

DIG4540 Production of Immersive Environments

Instructor

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Office Location

Norman Gym #116

Office Hours

Wednesdays
9:00 AM – 11:00 AM

Course Number

DIG6126C

Semester/Year

Fall 2021

Course Credits

3 credits

Course Location

Norman Gym
NRG 207

Computer Science
CSE 413

Course Meeting Times

Tue Period 8, 9
(3:00 PM – 4:55 PM)

Thu Period 9
(4:05 PM – 4:55 PM)

Course Description

This course is designed to provide students with an overview of the basic principles of virtual reality (VR) and augmented reality (AR) technology. There is a strong emphasis on the use of this technology as a tool for real-world applications. The course will be comprised of instructor lectures, student-led in-class discussions on selected topics, and a Unity tutorial where students will learn about the basics of scripting and rendering virtual environments. Students will be given an opportunity to interact directly with immersive virtual environment technology and will gain first-hand experience by developing a AR/VR-based application as a final project and paper. The class will be technologically motivated. Students should be comfortable learning new software.

Pre-Requisites

DAR major and junior standing, DIG3305C and DIG3878 with minimum grade of C.

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

- Understand how the design of VR/AR technology relates to human perception and cognition.
- Discuss applications of AR/VR in multiple domains including education, training, healthcare, and psychotherapy
- Gain first-hand experience with developing VR application
- Acquire the technical knowledge and skillsets to create a VR interface, including scripting in C#, editing OVR scripts, and setting up XR interaction toolkits.

Course Materials

- **Textbook:** There is no required textbook for this course
- **Optional Reading:**
“3D User Interfaces: Theory and Practice” by Doug Bowman, Ernst Kruijff, Joseph LaViola, and Ivan Poupyrev

ISBN-13: 978-0321980045

ISBN-10: 0321980042

Other Materials

- Unity
- Maya

Course Schedule

This schedule is only a guide and is subject to change. Unless otherwise indicated, assignments and readings are due the day they are listed on the syllabus, not the following day.

Week	Subject	Assignments (Due)
	Introduction	
Week 1	<ul style="list-style-type: none"> Course Introduction What is Virtual Reality 	Practice exercise
	Application of Virtual and Augmented Reality	
Week 2	<ul style="list-style-type: none"> History of AR/VR The current applications of AR/VR 	Reading 1 (Sunday at 11:59 PM)
	Process of UI/UX Design	
Week 3	<ul style="list-style-type: none"> User research Flowchart and wireframe 	Reading 2 (Sunday at 11:59 PM)
	Designing 3D User Experience	
Week 4	<ul style="list-style-type: none"> Graphics user interface Menu design in Unity 	Project pitch (Mon at 11:59 PM)
	Moving 3D Objects	
Week 5	<ul style="list-style-type: none"> Unity Physics: collider, rigidbody Animation 	Exercise 1 (Sunday at 11:59 PM)
	3D Navigation	
Week 6	<ul style="list-style-type: none"> First person controller Unity Input 	Exercise 2 (Sunday at 11:59 PM)
	Interactive Objects in VR	
Week 7	<ul style="list-style-type: none"> OVR Input, OVR manager Grab-attach mechanism 	Exercise 3 (Sunday at 11:59 PM)
	Creating an Immersive Environment	
Week 8	<ul style="list-style-type: none"> 3D contents Photogrammetry 	Project progress report (Mon at 11:59 PM)
	Build an AR interface	
Week 9	<ul style="list-style-type: none"> The basics of AR functionality Vuforia 	Exercise 4 (Sunday at 11:59 PM)
	Build a VR game: part 1	
Week 10	<ul style="list-style-type: none"> Object interaction 	Exercise 5 (Sunday at 11:59 PM)
	Build a VR game: part 2	
Week 11	<ul style="list-style-type: none"> User interface 	Exercise 6 (Sunday at 11:59 PM)
	Evaluation	
Week 12	<ul style="list-style-type: none"> Usability testing Survey analysis 	Project progress report (Mon at 11:59 PM)
Week 13	Thanksgiving	
Week 14	Project time	
Week 15	Project time	
Week 16	Final presentation	Final report

