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# CS/DES 427/450

## Creative Coding

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## Zoom

<https://uic.zoom.us/j/87675623428?pwd=1DpVZ5a5zKnaN8Mc3VKDYND3uMwpoj.1>

## In-person

Electronic Visualization Laboratory (EVL)

Engineering Research Facility (ERF)

842 W Taylor St

2068 Continuum / 2036 CAVE2

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- Introductions – Course goals and objectives / logistics
  - Class materials: syllabus, schedule, website, Box, Bb
  - Class presentation I EVL History I VR Class Projects
  - Assignment 1
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- Unity Intro
  - VR Project Introduction

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Course Website

[https://www.evl.uic.edu/datsoupi/2025\\_CC/](https://www.evl.uic.edu/datsoupi/2025_CC/)

Box – class materials, files, assignments, videos,

Blackboard - grades

Email – announcements, communication

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## Class Structure

Wednesdays 1-3.40pm

Mixed lecture and lab, with an in-class focus  
on introducing programming and software concepts:

- Theory and practice

Informative and thorough, rather than comprehensive

Programming tutorials, collaborative exercises;  
planning & developing team projects

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## Class Structure

students in CS, GD, ID – teams of 3

Undergraduate and graduate students

Work on individual assignments and class projects

Collaboration between CS+DES→ Transdisciplinary

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## Goals

To become familiar with contemporary tools in VR  
and computational expression

To work collaboratively to create conceptual creative coding  
projects at the intersections of design and technology



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Theory + practice

Project based / Exhibition organization

projects will have a research (theoretical), conceptual and technical components

projects should be novel and clearly illustrate a design and/or conceptual contribution

each project needs to be documented in writing, video, images and code

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We are experiencing an outburst of the VR technologies across fields and industries. The increasing accessibility of headsets is attracting researchers into VR to examine its potential beyond gaming.

However, despite this proliferation, there are conceptual, theoretical and practical challenges that require effective collaboration.

Participants will share reflections of the impact of advanced technologies on contemporary creative practices and discuss how contemporary technologies can inspire novel forms of creativity.

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## Tools

Unity 3D (Educational free) version 2019.2.11

C#

Maya Autodesk (3D)

Adobe CS

Audacity

Visual Studio

## Collaboration

Zoom

Box

Unity Gluon

Discord

~Slack, Piazza...

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experimental VR projects

little or no prior experience in theatre

teamwork in interdisciplinary teams of 3 (CS+ DES)

working within the design constraint of **typographic expressions**

steep eight-week learning curve (C# programming language)  
(design students new to coding; cs students new to design)=

HCI International 2025 Student Design Competition

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What might creative coding, VR, design, and theater have in common, conceptually and practically?

How can the VR experience be designed in such a way that it raises our awareness of the hidden systems underlying both technologies and global environmental challenges and urges us toward critique and interrogation of them?

How can creative coding adapt theater and design concepts and methodologies to create VR interactant experiences that are not only engaging but also edifying?

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# Why design + theater + science?

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Intersections of the vocabularies, theories, and practices of theatre, performance, and creative coding: For example, we explore parallels between audience experience and user experience. We examine how theatre's focus on the construction and representation of action can strengthen the interactive experience in virtual reality (VR), particularly through improvisation (Improv).

We also discussed how participant actions can influence the design of VR experiences, making them more effective and nuanced in evoking empathy for global societal concerns.

# Evaluation

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your willingness and ability to  
accept peers & faculty feedback

15 classes

11 work sessions

Attendance is mandatory

>2 absences – final grade reduction

late submissions will be penalized by 5%  
grade reduction for each overdue day.

Projects more than 5 days late will not  
be accepted.

Be prepared for a lot of hard work

Self – studies outside of the class

Research/design/code

Class time is limited-

In-depth course materials for review

Collaboration (20%)

Projects (50%)

Assignments, Discussions (30%)



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## Individual Assignments

A1 – VR presentation

A2 –VR Proposal contribution

Coding exercise

VR Collaboration (peer review)

## Team Assignments

A2 – project proposal

A3 – revisions

A4 - VRE

A4 –VR Type

A5- Aesthetics

A6 – Interactions

A7 –Interactions

A8 – final interaction

A9 –Audio

Improv

A10 – Test 1

A11 – Test 2

## Projects

VR Project

Final:

VR Project Video

VR Project Images

VR Project Paper

# Readings

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Understanding Virtual Reality: Interface, Application, and Design, 2nd Edition  
by William Sherman and Alan Craig

Typographie by Emil Ruder, Arthur Niggli/Teufen

The Elements of Typographic Style by Robert Bringhurst, Hartley & Marks Publishers

The VR Book - Human-Centered Design for Virtual Reality by Jason Jerald (2015)  
ACM Transactions on Graphics (Proceedings of SIGGRAPH)

Leonardo (Available from MIT Press through UIC digital library)

