

PRINCIPLES OF AUGMENTED AND VIRTUAL ENVIRONMENTS

COURSE NUMBER: DIG6931C	INSTRUCTOR: DR. ANGELOS BARMPOUTIS
SEMESTER/YEAR: FALL 2019	OFFICE LOCATION/HOURS: CSE E428 , WED. 8 TH PERIOD
CREDIT HOURS: 3.0	CONTACT EMAIL: ANGELOS@DIGITALWORLDS.UFL.EDU
CLASS LOCATION: CSE E413	CONTACT PHONE: (352) 294-2000
CLASS MEETING TIME(S): T 4 & TH 4-5 TH	COURSE WEBSITE: elearning.ufl.edu

COURSE DESCRIPTION

This course is a project-based class that will cover the core principles of immersive technologies such as AR and VR. The course provides hands-on experience developing a fully functioning prototype that enhances the immersion of the users beyond the typical use-case of modern VR system. Special focus will be give to haptic interactions through the blending of reality (tangible physical objects) and virtual reality.

COURSE GOALS AND/OR OBJECTIVES: *By the end of this course, students will be able to:*

- Understand the project pipeline of immersive technology production
- Become familiar with the industry standards in immersive technology
- Evaluate user experience using interaction principles
- Develop a fully functioning immersive experience

PURPOSE OF THE COURSE

This is a research-based class that offers students hands-on experience with immersive technology development through a complete pipeline of rapid prototyping, production, and evaluation. Students will apply previously acquired technical skills to a semester-long group project during which they will craft solutions to a challenge/problem related to the development of immersive environments. The students will define their own user evaluation research protocol and use it in a small scale user testing among peers.

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.

Date	Class Discussion
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Week 1	Class Introduction and Immersive Tech overview
Week 2	Understanding and Conceptualizing Interaction (Chapters 1-3)
Week 3	Establishing requirements, Design, Prototyping and Construction (Chapters 10-11)
Week 4	Prototype Inspection
Week 5	Cognitive Aspects, Social and Emotional Interaction (Chapters 3-5)
Week 6	Augmented Reality overview, definition, milestones
Week 7	AR key-enabled technologies
Week 8	Alpha Version Inspection
Week 9	AR Tracking
Week 10	AR Display Technologies
Week 11	Introducing Evaluation, Data gathering, and Analysis
Week 12	Beta Version Inspection
Week 13	webVR interfaces
Week 14	Everyday VR applications
Week 15	Case studies
Week 16	Final Product Inspection

RECOMMENDED TEXTBOOKS AND SOFTWARE:

1. The VR Book: Human-Centered Design for Virtual Reality". Jason Jerald Ph.D (2015)
2. Interaction Design: Beyond Human-Computer Interaction" Book by Helen Sharp, Jenny Preece, and Yvonne Rogers (2015)
3. Emerging Technologies of Augmented Reality: Interfaces and Design". Book by Michael Haller, Bruce Thomas and Mark Billinghurst (2006)

COURSE FEES:

Course fees are assessed for certain courses to offset the cost of materials or supply items consumed in the course of instruction. A list of [approved courses and fees](#) is published in the Schedule of Courses each semester. (UF-3.0374 Regulations of the University of Florida).

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

The total course fee for each course is listed on the UF Schedule of Courses.

[\(https://registrar.ufl.edu/soc/\)](https://registrar.ufl.edu/soc/).

EVALUATION OF GRADES

There will be four quarterly assessments:

- a) Prototype Inspection
- b) Alpha Version Inspection
- c) Beta Version Inspection
- d) Final Product Inspection.

Each of the assessment will be based on previously establish metrics that will evaluate the students' submissions with regards to the interaction design principles, requirements met, level of completion, and ease of use. 20% of the grade will be determined in each of the four assessments.

Peer-Review Feedback Evaluation

In addition, students will participate in four in-class, peer-reviewed feedback sessions. Participation in the peer-review process will determine 10% of the grade. Participation refers to relevant, insightful, and applied discussion that will be evaluated using three levels:

- 1.) Relevance to the work being peer-reviewed = 2.5% of grade
- 2.) Demonstrates outside preparation (you show you've read/watched/played the assigned project) = 2.5% of grade
- 3.) Moves beyond summary (you provide examples of application and guided critique that suggests areas for improvement instead of simply repeating what the project is) = 5% of grade

Students will be graded during each peer-review feedback session. Feedback is delivered during class, and the instructor will listen to students' feedback and check off the prior criteria during class. Instructors will strive to facilitate conversation within the purview of these three criteria by asking questions related to each criteria.

If these criteria are all met, then the student is assigned full credit for that session. If part of the criteria are met, then the student is assigned credit based on the criteria that have been met. If no criteria are met, then the student is assigned no credit.