Evaluation of Grades

Assignment	Total Points	% of Grade
Participation and attendance: Students are expected to actively participate in class discussions. For attendance policies, please see the course policies in page 3.	50	5%
Discussion and 5 min presentation: Each student will find an article or the latest news about virtual reality and prepare a 5 min presentation and class discussion.	50	5%
Weekly exercises and readings: Exercises will be assigned on Thursday s and due on Sunday midnight. Each exercise will be graded according to the following criteria: (1) fulfillment of basic requirements, and (2) appropriate use of techniques, and (3) quality of works.	400	40%
Project progress reports: Students will pitch their project ideas and write a design brief. Students will also report the progress of the project over the course of the semester.	150	15%
Final project: Each student will complete a 3D user interaction design project using VR devices. Students will also run a usability test and refine the prototype. The final design should be interactive, immersive, and user-friendly. Projects will be graded based on their creativity, usability, and functionality to accomplish the UX goals.	350	35%
TOTAL	1000	100%

Grading Scale

Letter Grade	% Equivalency	GPA Equivalency
A	94 – 100%	4.0
A-	90 – 93%	3.67
B+	87 – 89%	3.33
B	84 – 86%	3.00
B-	80 – 83%	2.67
C+	77 – 79%	2.33
C	74 – 76%	2.00
C-	70 – 73%	1.67
D+	67 – 69%	1.33
D	64 – 66%	1.00
D-	60 – 63%	.67
E, I, NG, S-U, WF	0 – 59%	0.00

More information on grades and grading policies is here:
<https://catalog.ufl.edu/UGRD/academic-regulations/grades-grading-policies/>

Materials and Supply Fees

Material and supply and equipment use fee information is available from the academic departments or from the schedule of courses (Florida Statutes 1009.24). The total course fee for this class is \$0.00.

The total course fee for each course is listed on the UF Schedule of Courses. (<https://registrar.ufl.edu/soc/>).

Course Polices

Attendance Policy

Students are responsible for keeping track of their own attendance.

During the semester students are allowed 3 absences. Any absence beyond these will result in a lowering of their grade by one letter grade for each missed class. For example, A will go to A-, B will go to B-, and C+ to C-. If students feel at any point that more than 3 absences from the class will be unavoidable, arrange to meet with the instructor or academic advisor to discuss how this should be dealt with. It is students' responsibility to catch up on any assignments or homework that they have missed during their absence.

Late Submission

All course works must be submitted no later than the due date unless prior arrangements are made with the instructor. If a student submits an assignment after the due date without making arrangements with the instructor, **1 point will be deducted each day.**

Extension: To request a deadline extension, **please make sure to contact the instructor 48 hours before the due date.** Failure to abide by this rule will result in a point deduction for your assignments.

Acceptable reasons for absence or failure to meet the deadline include illness, serious family emergencies, special curricular requirements (e.g., professional conference, job interviews), military obligation, religious holidays, jury duty, and more. If students are absent from classes or missed the deadline for these reasons, they should contact an instructor and provide documents or records (e.g., doctor's note) to excuse their absence.

Requirements for class attendance and assignments, and other work in this course are consistent with university policies that can be found at: <https://catalog.ufl.edu/UGRD/academic-regulations/attendance-policies/>

Face-to-Face Instruction

We will have face-to-face instructional sessions to accomplish the student learning objectives of this course. In response to COVID-19, the following policies and requirements are in place to maintain your learning environment and to enhance the safety of our in-classroom interactions.

- You are required to wear approved face coverings at all times during class and within buildings. Following and enforcing these policies and requirements are all of our responsibility. Failure to do so will lead to a report to the Office of Student Conduct and Conflict Resolution.
- This course has been assigned a physical classroom with enough capacity to maintain physical distancing (6 feet between individuals) requirements. Please utilize designated seats and maintain appropriate spacing between students. Please do not move desks or stations.
- Sanitizing supplies are available in the classroom if you wish to wipe down your desks prior to sitting down and at the end of the class.
- Follow your instructor's guidance on how to enter and exit the classroom. Practice physical distancing to the extent possible when entering and exiting the classroom.
- If you are experiencing COVID-19 symptoms ([Click here for guidance from the CDC on symptoms of coronavirus](#)), please use the UF Health screening system and follow the instructions on whether you are able to attend class. [Click here for UF Health guidance on what to do if you have been exposed to or are experiencing Covid-19 symptoms.](#)
- Course materials will be provided to you with an excused absence, and you will be given a reasonable amount of time to make up work. [Find more information in the university attendance policies.](#)

Course Communications

Students can communicate directly with the instructor regarding the course material through the course management system (CANVAS) using "Canvas Mail".

Course Technology Support

The [Technology Support Center](#) provides computer support for Digital Worlds students who access Zoom, lecture recordings, student equipment, facilities and other technology-based resources.

<http://digitalworlds.ufl.edu/support>

For computer assistance related to Zoon, lecture recordings, student equipment, and facilities request please [Submit a Help Ticket](#) or email support@digitalworlds.ufl.edu.