Proceedings of the International Symposium on Electronic Art (Available online)

The New Media Reader, edited by Noah Wardrip-Fruin and Nick Montfort, MIT Press 2003

Peripheral Vision: Bell Labs, the S-C 4020, and the Origins of Computer Art, Zabet Patterson, MIT Press

Unity Game Development Essentials Kindle Edition by Will Goldstone

Unity 3D Game Development by Example Beginner's Guide by Ryan Henson Creighton

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# EVL / Brief History

<https://www.youtube.com/watch?v=2aLOAJTISEs&t=6s>

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1969 Dan Sandin is invited to UIC's Art Dept.  
to bring computers to the art curriculum

1973 Tom DeFanti comes to UIC with the GRASS system,  
EVL begins as a short order media house for education and research



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50 years of Art/Science collaboration at UIC

Joint program: CS and Art, Design departments (EV, CS+DES)

First program in the US offering MFA that is a formal collaboration of art and computer science 1973-2014

Electronic Visualization Laboratory's 50th Anniversary Retrospective:  
Look to the Future, Build on the Past

[https://direct.mit.edu/pvar/article/doi/10.1162/pres\\_a\\_00421/120470/Electronic-V](https://direct.mit.edu/pvar/article/doi/10.1162/pres_a_00421/120470/Electronic-V)

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Artists organize projects, help visualize data, create media

Artists are supported and get the toys to do their own work:  
often inspired by science

Scientists get to communicate effectively

EVL makes them look good

EVL delivers visualization technology and techniques to science

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Advanced networking research

Distributed computing/visualization

Collaborative software

Advancement of tools and techniques for collaborative work  
over high-speed, experimental networks

Development of viable, scalable, deployable stereo displays

Development of VR hardware, software, tools and techniques

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mid-70s - the Electronic Visualization Events

a series of live performances in which images were computer generated and c

EVL helped to produce the CG special  
effects for the first Star Wars film

<https://www.youtube.com/watch?v=2aLOAjTISEs>





## CAVE 1992



## CAVE 2



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# VR Class Projects Examples

[https://www.evl.uic.edu/datsoupi/2025\\_CC/teams.html](https://www.evl.uic.edu/datsoupi/2025_CC/teams.html)

# BARRIERS by John Lee, Agustin Tena, Abril Azpeitia

According to the UN, migrants make up 3.5% of the world's population. "Barriers" uses both Tagalog and English to simulate the experience of a migrant facing the challenge of being in a new place without knowing the language.





# SURVIVE by Christine Chen, Anais Roman, Angelica Smiech

Homelessness has long been a societal issue, and understanding why it persists is crucial to finding ways to reduce it through increased awareness. This virtual reality experience aims to provide participants with a deeper understanding of homelessness, particularly within the context of their own city, Chicago.



# TRAJECTORY by Humza Habibullah, Sebastian Lopez, Emily Carroso

Diversity in the workplace has been a slow process, with many areas still needing improvement—from recruiting and hiring to promoting individuals of color. Studies show that diverse organizations are 1.7 times more innovative than their less diverse counterparts. TRAJECTORY aims to educate users on the importance of workplace diversity and its positive impact on society.



# Carbonating Concrete by Karthik Singh, Austin Watson, Matt Ziminsk

Recent groundbreaking research has uncovered the secret of Roman concrete, a recipe that has been lost for nearly two millennia. Researchers found that by capturing carbon from the atmosphere and incorporating it into the concrete production process, they can create a stronger material while simultaneously combating air pollution. Carbonating Concrete builds on these methodologies to improve infrastructure and enhance the quality of life in communities.





# Eat Me Up by Xingyang Yu, Siqi Hu, Qiaolin Chen and Natalia Szlaszynski

To achieve the goals of sustainable development and to raise public awareness of Ocean Plastic Pollution Eat Me Up emphasizes a practical solution by using “*Aspergillus tubingensis*”, a plastic-degrading fungus.

HCI 2024 Publication

[https://link.springer.com/chapter/10.1007/978-3-031-78561-0\\_22](https://link.springer.com/chapter/10.1007/978-3-031-78561-0_22)





# Assignment 1 – VR Presentation

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Chose VR pioneer – sign up in our Box/A1

**Biography or Profile of the Pioneer.** Provide background information on the pioneer, including key details of their life and career. This should take about half a slide.

**Major Contributions.** Include a detailed description of the pioneer's significant contributions to the field and/or the unique style they created.

**Video Documentations.** Include a video that documents at least three famous works created by the VR pioneer.

**Presentation.** Rehearse a short presentation (3 minutes) covering the top 3 projects by the VR pioneer. Make sure these are their most significant works, not just any projects. Include video links and a summary of your research to present in class. Submit your slides in PDF format to the class drive (A1).

**Research Requirements.** Use books, credible web sources, and images to complete your assignment. Ensure the information you curate is from reliable sources.

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