

**Virtual Environments**  
INF 385T  
Fall Semester 2019

Class Day and Time: Tuesdays 9:00am-12:00pm

Class Location: UTA 1.210A

Instructor:

Dr. Jakki Bailey  
Pronouns: She/Her/Hers

Email: [j.bailey@ischool.utexas.edu](mailto:j.bailey@ischool.utexas.edu)

**University Catalog Course Description**

Virtual environments have become an integral component of people's everyday lives for multiple uses such as socializing, learning, and behavior change. The focus of the course is to examine people's social and psychological experiences of virtual environments, such as in virtual reality. Through the course students will learn about the research behind people's experiences of virtual environments. The course includes finding and presenting cutting-edge research in the field, examining the intersection between research and the design of virtual environments as well as interacting with VR hardware and software to build 3D virtual environments. Finally, for their final project students will design their own research study/intervention that utilizes virtual environments.

Weekly readings are to be completed before class, and students are expected to participate in discussions as well as submit relevant examples that incorporate that week's readings and/or assignments.

**Course Objectives and Learning Outcomes**

Students will be able to:

- Understand and employ research and theory for creating virtual environments

- Identify how users experience different elements and aspects of virtual environments.
- Develop interpersonal communication skills and collaborative work skills
- Develop skills related to creating virtual environments

## **Course Requirements**

### Classroom Expectations

Attendance is required for the course. Many of the course activities and assignments are completed in class and in groups. Failing to attend course penalizes your grades and consequentially the other members of your group.

Bring the appropriate material for note taking, and writing. Although laptops are permitted, inattentive or discourteous behavior will be noticed and penalized. Before the start of each class, silence all devices such as cellphones, tablets, and computers.

To foster open discussion, students are asked to be tolerant and considerate of others' viewpoints.

Small snacks and drinks are welcome in the classroom but meals are not. This policy will remain in effect until it becomes a distraction or disruption.

### Course Materials

All relevant class information will be posted on the course website on Canvas. This includes the most recent syllabus, PDFs of the weekly readings, and any relevant links. Lectures will cover the readings as well as material not covered in the readings. The course calendar and readings are subject to change.

According to the class schedule, students will need to bring or have access to a laptop in class for lab work.

## **Assignments**

### Assignment Overview

Class Participation and Attendance: 20%

Assignments: 30%

Final Project: 50%

Research Proposal Memo: 5%

Final Paper: 25%

Demo: 10%  
Presentation: 5%  
Collaboration Statement: 5%

### Participation & Attendance

Class participation will comprise of 20% of the final grade. Weekly readings are to be completed before class. All students are expected to participate in discussions/ activities in class and on the course website. The criteria for successful participation in class are attendance, evidence during discussion that you have done the readings, including a willingness and ability to summarize, synthesize and evaluate. Half of your score will relate to participation and the other half to attendance.

Part of class participation may include presentations made to the class. Participation may include students posting content related to the readings such as a discussion question or an example of an artifact. These submissions are designed to help you prepare for class as well as the assignments. To receive full credit, responses must explicitly refer to and synthesize the readings of the week.

Students are expected to attend all class sessions, to arrive on time and stay for the duration of class. Students cannot to take this course if they are enrolled in other courses that conflict with our class time. Participation is crucial and the quality of your involvement contributes to your success and the success of the class by creating a collaborative learning environment.

Attendance will be taken during each class period. Absences will only be excused in situations following University policy (i.e., illness, religious holy days, participation in University activities at the request of university authorities, and compelling absences beyond your control) with proper documentation and timely notification (prior to class for non-emergencies). Students that need classroom accommodations will need to provide documentation to the Dean of Student's Office so the most appropriate accommodations can be determined

By UT Austin policy, you must notify me of your pending absence at least fourteen days prior to the date of observance of a religious holy day. If you must miss a class, an examination, a work assignment, or a project in order to observe a religious holy day, I will give you an opportunity to complete the missed work within a reasonable time after the absence. Excessive tardiness may be considered as an unexcused absence except in situations following university policy.

