

Course Proposal

Responsive Architecture

Instructor: Eric Forman [www.ericforman.com]

How can we treat the experience of architecture as an opportunity for interaction design? This course will experiment with integrating responsive technology into interior and urban space. We will examine both the functional and emotional qualities of how we interact with buildings and the built environment, and then ask how we can augment, transform, or complicate those relationships. Students will learn how to interface with sensors that detect motion and touch, ambient information such as sound, light, temperature, and air quality, and abstracted activity from physically remote sources. Working in collaborative groups, students will explore how “awareness” of this data could be integrated into architectural spaces and will construct working prototypes which can be experienced and critiqued in the real world.

Notes for administration:

This class is a 7-week 1.5 credit studio workshop, although it could be expanded in the future to a full 3 credits and made slightly more broad in scope. In a workshop format, the schedule will be fairly demanding. Students are expected to have taken or be simultaneously enrolled in Physical Computing, and basic programming experience, although not required, will be helpful. To keep the focus on concept and design, the instructor will facilitate the technical challenges using pre-built sensor packages and code templates. Open source hardware and software will be used, primarily Arduino, Processing, and Pachube, but students are welcome to use any tools they wish. Approximately 2/3 of each class will be lecture, discussion, presentations by students, and critique. The other 1/3 will be hands-on building and testing. Students will work in groups and maintain blogs sharing their progress and difficulties for other students and future classes to learn from. The approximate materials cost will be \$50-\$100 per student, depending on what equipment is already on hand from Physical Computing.

Responsive Architecture : Half Semester Course Schedule

Week 1:

- Responsive architecture and emotional interactions
- Critique of built space: awareness and (im)personal relationships
- Site intervention brainstorming

Week 2:

- Sensors and data management
- Interfacing with Arduino and Processing
- Discussion of proposed site interventions

Week 3:

- Remote data: Pachube and networked sensors
- Mechanical output: servomotors
- Limitations of sensing systems
- Site analysis presentations

Week 4:

- Final architectural interaction scenario (storyboard)
- Sensor and output proof of concept presentations

Weeks 5-6:

- System prototyping
- Progress reports and Feedback sessions

Week 7:

- Final presentations and critique

Responsive Architecture : Reading List

Theory

Interactive Architecture, Michael Fox and Miles Kemp. Princeton Architectural Press, 2009.

Flexible: Architecture that Responds to Change, Robert Kronenburg. Laurence King Publishers, 2007.

4dsocial: Interactive Design Environments, Lucy Bullivant, ed. AD/John Wiley & Sons, 2007.

Sensorium: Embodied Experience, Technology, and Contemporary Art, Caroline A. Jones, ed. MIT Press, 2006.

Websites and Blogs

The Office for Robotic Architectural Media & Bureau for Responsive Architecture - www.orambra.com

Interactive Architecture - www.interactivearchitecture.org

Spatial Robots: Interactive Architecture and Robotics - www.spatialrobots.com

Robotecture: Interactive Architecture - www.robotecture.com

Haque Design+Research - www.haque.co.uk

Technical

Arduino - www.arduino.cc

Processing - www.processing.org

Pachube - www.pachube.com