For support related to account services, technical consulting, mobile device services, software services, administrative support, application support center, and learning support services, please contact the [UF Computing Help Desk](#) available 24 hours a day, 7 days a week at 352-392-4357 or helpdesk@ufl.edu.

UF Policies

University Honesty Policy

UF students are bound by The Honor Pledge which states, “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honor and integrity by abiding by the Honor Code. On all work submitted for credit by students at the University of Florida, the following pledge is either required or implied: “On my honor, I have neither given nor received unauthorized aid in doing this assignment.” The Honor Code (<https://www.dso.ufl.edu/sccr/process/student-conduct-honor-code/>) specifies a number of behaviors that are in violation of this code and the possible sanctions. Furthermore, you are obligated to report any condition that facilitates academic misconduct to appropriate personnel. If you have any questions or concerns, please consult with the instructor or TAs in this class.

Class Demeanor

Students are expected to arrive to class on time and behave in a manner that is respectful to the instructor and to fellow students. Please avoid the use of cell phones and restrict eating to outside of the classroom. Opinions held by other students should be respected in discussion, and conversations that do not contribute to the discussion should be held at minimum, if at all.

Students Requiring Accommodations

Students with disabilities who experience learning barriers and would like to request academic accommodations should connect with the disability Resource Center. [Click here to get started with the Disability Resource Center](#). It is important for students to share their accommodation letter with their instructor and discuss their access needs, as early as possible in the semester.

Netiquette Communication Courtesy

All members of the class are expected to follow rules of common courtesy in all email messages, threaded discussions and chats, more information can be found at: <http://teach.ufl.edu/wp-content/uploads/2012/08/NetiquetteGuideforOnlineCourses.pdf>

Software Use

All faculty, staff, and students of the University are required and expected to obey the laws and legal agreements governing software use. Failure to do so can lead to monetary damages and/or criminal penalties for the individual violator. Because such violations are also against University policies and rules, disciplinary action will be taken as appropriate. We, the members of the University of Florida community, pledge to uphold ourselves and our peers to the highest standards of honesty and integrity.

Student Privacy

There are federal laws protecting your privacy with regards to grades earned in courses and on individual assignments. For more information, please see:

<http://registrar.ufl.edu/catalog0910/policies/regulationferpa.html>

Course Evaluation

Students are expected to provide professional and respectful feedback on the quality of instruction in this course by completing course evaluations online via GatorEvals. [Click here for guidance on how to give feedback in a professional and respectful manner](#). Students will be notified when the evaluation period opens, and can complete evaluations through the email they receive from GatorEvals, in their Canvas course menu under GatorEvals, or via ufl.bluera.com/ufl/. [Summaries of course evaluation results are available to students here](#).

Campus and Academic Resources

U Matter, We Care. If you or someone you know is in distress, please contact umatter@ufl.edu, 352-392-1575, or visit [U Matter, We Care website](#) to refer or report a concern and a team member will reach out to the student in distress.

Counseling and Wellness Center. [Visit the Counseling and Wellness Center website](#) or call 352-392-1575 for information on crisis services as well as non-crisis services.

Student Health Care Center. Call 352-392-1161 for 24/7 information to help you find the care you need, or [visit the Student Health Care Center website](#).

University Police Department. [Visit UF Police Department website](#) or call 352-392-1111 (or 9-1-1 for emergencies).

UF Health Shands Emergency Room / Trauma Center. For immediate medical care call 352-733-0111 or go to the emergency room at 1515 SW Archer Road, Gainesville, FL 32608; [Visit the UF Health Emergency Room and Trauma Center website](#).

E-learning technical support. Contact the [UF Computing Help Desk](#) at 352-392-4357 or via e-mail at helpdesk@ufl.edu.

Career Connections Center. Reitz Union Suite 1300, 352-392-1601. Career assistance and counseling services.

Library Support. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center. Broward Hall, 352-392-2010 or to make an appointment 352-392-6420. General study skills and tutoring.

Writing Studio. 2215 Turlington Hall, 352-846-1138. Help brainstorming, formatting, and writing papers.

Student Complaints On-Campus. [Visit the Student Honor Code and Student Conduct Code webpage for more information](#).

On-Line Students Complaints. [View the Distance Learning Student Complaint Process](#).

Disclaimer: This syllabus represents the instructor's current plans and objectives. As we go through the semester, those plans may need to change to enhance the class learning opportunity. Such changes, communicated clearly, are not unusual and should be expected.