## Assignments

Students will investigate an area related to the use and development of virtual environments. Weekly assignments will consist of synthesizing the course readings and integrating additional resources. The purpose of the research assignments is to expand on the course material to gain an in-depth understanding of virtual environments and users as well as prepare you for the final project. The assignments consist of 30% of the final grade. All assignments must use APA 6<sup>th</sup> edition formatting and style.

## Final Project Proposal

In pairs, students will create a proposal for an application using a virtual environment (i.e., virtual reality; see official prompt for details). The final project proposal will consist of 1) a literature review of past research on the use of virtual environments (i.e., virtual reality), 2) how the user's experience will be evaluated, and 3) a discussion on the potential outcomes and meaning of the project. In addition, the project will consist of a demo illustrating at least one aspect of the study as well as an in-class presentation. Finally, each group member will individually submit a collaboration statement providing their perspective on the quality of the overall group collaboration. The final project will consist of 50% of the final grade. All assignments must use APA 6<sup>th</sup> edition formatting and style.

## **Course at a glance**

<b>Week, Date</b>	<b>Topic</b>	<b>Note or Deadline</b>
Week 1 Aug 27		<ul style="list-style-type: none"><li>• No official class</li></ul>
Week 2 Sept 3	<ul style="list-style-type: none"><li>• Class Introductions</li><li>• What is Virtual Reality?</li></ul>	
Week 3 Sept 10	<ul style="list-style-type: none"><li>• VR Systems</li></ul>	<ul style="list-style-type: none"><li>• VR Systems Assignment Due</li></ul>
Week 4 Sept 17	<ul style="list-style-type: none"><li>• Presence &amp; Technological Immersion</li><li>• Building Environments: Tutorials</li></ul>	<ul style="list-style-type: none"><li>• Presence &amp; Immersion Assignment Due</li></ul>
Week 5 Sept 24	<ul style="list-style-type: none"><li>• Building Environments: Tutorials</li></ul>	<ul style="list-style-type: none"><li>• Evaluating VR Experiences Assignment Due</li></ul>
Week 6 Oct 1	<ul style="list-style-type: none"><li>• Building Environments: Avatars &amp; Embodied</li></ul>	<ul style="list-style-type: none"><li>• Tutorial #1 Due</li></ul>

	Agents	
Week 7 Oct 8	<ul style="list-style-type: none"> <li>Building Environments: Avatars &amp; Embodied Agents</li> </ul>	<ul style="list-style-type: none"> <li>No Official class: Work on own</li> </ul>
Week 8 Oct 15	<ul style="list-style-type: none"> <li>Building Environments: Avatars &amp; Embodied Agents</li> </ul>	<ul style="list-style-type: none"> <li>Tutorial Due #2 Due</li> <li>Intro to Final Project</li> </ul>
Week 9 Oct 22	<ul style="list-style-type: none"> <li>Building Environments: Avatars &amp; Embodied Agents</li> </ul>	<ul style="list-style-type: none"> <li>Tutorials</li> <li>Working on Final Project</li> </ul>
Week 10 Oct 29	<ul style="list-style-type: none"> <li>Building Environments: Avatars &amp; Embodied Agents</li> </ul>	<ul style="list-style-type: none"> <li>Tutorials</li> <li>Working on Final Project</li> <li>Final Project Memo Due</li> </ul>
Week 11 Nov 5	<ul style="list-style-type: none"> <li>Building Environments: Embodied Agents and Social Influence</li> </ul>	<ul style="list-style-type: none"> <li>Tutorials</li> <li>Working on Final Project</li> </ul>
Week 12 Nov 12	<ul style="list-style-type: none"> <li>Building Environments: Avatars &amp; Embodied Agents</li> </ul>	<ul style="list-style-type: none"> <li>Project Testing: Basic Environment</li> <li>Working on Final Project</li> </ul>
Week 13 Nov 19	<ul style="list-style-type: none"> <li>Building Environments</li> </ul>	<ul style="list-style-type: none"> <li>Project Testing</li> <li>Working on Final Project</li> </ul>
Week 14 Nov 26	<ul style="list-style-type: none"> <li>Building Environments</li> </ul>	<ul style="list-style-type: none"> <li>Project Testing</li> <li>Working on Final Project</li> </ul>
Week 15 Dec 3	<ul style="list-style-type: none"> <li>Project Presentations and Demos</li> <li>Conclusions</li> </ul>	<ul style="list-style-type: none"> <li>Submit Final Demo Monday at 9:00am</li> <li>Final Project Proposal and Collaboration Statement Due at Friday 5:00pm</li> </ul>

