

DEPARTMENT OF INFORMATION SCIENCE TECHNOLOGY

DIGM 3358 – Augmented and Virtual Reality

Fall 2024

Th, 11am to 2pm

Lecture: 3 credit hours

BH2, Room 180

Prerequisites: C- or Better in DIGM 1300 & DIGM 2325

Dr. Spencer Bennett

Office Location: AMG217

Email: smbenne3@central.uh.edu

COURSE DESCRIPTION:

Augmented reality (AR), virtual reality (VR), and mixed reality (MR) technologies including design and technological possibilities of AR/VR, media imaginations, economic implications, and related research.

REQUIRED MATERIALS:

There is no textbook in this course.

COURSE OUTCOMES:

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

- 1) Understand features of virtual and augmented reality technologies and have hands on experience with new augmented reality devices.
- 2) Analyze contemporary theories, projections, and empirical research surrounding virtual and augmented reality technologies.
- 3) Imagine the future of virtual and augmented reality and critically consider the positive and negative implications of the new media environment.
- 4) Create experiences that utilize augmented reality features and technologies.
- 5) Reflect on what these technologies mean for our own lives and society as a whole.

END-OF-COURSE LETTER GRADE ASSIGNMENT

Letter Grades: A 94-100 A- 90-93

B+ 87-89 B 84-86 B- 80-83

C+ 77-79 C 74-76 C- 70-73

D+ 67-69 D 64-66 D- 60-63

- No grades of Incomplete will be given. (This policy is an individual faculty decision.)
- The instructor retains the right to subjectively evaluate an individual student's grade in appropriate cases.
- The instructor retains the right to determine at a later date if plus and/or minus will be used to modify a letter grade.

Element	Percent
In Class DBQ Participation 15 sessions, .5 point each	7.5%
Reading Responses 15 weeks, 1.5 points each	22.5%
Assignment #1 – Summarize article, 5 points	5%
Assignment #2 – Scan+, 15 points	15%
Assignment #3 – Product/App Review Video, 20 points	20%
Final Project - AR/VR App/Filter/World/Avatar, 30 points	30%
Total	100%

IN CLASS PARTICIPATION, DISCUSSION BOARD AND ATTENDANCE (7.5%)

This being a 3000 level undergraduate seminar, much of what you will get out of the course is contingent on your being at lecture, participating actively in the discussion, and engaging in our in-class exercises. Class attendance is required. Not counting the first class, there are 13 lectures this semester. You are allowed 2 misses for any reason.

Attendance alone is not sufficient to count as participation though. We will also be doing activities on a shared canvas document that everyone will be on during course. This document will be open only while the lecture is happening, and I'll be asking questions throughout the course that require in discussion board responses. Active participation on this document, posting comments, links, engaging with your classmates is required to receive full credit.

READING RESPONSES (22.5%)

This course asks students to engage with a collection of AR/VR readings, articles, movies, and podcasts. These are designed to stimulate interesting discussions and conversations about the future of digital media. The materials for the week are to be completed by Monday, along with a reading response post that is due at 11:59pm on Tuesdays. With 14 weeks of readings, you can miss 2 weeks for any reason. 12 reading response posts will count towards your grade, at 1.5 points each = 22.5%. Posts will be graded on how well they respond to a set of prompts and demonstrate your understanding of the readings.

ASSIGNMENT #1 – SUMMARIZE AN ARTICLE (5%)

For this assignment, you will select a peer-reviewed research article related to augmented reality (AR) or virtual reality (VR) and write a concise summary that captures its essential components and contributions to the field. Your summary should include several key elements. Begin by providing the full APA citation for the article. Then, describe the primary question or objective the researchers aimed to address. Summarize the methods used in the study, such as experiments, surveys, or case studies, and identify the main results and conclusions drawn by the researchers. Explain the significance of the research by discussing why it is important and how it contributes to the broader understanding of AR/VR. Finally, include a brief personal reflection on the article, highlighting any surprising or particularly compelling aspects.

