prototype: Creation, Assembly, Improvisation
- 4) Creating a design tool for choosing among materials

Final Presentation

The semester will conclude with a final presentation of made and exploratory material followed with its thoughtful and selective documentation. This includes the weekly material investigations in addition to, or as part of, the final project.