### Grading

This class employs a plus/minus grading system. For more information on this system, please consult the University's General Information Catalog. Below is the grade scale the University employs and which will be used in this class:

Meets major requirement		Does not meet requirement	
Grade	Percentage Equivalent	Grade	Percentage Equivalent

A	≥94.00	C-	70.00-73.99
A-	90.00-93.99	D+	67.00-69.99
B+	87.00-89.99	D	64.00-66.99
B	84.00-86.99	D-	60.00-63.99
B-	80.00-83.99	F	<60.00
C+	77.00-79.99		
C	74.00-76.99		

## Course Policy

*You are responsible for reading and following these class policies, and any additional policies that develop over course of the semester.*

### Instructor Communication

E-mail is the official mode of communication for the university and the most reliable means of contacting me. It is always helpful if your e-mail includes a focused subject line that begins with “INF 385T.” ***Do not use the messaging facilities in Canvas; these messages do not arrive in my e-mail inbox.*** Please allow at least a 24-hour window for email responses and plan accordingly. Please limit emails to 5 sentences or less. If your question about a reading or an assignment takes more than 5 sentences to express, please come see me in office hours. If you cannot make office hours, please email me to arrange an appointment.

### Copyright Notice

These materials may be protected by copyright. United States copyright law, 17 USC section 101, et seq., in addition to University policy and procedures, prohibit unauthorized duplication or retransmission of course materials.

### Classroom Recording

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor, and any such recording properly approved in advance can be used solely for the student’s own private use.

### Original Work

***Cheating and plagiarism not are tolerated.*** If an assignment turned in for credit is found to have been plagiarized, you will receive a grade of 0 points and a formal reprimand in your student file. You will be subject to the University’s disciplinary penalties, including the possibility of failure in the course. Some assignment require submission of individual work while other

assignments are submitted as a group. It is your responsibility to identify the requirements for each assignment. If you have any questions about the requirements, please contact the instructor.

### Late assignments

***I do not accept late assignments.*** Students who anticipate difficulties with completing assignments on time should consult with the instructor as soon as possible so that alternate solutions can be discussed. When negotiated in advance, arrangements can often be made.

### Style manual

Please use the American Psychological Association's style manual (i.e., APA 6<sup>th</sup> edition). In particular, please be sure to follow its citation formats and rules on language bias.

Example guide:

[https://owl.purdue.edu/owl/research\\_and\\_citation/apa\\_style/apa\\_formatting\\_and\\_style\\_guide/general\\_format.html](https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_formatting_and_style_guide/general_format.html)

### Religious holy days

A student who misses classes or other required activities, including examinations, for the observance of a religious holy day should inform the instructor as far in advance of the absence as possible, so that arrangements can be made to complete an assignment within a reasonable time after the absence.