ASSIGNMENT #2 – SCAN+ (15%)

During the middle part of the semester, we are going to experiment with a variety of Augmented Reality technologies and spatial scanning technologies. We will play around with Spatial.io, HaloAR, Varjo Teleport, Polycam, Matterport, Insta360, and others. This project will involve doing some sort of spatial creation in AR/VR, and using it to make something that changes our understanding and experience of space.

ASSIGNMENT #3 – PRODUCT/APP REVIEW (20%)

In this course, and when you encounter AR/VR in general, you will see several different devices/headsets, hundreds of applications, and other supporting platforms, operating systems, software, attachments, controllers, etc. This assignment asks that you choose one, and by yourself or in a small group, plan and record a short product/app review of this for a potential customer. What do they need to know? What would you want to know before you decide to buy something? You'll find that in writing and creating a product/app review, you'll have to spend quite a lot of time beta testing and playing around with it, so I think it's a great one to learn with. If you can take a unique spin on something, even better. For example, I've had a student who was training to be a pilot hook up a GoPro while he was flying, and did a side by side comparison/review of Microsoft Flight Simulator.

FINAL PROJECT – AR/VR APP/FILTER/WORLD/GAME/RESEARCH PROJECT (30%)

The final project for this class is to take what we have learned and try to create something new with it, applying your technical skills with the theoretical principles we'll learn about in class and your own interests/creativity. This is a fairly open assignment, but you should know that we've had some pretty incredible ones over the years. Think about what you're really interested in, and what you could do with AR/VR technologies to make the world a better place, or what you would want to know more about AR/VR.

COURSE DELIVERY FORMAT

This is a face to face lecture course. There will be some lab experiences that will take in the CougAR Lab, AMG #217, scheduled by the student when the lab supervisor is available.

TENTATIVE COURSE SCHEDULE

Readings are to be completed prior to class where listed.

Week 1 – January 15, 2025

Topic: Course and Syllabus Overview & What is AR/VR

Readings:

- Syllabus
- Defining (X) Realities, CAVRN Syllabus, Liao

To Do:

- Weekly Reading Responses
- Assignment #1: Scouting Report

In-Class Activity:

- Buddy Up
 - Beat Saber
 - DBQ Participation
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Week 2 – January 22, 2025

Topic: AR/VR Industry

Readings:

- Foxman, 2022

To Do:

- Weekly Reading Responses

In-Class Activity:

- Polycam Scans
 - DBQ Participation
-

Week 3 – January 29, 2025

Topic: What is the VR/AR Future Being Promised

Readings:

- Liao & Humphreys, 2015

To Do:

- Weekly Reading Responses
- Assignment #1 Due: Summarize Article
- Assignment #2 Prompt: Scan+

In-Class Activity:

- DBQ Participation
-

Week 4 – February 5, 2025

Topic: Space/Place, Art, Media

Readings:

- Liao, 2021

To Do:

- Weekly Reading Responses

In-Class Activity:

- Hardware Day
- Spatial Scans
- DBQ Participation

Week 5 – February 12, 2025

Topic: Entertainment and AR/VR Technologies

Readings:

- Pimentel
- Mia Wang

To Do:

- Weekly Reading Responses
- Assignment #2 Due
- Assignment #3 Prompt

In-Class Activity:

- Create a Spatial Room
 - DBQ Participation
-

Week 6 – February 19, 2025

Topic: VR/AR and Pro-Social

Readings:

- Herschfield
- Liao, Chang, Songyi Lee

To Do:

- Weekly Reading Responses

In-Class Activity:

- DBQ Participation
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Week 7 – February 26, 2025

Topic: VR/AR and Social Interaction

Readings:

- Freeman

To Do:

- Weekly Reading Responses

In-Class Activity:

- 360 Demos
 - DBQ Participation
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Week 8 – March 5, 2025

Topic: VR/AR Avatar Week

Readings:

- Spotcrime

To Do:

