Material Investigations

Fall 2012, Course Level: 200

3 credit hours

Liane Hancock

Senior Lecturer

hancock@wustl.edu | 314 935 4202

Material Investigations

This course introduces the role of materials and fabrication within design, emphasizing how material choice can change the outcome of design proposals. The course includes short design exercises that explore material qualitative characteristics, performance characteristics and resolution of detail. Visits to fabrication facilities and presentations by experts will explain how a range of materials are manufactured and/or fabricated, including multistep processes. Student research explores innovative sustainable materials and employment of the materials through documentation of case studies including art installations, exhibitions, interior architecture, landscape architecture and building design. Work builds upon the research done in the Materials Resource Center.

Relevance to Art and Architecture:

This course will allow students to develop a material dialogue spanning across divisions in the Sam Fox School, which will be useful to later cross-disciplinary coursework and projects. As a foundation to this dialogue, students will be introduced to a wide range of materials (metal, ceramic/glass, cementitious/masonry, organic, plastic and hybrid): A) through readings and presentations that trace historically how the material was produced; B) new critical writings on materiality and material production; and C) presentations by experts and site visits to fabrication facilities. Students will also explore the performative and haptic characteristics of materials through a series of short design exercises. Research on innovative and sustainable materials and fabrication methods will foster discussion about the future of material culture and will be depicted through documentation of case studies. A final group exhibition will reveal the students' discoveries from the semester. This exhibition will both be shown on campus, and be developed as an online resource.

Course Schedule

Week 1-10

Traditional materials presentations by faculty, experts and site visits; Introduction to the Materials Resource Center: database and resources.

Week 1	Overview, Assignment #1 started
Week 2	Cementitious/Masonry (Tour of the Pulitzer with Steve Morby)
Week 3	Work in Class Assignment #1 (Stereotonic/Cast/Module project)
	Materials Research – 5 new materials researched
Week 4	Ceramic/Glass (Pilkington Presentation, Mike Johnson) Assignment #2 started
Week 5	Work in Class Assignment #2 (Sheet Goods, Surface)
	Materials Research – 5 new materials researched
Week 6	Metal (Alberici, Zahner)
Week 7	Organic (Wood) Assignment #3 started
Week 8	Work in Class Assignment #3 (Tectonic/Assembly project, from surface investigation)
	Materials Research – 5 new materials researched
Week 9	Plastics (3Form) Assignment #4 Started
Week 10	Work in Class Assignment #4 (Textile/Membrane project), Case Study Project Assigned

Week 11-15

Student research on new materials complete, Case Study project, Design of Final Exhibition

Week 11	Case Study Project – 5 case studies due
Week 12	Design of Final Exhibition
Week 13	Case Study Project – 5 case Studies due, Student Presentation Materials/Case Studies
Week 14	Design of Final Exhibition
Week 15	Final Exhibition Review

References and Readings

Cecil Elliot, Technics and Architecture: The Development of Materials and Systems for Buildings, 1994

Michael Bell, Jeannie Kim, Engineered Transparency: The Technical, Visual and Spatial Effects of Glass

Michael Bell, Craig Buckley, Solid States: Concrete in Transition

Thomas Schropfer Material Design

John Fernandez, Material Architecture: Emergent materials for Innovation and Ecological Construction

Andrea Deplazes, Constructing Architecture: Materials, Processing, Structures

Assignment 1
Membrane and Surface

1.5 weeks

Find three different textiles (or three variations of the same textile) that vary in the following ways: thickness/texture, stretch/rigidity, sheerness/opacity or a performative/qualitative characteristic of your choice. Develop a consistent pattern of voids/apertures, pleats or gathers over a 12”x12” swatch. Either by hand or digitally (Using a scanner, adobe illustrator and then autocad to create a lasercut file - you will receive instructions on the use of these) incise the same pattern onto the three swatches of each different textile. Develop an internal structure and/or method of connection to separate and/or join the three layers of the single textile, exhibiting the initial qualitative or performative characteristic that interested you. Employ the same methodology with the additional two textile samples, exhibiting how the variation in the material can be depicted. Complete a fourth iteration, following the same rules, but now introducing color in some manner.