

LMC 6340/4733: Mixed Reality Experience Design

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Overview

This project-based course gives students an opportunity to participate in research in XR (VR and AR combined) for experience design. This semester will focus on creative uses of social XR environments for communication and expression and in particular on the concept of the "immersive book" — a new digital medium that can serve to complement the existing media of print and the WWW. Students in the course will read and discuss the historical background and technical framework of XR. The bulk of the course will be devoted to team projects in building prototypes of the immersive book. The technological focus will be the design possibilities afforded by Immersive Web (WebXR) technologies, particularly Hubs (<https://hubs.mozilla.com>). For more information about WebXR see <https://github.com/immersive-web/webxr>. For more information about Aframe see <https://aframe.io>.

Course Objectives

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

- Apply appropriate design principles and techniques for creating XR experiences;
- Employ techniques and technologies for programming and content creation for XR;
- Work in a team to realize a significant digital media prototype.

Canvas

In addition to this syllabus, resources (lecture slides and readings) and assignments will be available on Canvas.

Teams

Teams will be used for the project groups and for communication with the instructors. Please join the class Team immediately using this code: **z9xofrj**.

Assignments

The major activity of the class is centered around the group project. Students will work in small teams on the project described below. This team work will give students the opportunity to employ various skills, including programming, content creation (including 3D modeling and animation, video, audio, and 2D visual design), as well as backgrounds in HCI and even media theory and history. Students with any of these backgrounds can successfully participate in their project.

There will also be individual assignments. In the second half of the semester, each student will deliver an oral report/written summary on one article from a reading list. We will also collectively create a Zotero group library that contains all the literature read as well as other materials.

Semester project: The Immersive Book

In the past 30 years, the World Wide Web, has become an important complement to (not replacement for) print publication, the primary medium of humanistic communication since the fifteenth century. This semester, we will be exploring the possibilities offered by collaborative virtual environments for a new form of the representation and communication of ideas. [More details here.](#)

Related Readings (sample list; all readings will be urls or pdfs in the Files folder)

- Bolter, Engberg, and MacIntyre Reality Media (excerpts in ms. form)
- 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.
- Grau, Oliver. *Virtual Art: From Illusion to Immersion*, 2003. (Chapter 1)
- Le, Duc Anh, Blair MacIntyre, and Jessica Outlaw. 2020. "Enhancing the Experience of Virtual Conferences in Social Virtual Environments." In *2020 IEEE Conference on Virtual Reality and 3D User Interfaces Abstracts and Workshops (VRW)*, 485–94. Atlanta, GA, USA: IEEE
- Ch'ng, Eugene, Yue Li, Shengdan Cai, and Fui-Theng Leow. 2020. "The Effects of VR Environments on the Acceptance, Experience, and Expectations of Cultural Heritage Learning." *Journal on Computing and Cultural Heritage* 13 (1): 7:1-7:21.
- Tennent, Paul, Sarah Martindale, Steve Benford, Dimitrios Darzentas, Pat Brundell, and Mat Collishaw. 2020. "Thresholds: Embedding Virtual Reality in the Museum." *Journal on Computing and Cultural Heritage* 13 (2): 12:1-12:35.

Project Collaboration Page

Each project team is expected to maintain a Teams channel for their project. This channel should include documents summarizing of the project design concept, links to all the turn-ins and presentations, including the final video of the project.

Zotero Group Library and Class Website

The class will also maintain and add to a group library in Zotero of items useful for the projects and themes of the course. Zotero (<https://zotero.org>) is a free-for-download digital library program. We will also create a class website on the Immersive Book with all the class projects (suitably anonymized where necessary).

Grading

Your grade for the class will be determined based on the following:

- 10% Short programming assignments.
- 15% individual reading presentation (second half of semester)

- 20% Group Progress Report (presentation and delivery of prototype)
- 20% Final group presentation

- 35% Final Submission (prototype, video and design document)

Attendance

Students are expected to attend class and participate in the discussions and presentations.

Disability Statement

Students with Disabilities should report to the Access Disabled Assistance Program for Tech Students (ADAPTS) at: Smithgall Student Services Building, Suite 210; 404-894-2563 (V); 404-894-1664 (TDD) (adaptsinfo@gatech.edu) If you are already registered with ADAPTS and expect to use any of your special accommodations in this class, please let me know as soon as possible so I can work with you and ADAPTS to ensure a good experience for us all.

HONOR CODE

Plagiarizing is defined by Webster's as "to steal and pass off (the ideas or words of another) as one's own : use (another's production) without crediting the source."

If caught plagiarizing, you will be dealt with according to the GT Academic Honor Code. For any questions involving these or any other Academic Honor Code issues, please consult me, or www.honor.gatech.edu.