### Use of E-mail for Official Correspondence

All students should become familiar with the University's official e-mail student notification policy. It is the student's responsibility to keep the University informed as to changes in his or her e-mail address. Students are expected to check e-mail on a frequent and regular basis in order to stay current with University-related communications, recognizing that certain communications may be time-critical. It is recommended that e-mail be checked daily, but at a minimum, twice per week. The complete text of this policy and instructions for updating your e-mail address are available at <http://www.utexas.edu/its/help/utmail/1564>

### Documented Disability Statement

You will need to provide documentation to the Dean of Student's Office so the most appropriate accommodations can be determined. Specialized services are available on campus through Services for Students with Disabilities (SSB 4.104, 471-6259). Any student who requires special accommodations must obtain a letter that documents the disability from the

Services for Students with Disabilities area of the Division of Diversity and Community Engagement (471-6259 voice or 471- 4641 TTY for users who are deaf or hard of hearing). Present the letter to the professor at the beginning of the semester so that needed accommodations can be discussed. The student should remind the professor of any testing accommodations no later than five business days before an exam. If you plan to make use of specialized services through SSD please inform me before the second class meeting. For more information, visit <http://www.utexas.edu/diversity/ddce/ssd/>

### Personal Pronoun Preference

Professional courtesy and sensitivity are especially important with respect to individuals and topics dealing with differences of race, culture, religion, politics, sexual orientation, gender, gender variance, and nationalities. Class rosters are provided to the instructor with the student's legal name. I will gladly honor your request to address you by an alternate name or gender pronoun. Please advise me of this preference early in the semester so that I may make appropriate changes to my records.

### **Student Rights & Responsibilities**

- You have a right to a learning environment that supports mental and physical wellness.
- You have a right to respect.
- You have a right to be assessed and graded fairly.
- You have a right to freedom of opinion and expression.
- You have a right to privacy and confidentiality.
- You have a right to meaningful and equal participation, to self-organize groups to improve your learning environment.
- You have a right to learn in an environment that is welcoming to all people. No student shall be isolated, excluded or diminished in any way.

### With these rights come responsibilities:

- You are responsible for taking care of yourself, managing your time, and communicating with the teaching team and with others if things start to feel out of control or overwhelming.
- You are responsible for acting in a way that is worthy of respect and always respectful of others.
- Your experience with this course is directly related to the quality of the energy that you bring to it, and your energy shapes the quality of your peers' experiences.
- You are responsible for creating an inclusive environment and for speaking up when someone is excluded.



- You are responsible for holding yourself accountable to these standards, holding each other to these standards, and holding the teaching team accountable as well.

## University Policies

### Academic Integrity

Each student in the course is expected to abide by the University of Texas Honor Code: “As a student of The University of Texas at Austin, I shall abide by the core values of the University and uphold academic integrity.”

**Plagiarism is taken very seriously at UT.** Therefore, if you use words or ideas that are not your own (or that you have used in previous class), you must cite your sources. Otherwise you will be guilty of plagiarism and subject to academic disciplinary action, including failure of the course. You are responsible for understanding UT’s Academic Honesty and the

University Honor Code which can be found at the following web address: [http://deanofstudents.utexas.edu/sjs/acint\\_student.php](http://deanofstudents.utexas.edu/sjs/acint_student.php)

### Q Drop Policy

If you want to drop a class after the 12<sup>th</sup> class day, you’ll need to execute a Q drop before the Q-drop deadline, which typically occurs near the middle of the semester. Under Texas law, you are only allowed six Q drops while you are in college at any public Texas institution. For more information, see:

<http://www.utexas.edu/ugs/csacc/academic/adddrop/qdrop>

## University Resources for Students

Your success in this class is important to me. We will all need accommodations because we all learn differently. If there are aspects of this course that prevent you from learning or exclude you, please let me know as soon as possible. Together we’ll develop strategies to meet both your needs and the requirements of the course. There are also a range of resources on campus:

### Services for Students with Disabilities

This class respects and welcomes students of all backgrounds, identities, and abilities. If there are circumstances that make our learning environment and activities difficult, if you have medical information that you need to share with me, or if you need specific arrangements in case the building needs to be evacuated, please let me know. I am committed to creating an effective learning environment for all students, but I can only do so if you discuss your needs with me as early as possible. I promise to

maintain the confidentiality of these discussions. If appropriate, also contact Services for Students with Disabilities, 512-471-6259 (voice) or 1-866-329-3986 (video phone). <http://ddce.utexas.edu/disability/about/>

### Counseling and Mental Health Center

Do your best to maintain a healthy lifestyle this semester by eating well, exercising, avoiding drugs and alcohol, getting enough sleep and taking some time to relax. This will help you achieve your goals and cope with stress.

