Sensing Environments

51377 | Units 9 | Sec A | MW | 11:30-1:20 PM | MM 107 | Pittsburgh PA

51777 | Units 12 | Sec A | MW | 11:30-1:20 PM | MM 107 | Pittsburgh PA

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Course Description:

Whereas UX Design is typically described as shaping the immediate environment between a user and an object/interface, this course will instruct you in techniques, methods, and vocabularies to expand the scale of your design. Course content will give students experience integrating and shaping their current work into 2-3 other levels of scale, such as a single room, building, campus, and neighborhood. Students will walk away with an understanding of environments that will expand their range of capability, fitting for interdisciplinary application within fields such as social innovation, community development, public policy, architecture, and urban design.

This semester we will participate in a range of exercises, projects, discussions, and readings that are geared toward developing a deep body of expertise in the interpretation, documentation, and distribution of environmental systems. The exercises and projects will provide the opportunity to rapidly develop a personal expertise in mixed-methods research and analysis of environments and human to environment interactions, and the contextual impact of human to human interactions.

Working in a variety of analog and digital media, students will develop an understanding of multiple tools and platforms that are at the foundation and the cutting edge of geospatial assessment. Through readings, we will analyze multiple case studies and interpretations of such tools and processes to establish a robust understanding of the opportunities and limitations for next generation geospatial analysis. Students will thus be prepared to ingrate a multifaceted understanding of environments into their work and to lead a new direction in technology beyond normative design practice.

Course Objectives - By the end of the semester students can effectively:

- Quickly and methodically deconstruct the existing social and behavioral systems of an unknown landscape
- To document that deconstruction with a wide design vocabulary
- To better translate phenomenological experience into discrete data
- A basic familiarity with various GIS tools (geographic information systems)
- To integrate and work with a diversity of external data within geospatial technologies
- To use this body of knowledge for the creation of new GIS tools and possibilities
- To apply this expertise to other design problems such as mobile UX and robotics

Learning Outcomes - Students will have evidence of expertise and ability to:

- Create and share spatial knowledge
- Design and share tools, vocabularies, and insights of spatial knowledge
- Integrate spatial knowledge, tools, vocabularies, and insights into design processes
- To design at a range of scales in a nuanced and sophisticated fashion

Course Structure:

It is the priority of the instructor and the School of Design Environments track for students to develop a nuanced understanding of environments, ranging from internal cognitive models to large-scale and abstract conceptions of space and place. This understanding will be established through rapid field work exercises focused on research methods and geospatial technologies to gain an attuned tool kit for engaging locations. Students will be challenged to apply this understanding to the design of new artifacts for engaging spaces and translating that experience to others.

Field Craft Tools and Methods

We will undertake a series of short assignments to rapidly assemble an array of mixed methods research techniques to understand environmental conditions and human to environment interactions in a variety of contexts. Some guest speakers may participate.

Data Literacy and Digital Ethnography

Strategies to quantify the qualitative information into computational data while reducing loss of quality. Data will then be explored with a variety of open source GIS platforms for mapping, spatial modelling and analysis.

Prototyping and Knowledge Distribution

Teams will apply their expertise in field craft, digital ethnography, and GIS to envision and prototype new types of tools, to explore ways users engage with those tools, and to consider the social impact of those tools.

Readings

Readings will be given sparingly. When readings have been provided, it is expected that students apply the readings to the class critique as a way to discuss the reading in context.

Evidence Based Expectations

Be prepared to present and discuss your work during class. Due to class size, it will not be possible for everyone to participate, and participants will be chosen randomly. Experimental methods in group-based critique will also be applied throughout the term. Also remember that discussing your work is an essential part of the design process. It gives us the opportunity to articulate our ideas, assess where we are in a project, ask questions, and accept constructive criticism from our peers. Feedback from your colleagues and me can expose unforeseen problems in your work, help you see a potential direction when you are stuck, or validate the direction you have chosen. Your contributions are vital to the success of the class and will be expected. Please feel comfortable and prepared to jump into the conversation.

Documentation, Submission and Grading

Students are responsible to consolidate work for submission every three weeks.

You will receive project feedback, mid-term grades, and final grades for the course based on the following criteria:

b Design Process: breadth and depth of idea generation and exploration, evaluation of ideas, and development and refinement of a selected idea

b Your Work: quality, relevance, and innovation of your final pieces, craftsmanship employed, verbal presentation of your work, and evidence of understanding of the key points in the project

b Your Participation and Attitude: articulation of ideas, contribution of constructive criticism, value and frequency of comments given, attention to class activities, attendance, meeting of deadlines, demeanor, and commitment to this class and your work