- Weekly Reading Responses

In-Class Activity:

- DBQ Participation
-

Week 9 – March 19, 2025

Topic: VR/AR and Health/Behavior

Readings:

- Liao, 2015

To Do:

- Weekly Reading Responses

In-Class Activity:

- DBQ Participation
-

Week 10 – March 26, 2025

Topic: Virtual Humans and Ethics

Readings:

- Liao, 2023

To Do:

- Weekly Reading Responses

In-Class Activity:

- DBQ Participation
-

Week 11 – April 2, 2025

Topic: Downsides of AR/VR

Readings:

- Liao & Iliadis, 2021

To Do:

- Weekly Reading Responses

In-Class Activity:

- DBQ Participation
-

Week 12 – April 9, 2025

Topic: AR/VR in Marketing

Readings:

- Liao, 2019

To Do:

- Weekly Reading Responses

In-Class Activity:

- 8th Wall, Lens Studio, Spark AR
 - Vision Pro FaceTime Demo
 - DBQ Participation
-

Week 13 – April 16, 2025

Topic: AR/VR and Education

Readings:

- NEED

To Do:

- Weekly Reading Responses

In-Class Activity:

- DBQ Participation
-

Week 14 – April 23, 2025

Topic: Future of AR/VR

Readings:

- Liao, 2021

To Do:

- Weekly Reading Responses

In-Class Activity:

- DBQ Participation
-

Week 15 – April 30, 2025

Topic: Showcase

To Do:

- Final Project Due

In-Class Activity:

- DBQ Participation
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INFORMATION TECHNOLOGY USED IN THIS COURSE:

The DIGM program requires every student majoring in DIGM to have their own laptop computer. For more information about laptop requirements, see:

[Degree Requirements - University of Houston \(uh.edu\) \(DIGM\)](#)

Software requirements plus other hardware required for this course include: (list any software or hardware requirements)

- USB flash drive for backing up work
- MS Teams and Blackboard
- Webcam for Online
- MS Windows 10 or higher
- MS Office 2019 or higher

All of the software except MS Office are available for download and installation on your personal computer courtesy of Azure Dev Tools for Teaching. Office 365 is free to you as a student. For additional information, please visit the following:

<http://www.uh.edu/technology/college/technical-support/general-faq/>

Course Policies:

Grading: I have two goals when I grade assignments – the first is to provide a thorough justification for why I assigned a particular grade, and the second is to offer suggestions for how to improve. My philosophy on grading is that effort is necessary for a good grade, but not sufficient. Effort is something that you demonstrate through your work, not something independent of your work. Effort is also difficult to measure and quantify, as what you believe is sufficient effort may differ greatly from my expectation or that of your peers. Lastly, it may simply be that you are exerting effort (e.g. pulling an all nighter) as a result of not having planned appropriately or done the work beforehand. That's just a concentrated burst of effort, but ultimately has a less than optimal result. Because of this, I grade on the outcome that is on the page, which will show me your effort, as opposed to any reports of effort.

Late Policy: For our weekly activities, those deadlines are fixed with no extensions. With a class this size, we really cannot allow for This is to ensure the proper administration of the course, discussion/activities of the course, and the instructors time.

The place there is SOME leeway as far as a late policy is with projects, but really not much. For an instructor approved no penalty extension, you need to let me know well in advance and ask

for a specific extension date. If you miss your one extension date, there will be no second extension.

If you do not have an instructor approved extension, the late penalty will be 10% off the total possible score for each day the assignment is late.

Office Hours: You are welcome and encouraged to stop by my office hours at any time, and also by appointment if necessary. My office is in 349 Brazos Hall.

Email: I really do my best to be as responsive as possible via email, but I ask that you keep a few things in mind: 1) Professors can receive dozens of work related emails a day, so always consider the reason you are emailing, and think about if there is another place you can find that information or if you can ask a classmate. 2) Be as clear as possible in your request, not something like 'I didn't understand the readings, can you explain.' 3) Try to be respectful and understanding about the time that you send requests and the response time – Professors, like students, are very busy, and we all have different hours that we allot for work. I will not respond to class emails on weekends.