All of us benefit from support during times of struggle. You are not alone. There are many helpful resources available on campus and an important part of the college experience is learning how to ask for help. Asking for support sooner rather than later is often helpful.

If you or anyone you know experiences any academic stress, difficult life events, or feelings like anxiety or depression, we strongly encourage you to seek support. <http://www.cmhc.utexas.edu/individualcounseling.html>

### The Sanger Learning Center

Did you know that more than one-third of UT undergraduate students use the Sanger Learning Center each year to improve their academic performance? All students are welcome to take advantage of Sanger Center's classes and workshops, private learning specialist appointments, peer academic coaching, and tutoring for more than 70 courses in 15 different subject areas. For more information, please visit <http://www.utexas.edu/ugs/slc> or call 512-471-3614 (JES A332).

*Undergraduate Writing Center:* <http://uwc.utexas.edu/>

*Libraries:* <http://www.lib.utexas.edu/>

*ITS:* <http://www.utexas.edu/its/>

*Student Emergency Services:* <http://deanofstudents.utexas.edu/emergency/>

### Basic Needs Security

Any student who faces challenges of affording groceries or accessing sufficient food to eat every day, or who lacks a safe and stable place to live, and believe this may affect their performance in the course, is encouraged to contact the Office of the Dean of Students – Student Emergency Services (SES) for support. Please notify the instructor if you are comfortable doing so and I will make efforts to provide any resources that I may possess to help you navigate issues of food insecurity or residential displacement.

SES Concerns and

Emergencies: <http://deanofstudents.utexas.edu/emergency/concernsemergencies.php>

SES Food Pantry:

<http://deanofstudents.utexas.edu/emergency/pantry.php>

SES Confidential Advocacy and

Support: <http://deanofstudents.utexas.edu/emergency/advocacysupport.php>

### BeVocal

BeVocal is a university-wide initiative to promote the idea that individual Longhorns have the power to prevent high-risk behavior and harm. At UT Austin all Longhorns have the power to intervene and reduce harm. To learn more about BeVocal and how you can help to build a culture of care on campus go to [wellnessnetwork.utexas.edu/BeVocal](http://wellnessnetwork.utexas.edu/BeVocal)

### **Important Safety Information**

If you have concerns about the safety or behavior of fellow students, TAs or Professors, call BCAL (the Behavior Concerns Advice Line): 512-232-5050. Your call can be anonymous. If something doesn't feel right – it probably isn't. Trust your instincts and share your concerns.

The following recommendations regarding emergency evacuation from the Office of Campus Safety and Security, 512-471-5767,

<http://www.utexas.edu/safety/>

Occupants of buildings on The University of Texas at Austin campus are required to evacuate buildings when a fire alarm is activated. Alarm activation or announcement requires exiting and assembling outside.

- Familiarize yourself with all exit doors of each classroom and building you may occupy. Remember that the nearest exit door may not be the one you used when entering the building.
- Students requiring assistance in evacuation shall inform their instructor in writing during the first week of class.
- In the event of an evacuation, follow the instruction of faculty or class instructors. Do not re-enter a building unless given instructions by the following: Austin Fire Department, The University of Texas at Austin Police Department, or Fire Prevention Services office.
- Link to information regarding emergency evacuation routes and emergency procedures can be found at:  
[www.utexas.edu/emergency](http://www.utexas.edu/emergency)



## Course Readings/Schedule

### Part I: What is Virtual Reality?

#### Week 1

August 27<sup>th</sup>

*No official Class*

*Review syllabus and course expectations.*

#### Week 2

September 3, 2019

*Introductions*

*What is Virtual Reality?*

Blascovich, J. & Bailenson, J. (2011). *Dream Machine In Infinite reality: Avatars, eternal life, new worlds, and the dawn of the virtual revolution*. New York, NY: HarperCollins

Blascovich, J. & Bailenson, J. (2011). *Mirror, mirror on the wall In Infinite reality: Avatars, eternal life, new worlds, and the dawn of the virtual revolution*. New York, NY: HarperCollins.