	Excellent	Good	Needs Improvement	Unacceptable
Process	breadth and depth of ideas generated and explored is extensive; evidence of steady progress shown through sketches, models, notes, etc. is clear and consistent; ideas are thoroughly evaluated and clearly used to inform steps taken in development and refinement stages	the required amount of ideas are generated and are moderately varied, some sporadic evidence of progress is shown through sketches, models, notes, etc.; ideas are evaluated and connected loosely to the development and refinement stages of projects	a few ideas are often generated; little evidence of progress is shown through sketches, models, notes, etc., ideas appear to be occassionally evaluated; loose connections of process work to the development and refinement of ideas is seldom visible	a single idea is typically generated; evidence of any progress is difficult to find; few sketches, models, notes, etc. have been made; evaluation of ideas isn't evident; connection of process work to the development and refinement of ideas is unclear
Work	consistently high-quality work is generated that takes an unconventional, yet appropriate approach to problem solving; craftsmanship is stellar; ideas are communicated clearly in visual and verbal forms, understanding of key course concepts is illustrated in work	good-quality work is created that appropriately addresses the requirements of projects; no significant problem areas are visible; craftsmanship is very good; visual and verbal communication of ideas is understandable; understanding of most course concepts is illustrated in work	the minimal amount of work is generated and is of fair-quality; work addresses some of the requirements of projects; craftsmanship is good; visual and verbal communication of idea is difficult to understand; basic grasp of some course concepts is illustrated in work	poor-quality work is repeatedly generated that addresses few of the requirements of projects; craftsmaship is poor; ideas communicated using visual and verbal forms are incoherent; grasp of key concepts isn't evident in work
Participation and Attitude	articulation of ideas is clear; constructive criticism is often given; appropriate and valuable contributions to critiques and discussions are frequently provided; attitude is consistently positive; commitment to class, instructor, peers, and professional development is always exhibited	articulation of ideas is often clear; constructive criticism is occasionally given; contributions to critiques and discussions are sometimes provided; attitude is usually positive; commitment to class, instructor, peers, and professional development is often exhibited	articulation of ideas is often unclear; constructive criticism is seldom given; contributions to critiques and discussions are occasionally provided; attitude is sometimes negative; occasional lack of commitment to class, instructor, peers, and professional development is exhibited	articulation of ideas is usually unclear; constructive criticism is typically not given; contributions to critiques and discussions are rarely provided; attitude is often negative; lack of a commitment to class, instructor, peers, and professional development is often exhibited

Wk 2	September 7 September 9	Defining & Entering the Field	Intro to GIS Platforms and Concepts Assignment – Migration Open Source Assemblage	*Reading: Saoni, Katriniina: (Map 10% Grade)*
Wk 3	September 14 September 16	Strategies & Tactics	Content: Entering the field, EDRA, Cognitive mapping Tools: OSM, Walking Papers, First Mile Geo	Task: Deep Map Project
Wk 4	September 21 September 23	Tactics & Tools	Content: Methods and EDRA Spatial Project Design and Testing, Intro Fulcrum	*Reading Assigned: Ziesal chapters 3, 4, 5*
Wk 5	September 28 September 30	Tactics & Tools II	Content: Fulcrum Survey Construction and Data Collection CartoDB and External Data	
Wk 6	October 5 October 7	Tactics & Tools III, Concept Development	5: Studio Time **7: Presentations**	**Oct 7: Deep Map Presentation (15% Grade)**
Wk 7	October 12 October 15	Time, Light, Media, and Place	Digital Ethnography Historical GIS – Streetmusuem, HistoryPin, Virtual Galleries, Archaeological Research	Risk Project Assigned Ecosystem Assigned *Wed Reading: Hiremath Et Al, Indicators…*
Wk 8	October 19 October 21	Time, Light, Media, and Place	19 & 21: Computer vision, AR, Sound Maps, VR, Symkala 21 – Project Design	Wed Reading: *Saarala_casestudy_finland*
Wk 9	October 26 October 28	Ecosystem Development	26 Content: Risk Assessment, LIDAR, and Remote Sensing 28 Studio	For Wed http://www.aaas.org/case-studies
Wk 10	November 2 November 4	Ecosystem Development	2: Residential Community, Youth **4: Presentation**	**Nov. 4 Risk Assessment Presentation (15% Grade)**
Wk 11	November 9 November 11	Ecosystem Development	9: Workplace, School 11: Studio	
Wk 12	November 16 November 18	Ecosystem Development	16: Mid-Dev Project Review 18: No Class	Guest Speaker Nov 16 No Class Nov 18
Wk 13	November 23 November 25	Ecosystem Development	23: Social Services 25: Studio	
Wk 14	November 30 December 2	Ecosystem Development	30: Hospitality, Retail, Integrated Service Design 2: Studio	*Reading Assigned:*
Wk 15	December 7 December 9	Presentation & Critique		***7 & 9 Ecosystem Final Presentations (20%x3)***

Readings

Hiremath, Rahul B., P. Balachandra, Bimlesh Kumar, Sheelratan S. Bansode, and J. Murali. "Indicator-based urban sustainability—a review." *Energy for sustainable development* 17, no. 6 (2013): 555-563.

Parjanen, Satu, Helinä Melkas, and Tuomo Uotila. "Distances, knowledge brokerage and absorptive capacity in enhancing regional innovativeness: A qualitative case study of Lahti region, Finland." *European Planning Studies* 19, no. 6 (2011): 921-948.

Soini, Katriina. "Exploring human dimensions of multifunctional landscapes through mapping and map-making." *Landscape and Urban planning* 57, no. 3 (2001): 225-239.

Zeisel, John. *Inquiry by design: Environment/behavior/neuroscience in architecture, interiors, landscape, and planning*. WW Norton & Co, 2006.