Lab Policies: The use of the CougAR lab is a privilege afforded to students of this class by me the instructor and the director of the lab. Please adhere to the following rules:

- Respect the lab manager and anyone else working in the lab
- Use the hardware/equipment for its designated purpose and following the instructions of the lab manager
- Follow all the given safety instructions
- Treat the hardware gently
- No food or drink inside the lab
- Stop immediately if you begin to feel discomfort or sickness

CLASS PROBLEMS:

Occasionally, there problems or concerns arise about the course you are taking. The IST Department expects that you communicate with the course instructor about problems and concerns, first.

If problems or concerns cannot be resolved with the instructor, the next appropriate course of action is to contact the program coordinator. If the situation is still not resolved, contact the IST Department Chair, Dr. George Zouridakis, to communicate your problems or concerns.

Mental health and wellness services:

The University of Houston has a number of resources to support students' mental health and overall wellness, including [CoogsCARE](#) and the [UH Go App](#). UH [Counseling and Psychological Services \(CAPS\)](#) offers 24/7 mental health support for all students, addressing various concerns like stress, college adjustment and sadness. CAPS provides individual and couples counseling, group therapy, workshops and connections to other support services on and off-campus. For assistance visit uh.edu/caps, call 713-743-5454, or visit a [Let's Talk](#) location in-person or

virtually. [Let's Talk](#) are daily, informal confidential consultations with CAPS therapists where no appointment or paperwork is needed.

Need Support Now?

If you or someone you know is struggling or in crisis, help is available. Call CAPS crisis support 24/7 at 713-743-5454, or the National Suicide and Crisis Lifeline: call or text [988](tel:988), or chat 988lifeline.org.

Title ix/sexual misconduct policy:

Per the UHS Sexual Misconduct Policy, your instructor is a “responsible employee” for reporting purposes under Title IX regulations and state law and must report incidents of sexual misconduct (sexual harassment, non-consensual sexual contact, sexual assault, sexual exploitation, sexual intimidation, intimate partner violence, or stalking) about which they become aware to the Title IX office. Please know there are places on campus where you can make a report in confidence. You can find more information about resources on the Title IX website at <https://uh.edu/equal-opportunity/title-ix-sexual-misconduct/resources/>.

reasonable academic adjustments/auxiliary aids

The University of Houston is committed to providing an academic environment and educational programs that are accessible for its students. Any student with a disability who is experiencing barriers to learning, assessment or participation is encouraged to contact the Justin Dart, Jr. Student Accessibility Center (Dart Center) to learn more about academic accommodations and support that may be available to them. Students seeking academic accommodations will need to register with the Dart Center as soon as possible to ensure timely implementation of approved accommodations. Please contact the Dart Center by visiting the website:

<https://uh.edu/accessibility/> calling (713) 743-5400, or emailing jdcenter@Central.UH.EDU.

The [Student Health Center](#) offers a Psychiatry Clinic for enrolled UH students. Call 713-743-5149 during clinic hours, Monday through Friday 8 a.m. - 4:30 p.m. to schedule an appointment.

The [A.D. Bruce Religion Center](#) offers spiritual support and a variety of programs centered on well-being.

The [Center for Student Advocacy and Community \(CSAC\)](#) is where you can go if you need help but don't know where to start. CSAC is a “home away from home” and serves as a [resource hub](#) to help you get the resources needed to support academic and personal success. Through our [Cougar Cupboard](#), all students can get up to 30 lbs of FREE groceries a week. Additionally, we provide 1:1 appointments to get you connected to on- and off-campus resources related to essential needs, safety and advocacy, and more. The [Cougar Closet](#) is a registered student organization advised by our office and offers free clothes to students so that all Coogs can feel good in their fit. We also host a series of cultural and community-based events that fosters social connection and helps the cougar community come closer together. Visit the CSAC homepage or follow us on Instagram: [@uh_CSAC](#) and [@uhcupbrd](#). YOU belong here.

women and gender resource center

The mission of the [WGRC](#) is to advance the University of Houston and promote the success of all students, faculty, and staff through educating, empowering, and supporting the UH community. The WGRC suite is open to you. Stop by the office for a study space, to take a

break, grab a snack, or check out one of the WGRC programs or resources. Stop by Student Center South room B12 (Basement floor near Starbucks and down the hall from Creation Station) from 9 am to 5 pm Monday through Friday.