Bailenson, J. (2018). Protecting nonverbal data tracked in virtual reality. *JAMA Pediatrics*, 172 (10), 905-906

**\*VR Systems Assignment Due Sunday September 9<sup>th</sup> at 12:00pm\***

#### Week 3

September 10, 2019

*VR Systems*

Spanlang, B., Normand, J-M, Borland, D., Kiltner, K., Giannopoulos, E., Pomes, A., Gonzalez-Franco, M.,...Slater, M., (2014). How to build an embodiment lab: Achieving body representation illusions in virtual reality. *Frontiers in Robotics and AI*, 27 (9), 1-22.

LaViola, Jr., J.J. (2000). A discussion of cybersickness in virtual environments. *SIGCHI Bulletin*, 32(1), 47-56

#### **READ:**

- “Introduction” to “Consequences and Implications of Cybersickness”(pp. 47- 50)

- “Contributing Factors to Cybersickness in Virtual Environments” to the END (pp. 52-54)

**\*Presence & Immersion Assignment Due Sunday Sept 16th at 12:00pm\***

**Week 4**

September 17, 2019

*Presence & Immersion*

Lee, K.M. (2004). Presence explicated. *Communication Theory*, 14(1), 27-50.

Cummings & Bailenson (2016). How immersive is enough? A meta-analysis of the effect of immersive technology on user presence. *Media Psychology*, 19(2), 272-309.

**Week 5**

September 24, 2019

**\*Evaluating Systems and Experience Assignment Due at 9:00am\***

*Building Environments*

**Week 6**

October 1, 2019

**Tutorial #1 Due at 9:00am**

*Building Environments*

**Part II: Avatars and Embodied Agents**

**Week 7**

October 8, 2019

*Work on own: No official class*

**Week 8**

October 15, 2019

**Tutorial #2 Due at 9:00am**

*Introduction to Final Project*

*VR & Avatars I*

Bailenson, J.N. & Blascovich, J. (2004). Avatars. *Encyclopedia of Human-Computer Interaction*, Berkshire Publishing Group, 64-68

Won, A.A. Bailenson J., Lee, J., & Lanier, J. (2015). Homuncular flexibility in virtual reality. *Journal of Computer-Mediated Communication*, 20(3), 241-259.

Slater, M., Spanlang, B., Sanchez-Vives, M.V., & Blanke, O. (2010). First person experience of body transfer in virtual reality. *PLOS One*  
Retrieved from  
<https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0010564>

### **Week 9**

October 22, 2019

*VR & Avatars II*

*Building Environments*

Final Project Work Session

### **Week 10**

October 29, 2019

*Embodied Agents I*

Blascovich, J., Loomis, J., Beall, A., Swinth, K., Hoyt, C., & Bailenson, J.N. (2002). Immersive virtual environment technology as a methodological tool for social psychology. *Psychological Inquiry*, 13, 103-124.

*Building Environments*

Final Project Work Session

### **Week 11**

November 5, 2019

*Embodied Agents II*

Readings TBD

*Building Environments*

Final Project Work Session

### **Week 12**

November 12, 2019

**Environment set up Due for Testing**

*Building Environments*

Final Project Work Session

Environment Testing

**Week 13**

November 19, 2019

*Building Environments*

Final Project Work Session

Environment Testing

**Week 14**

November 26, 2019

*Building Environments*

Final Project Work Session

Environment Testing

**Week 15**

December 2<sup>nd</sup> & 3<sup>rd</sup>, 2019

**Final Demos due Monday December 2 at 9:00am**

*Project Presentations and Demos*

*Conclusions*

**Final Paper and Collaboration Statement Due Friday Dec 6th at 5:00pm**