Attendance and Participation Evaluation

Attendance and participation in the weekly lectures will add up to a total of 10% of the grade. As with participation in the peer review sessions, students will be expected to contribute relevant, insightful, and applied discussion about the daily topic and will be evaluated on three similar levels:

- 1.) Relevance to the day's topic/the discussion at hand = 2.5% of grade
- 2.) Demonstrates outside preparation (you show you've read/watched/played assigned media) = 2.5% of grade
- 3.) Moves beyond summary (you provide examples of application instead of repeating what we've all already read) = 5% of grade

Students will be graded during each class session. Participation is delivered during class, and the instructor will listen to students' participation and check off the prior criteria during class. Instructors will strive to facilitate conversation within the purview of these three criteria by asking questions related to each criteria.

If these criteria are all met, then the student is assigned full credit for that session. If part of the criteria are met, then the student is assigned credit based on the criteria that have been met. If no criteria are met, then the student is assigned no credit.

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/ugrad/current/regulations/info/grades.aspx>

COURSE POLICIES:

ATTENDANCE

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

MAKE-UP POLICY

Unless discussed at least 72 hours in advance of the deadline, late assignments will not be accepted. Excluded from this policy are any assignments missed due to medical emergencies.

Requirements for class attendance and make-up exams, assignments, and other work in this course are consistent with university policies that can be found at:

<https://catalog.ufl.edu/ugrad/current/regulations/info/attendance.aspx>

COURSE TECHNOLOGY

The students will be required to have access to and use a personal computer with the access to the Internet. Word editing software will be required for written assignments.

The University of Florida and Digital Worlds requires that students have access to and on-going use of a laptop/mobile computer for DIG courses in order to be able to function in the current learning environment. Students are required to access electronic forms of information, submit assignments and communicate with other students and faculty electronically. DW requires each student's mobile computer to meet certain minimum specs for heavy graphics use, the requirements documented below must be met.

DW Computer Requirements

<http://digitalworlds.ufl.edu/programs/ba-in-digital-arts-sciences/new-student-buyers-guide/>

COURSE COMMUNICATIONS

Students can communicate directly with the Instructor regarding the course material through the course management system (CANVAS). Electronic communication must demonstrate a formal tone and style and, unless absolutely urgent, will be responded to M-F from 9 AM to 5 PM.

COURSE TECHNOLOGY SUPPORT:

The [Technology Support Center](http://digitalworlds.ufl.edu/support) provides computer support for Digital Worlds students who access Visimeet, lecture recordings, student equipment, facilities and other technology-based resources. <http://digitalworlds.ufl.edu/support>

For computer assistance related to Visimeet, 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 Computer 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 that 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](#) 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 requesting accommodations should first register with the [Disability Resource Center](#) (352-392-8565) by providing appropriate documentation. Once registered, students will receive an accommodation letter which must be presented to the instructor when requesting accommodation. Students with disabilities should follow this procedure 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>

ONLINE COURSE EVALUATIONS

Students are expected to provide feedback on the quality of instruction in this course by completing [online evaluations](#). Evaluations are typically open during the last two or three weeks of the semester, but students will be given specific times when they are open. Summary results of these assessments are available to students at [evaluation results](#).

CAMPUS RESOURCES

HEALTH AND WELLNESS

U Matter, We Care

If you or a friend is in distress, please contact umatter@ufl.edu or 352 392- 1575 so that a team member can reach out to the student.

Counseling and Wellness Center

<http://www.counseling.ufl.edu/cwc/Default.aspx>, 392-1575; and the University Police Department: 392-1111 or 9-1-1 for emergencies.

Sexual Assault Recovery Services (SARS)

Student Health Care Center, 392-1161.

University Police Department, 392-1111 (or 9-1-1 for emergencies). <http://www.police.ufl.edu/>

ACADEMIC RESOURCES

E-learning technical support, 352-392-4357 (select option 2) or e-mail to Learning-support@ufl.edu. <https://lss.at.ufl.edu/help.shtml>.

Career Resource Center, Reitz Union, 392-1601. Career assistance and counseling.

<http://www.crc.ufl.edu/>

Library Support, <http://cms.uflib.ufl.edu/ask>. Various ways to receive assistance with respect to using the libraries or finding resources.

Teaching Center, Broward Hall, 392-2010 or 392-6420. General study skills and tutoring.

<http://teachingcenter.ufl.edu/>

Writing Studio, 302 Tigert Hall, 846-1138. Help brainstorming, formatting, and writing papers.

<http://writing.ufl.edu/writing-studio/>

Student Complaints Campus:

https://www.dso.ufl.edu/documents/UF_Complaints_policy.pdf

On-Line Students Complaints:

<http://www.distance.ufl.edu/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.