**LMC-6340 Mixed Reality Experience Design**

**Mixed Reality Experience Design**

**1. Instructor Name, Contact Information and Office Hours**

Instructor: Jay Bolter

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Phone:

Office: TSRB

Meetings by Appointment

**2. Course Prerequisites:** (None)

**3. Core Area/Attributes Fulfilled by this Class:** (None)

**4. Course Description**

This course gives students an opportunity to learn about Mixed and Augmented Reality (MR and AR) as a platform for interaction design. MR/AR refers to computer systems that combine virtual content with the physical environment, allowing users to interact with these combined physical/virtual worlds in appropriate locations. Students will use the Argon AR Web Browser (developed here at Georgia Tech) to experiment with MR and AR, with a particular emphasis on the creation of mobile, social AR experiences.  (For more information about Argon, see argon.gatech.edu). The goal of the course is to learn to design and critique locative media experiences in general and explore the potentials of MR and AR in particular.

Students with backgrounds in visual design, industrial design, architecture, video production, and visual storytelling are welcome, as are students with significant programming, HCI or computer graphics backgrounds. Above all, creative thinking with and through technology is the most important asset that students can bring to this course. Regardless of your background, you must be comfortable working with web technologies and learning how to develop interactive experiences with them.  Argon is built on web technologies, so the project work will be analogous to building web applications for a mobile web browser.

In addition to various design exercises, students will work in small groups on a major semester long project. The project will concern a "cultural heritage" experience centering on Auburn Avenue in Atlanta.  Auburn Avenue was the center of African-American culture in the first half of the twentieth century. It was also a key site in the Civil Rights Movement in the 1960s. Student groups will learn about various aspects of that rich cultural heritage and design and prototype applications to enrich the experience of visitors or residents of "Sweet Auburn." We will be working with the Historic Preservation Division and the Georgia African-American Historic Preservation Network of Georgia Department of Natural Resources, who will act as clients for this course, providing content and feedback for the project.

**5. Learning Objectives**

By the end of the course, students will be able to:

* Understand and apply appropriate design principles and techniques for creating mobile AR/MR experiences;
* Employ techniques and technologies for programming and content creation for AR/MR experience in an AR browser, such as Argon.
* Learn and put into practice a rigorous design process that is inclusive of generative research and ideation, visualization, prototyping, evaluation, and presentation of design concepts to a client.
* Work in a team to realize a significant digital media design and prototype that is a significant portfolio piece for you.

**6. Required Texts**

* Auslander, Philip. Liveness: Performance in a Mediatized Culture, 2008.
* Bolter, Catharsis and Flow
* Lombard, M., & Ditton, T. (1997). At the heart of it all: The concept of presence. Journal

of Computer-Mediated Communication, 3(2).

* MacIntyre, B., Bolter, J., and Gandy, M. (2004) "Presence and the Aura of Meaningful Places" 7th Annual International Workshop on Presence (PRESENCE 2004), Polytechnic University of Valencia, Valencia, Spain, 13-15 October 2004.
* Barba, E., MacIntyre, B. and Mynatt, E. D., “Here we are! where are we? Locating mixed reality in the age of the smartphone”, Proceedings of the IEEE, 100, pp. 929-936, (2012)
* Grau, Oliver. Virtual Art: From Illusion to Immersion, 2003. (Chapter 1)
* Wright, P. and McCarthy, J. Technology as Experience, 2007. (Chapter 1)
* Tuan, Yi-Fu. Space and Place: The Perspective of Experience, 1977. (Selections)
* Buchanan, Richard. "Good Design in the Digital Age." GAIN: AIGA Journal of Design for the Network Economy. Vol 1, No 1. October, 2000.

**7. Graded Assignments**

Your grade for the class will be determined based on the following:  
NB: due to the elimination of Progress Report #3, the final submission materials were raised to 50%):

* 20% Class Attendance & Participation
* 5% short assignments
* 5% Progress Report #1
* 20% Progress Report #2
* 50% Final Submission and Presentations

The major activity of the class is centered around the group project, but there will be individual assignments early in the semester.  The goal of these assignments is to ensure everyone in the class gains experience and understanding of AR and MR design and implementation, as well as interaction design processes and principles, without which creating an interesting and sophisticated project will be difficult.

**Project Wiki Page**

Each project team is expected to maintain a T-Square wiki page for their project.  This page should be linked of the wiki group page where you list the group members. The wiki should have a summary of the project design concept, links to all the turn-ins and presentations, including the final video and poster of the project.  The content should be neatly and concisely laid out on this page, with explanations of what each linked element is (i.e., do not just throw a pile of resource links on a page and expect us to figure it out).  All elements must be clearly documented and accessible from your project page.

**8. Attendance Policy**

Attendance and punctuality are mandatory. Three or more unexcused absences will result in a half grade point reduction. An **excused** absence is one in which permission is requested in advance and you have a legitimate reason to skip class, such as an illness. You are expected to make up what you missed by checking with other students and reviewing lecture materials on the web site.

**9. Information for Students with Disabilities**

Please notify the instructor if you have any disabilities with which you need special assistance or consideration. The campus disability assistance program can be contacted through ADAPTS: <http://www.adapts.gatech.edu>

**10. Honor Code Statement**

Students are expected to adhere to the Georgia Tech Honor Code:

<http://www.honor.gatech.edu/plugins/content/index.php?id=9>

**11. Course Schedule**

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| **Week #** |  | **Read** |
| **Week 1** | Jan 8. Course Introduction  Jan 10. Interaction Design Overview (Argon SA#2 Due)  Design Short Assignment #1 |  |
| **Week 2** | Jan 15: Interaction Design Overview (Design SA #1 Due)  Design Short Assignment #2  Jan 17: Mixed and Augmented Reality Overview; Intro to Argon  Argon Short Assignment #1 |  |
| **Week 3** | Jan 22: Mixed and Augmented Reality Overview; Intro to Argon (Argon SA#1 Due) Argon Short Assignment #2  Jan 24: Auburn Avenue History (Design SA #2 Due)  Team Building |  |
| **Week 4** | Jan 29: Class Activity: Brainstorming  Jan 31: Concept and Content Development |  |
| **Week 5** | Feb 5: Argon coding  Feb 7: Progress Report #1: 5 minute presentations by students |  |
| **Week 6** | Feb 12: History of Panoramas  (Grau, especially Chap 2)  Feb 14: Design Methods  Students work on initial prototypes and demos |  |
| **Week 7** | Feb 19: Class work day: Feedback on methods selection and progress  Feb 21: Flow and Catharsis (two design aesthetics) |  |
| **Week 8** | Feb 26: Class work day  Feb 28: Progress report #2: Informal presentations (Methods selection and progress; Prototype design and progress; Content development and progress) |  |
| **Week 9** | March 5: Reading and Discussion: Aura and Augmented Reality  March 7: Lecture: Video Documentation (Scenarios and Personas) |  |
| **Week 10** | March 12:  Video scenarios  March 14:  Programming Argon2 |  |
| **Week 11** | Spring Break |  |
| **Week 12** | March 26:  Reading and Discussion: Liveness  March 28:  Class work day |  |
| **Week 13** | April 2:  Reading and Discussion: Place and Space  April 4: Class work day |  |
| **Week 14** | April 9: Presence: read papers by Lombard & Ditton; Gandy et al;  April 11: Presence (continued) |  |
| **Week 15** | April 16: Programming Argon2  April 18: Class work day: preparation for Final Presentations |  |
| **Week 16** | April 23: Final Presentations  April 25: Final Presentations |  |
| **Week 17** | **FINALS WEEK NO CLASS** |  |