[academic honesty policy](#)

High ethical standards are critical to the integrity of any institution, and bear directly on the ultimate value of conferred degrees. All UH community members are expected to contribute to an atmosphere of the highest possible ethical standards. Maintaining such an atmosphere requires that any instances of academic dishonesty be recognized and addressed. The [UH Academic Honesty Policy](#) is designed to handle those instances with fairness to all parties involved: the students, the instructors, and the University itself. All students and faculty of the University of Houston are responsible for being familiar with this policy.

[excused absence policy](#)

Regular class attendance, participation, and engagement in coursework are important contributors to student success. Absences may be excused as provided in the University of Houston [Undergraduate Excused Absence Policy](#) and [Graduate Excused Absence Policy](#) for reasons including: medical illness of student or close relative, death of a close family member, legal or government proceeding that a student is obligated to attend, recognized professional and educational activities where the student is presenting, and University-sponsored activity or athletic competition. Under these policies, students with excused absences will be provided with an opportunity to make up any quiz, exam or other work that contributes to the course grade or a satisfactory alternative. Please read the full policy for details regarding reasons for excused absences, the approval process, and extended absences. Additional policies address absences related to [military service](#), [religious holy days](#), [pregnancy and related conditions](#), and [disability](#).

[recording of class](#)

Students may not record all or part of class, livestream all or part of class, or make/distribute screen captures, without advanced written consent of the instructor. If you have or think you may have a disability such that you need to record class-related activities, please contact the [Justin Dart, Jr. Student Accessibility Center](#). If you have an accommodation to record class-related activities, those recordings may not be shared with any other student, whether in this course or not, or with any other person or on any other platform. Classes may be recorded by the instructor. Students may use instructor's recordings for their own studying and notetaking. Instructor's recordings are not authorized to be shared with anyone without the prior written approval of the instructor. Failure to comply with requirements regarding recordings will result in a disciplinary referral to the Dean of Students Office and may result in disciplinary action.

[security escorts and cougar ride](#)

UHPD continually works with the University community to make the campus a safe place to learn, work, and live. The security escort service is designed for the community members who have safety concerns and would like to have a Security Officer walk with them, for their safety, as they make their way across campus. Based on availability either a UHPD Security Officer or Police Officer will escort students, faculty, and staff to locations beginning and ending on campus. If you feel that you need a Security Officer to walk with you for your safety, please call [713-743-3333](tel:713-743-3333). Arrangements may be made for special needs.

Parking and Transportation Services also offers a late-night, on-demand shuttle service called “Cougar Ride” that provides rides to and from all on-campus shuttle stops, as well as the MD Anderson Library, Cougar Village/Moody Towers and the UH Technology Bridge. Rides can be requested through the UH Go app. Days and hours of operation can be found at <https://uh.edu/af-university-services/parking/cougar-ride/>.

syllabus changes

Please note that the instructor may need to make modifications to the course syllabus. Notice of such changes will be announced as quickly as possible through canvas and in class.

artificial intelligence

You may use AI programs e.g. ChatGPT to help generate ideas and brainstorm. However, you should note that the material generated by these programs may be inaccurate, incomplete, or otherwise problematic. Beware that use may also stifle your own independent thinking and creativity.

You may not submit any work generated by an AI program as your own. If you include material generated by an AI program, it should be cited like any other reference material (with due consideration for the quality of the reference, which may be poor).