Course Description:
Virtual reality, augmented reality, mixed reality... these systems can provide participants with amazingly compelling experiences. You’ve heard all the media buzz, so what’s the reality behind the excitement? What are the science, technology, and art issues to building these virtual places? This course will look at the issues in designing computer generated worlds.

This course is an introduction to the hardware, software, interaction, psychology, algorithms, technology, and research that are involved in virtual reality. This course assumes a general technical background and at least a working knowledge of basic 3D computer graphics. This course welcomes students with a diverse set of backgrounds, including (but not restricted to): computer science, math, physics, digital art, engineering, architecture, and psychology. If you are unsure if the course is appropriate (or if you have the necessary background), please email me.

As part of this course, you will create your own virtual environments. This will require a substantial amount of work. However, at the end of the course you will have several significant projects that can highlight your abilities.

Course Objectives:
• Design a virtual environment and compelling virtual reality experience.
• Create compelling virtual experiences.
• Generate a design document for a virtual environment system for a set of application requirements
• Comprehend and analyze the fundamental issues of virtual reality.
• Comprehend the IEEE VR proceedings.

Prerequisites:
COP 3530 Data Structures
Texts:

Tentative Course Topics:
- Introduction to Virtual Reality (VR)
- Tracking
- Inputs and Outputs
- Presence
- Virtual Characters
- Augmented Reality
- Mixed Reality
- Distributed VR

Course Webpage: ufvr2016.wordpress.com

Grading:
- 10% Paper Presentation
- 10% Quizzes on Readings
- 20% Project 1 – Tracking
- 20% Project 2 – Displays
- 20% Project 3 – Presence
- 20% Project 4 – Interfaces (Group)

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A C- will not be a qualifying grade for critical tracking courses. In order to graduate, students must have an overall GPA and an upper-division GPA of 2.0 or better (C or better). Note: a C-
average is equivalent to a GPA of 1.67, and therefore, it does not satisfy this graduation requirement. For more information on grades and grading policies, please visit: [http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html](http://www.registrar.ufl.edu/catalog/policies/regulationgrades.html)

**Expectations for graduate and undergraduate students:**
The graduate and undergraduate course offerings of Virtual Reality differs in the scope of the class projects.

**Workload:**
*Weekly:* class lectures, readings outside of class, in-class quizzes on readings
*Semester:* Each month, a major project will be completed. Estimated time for projects is 10 hours for undergrads, 15 hours for grad students.

The course requires an average to above average time commitment.

**Programming Languages**
You can use any development environment and programming language.

**Programming Requirements**
Programming at a Data Structures level is required

**Honor Code & Collaboration:**
High level questions, syntax topics, and algorithms can be discussed. Not allowed in this course include the following: 1) plagiarism (misrepresenting others ideas as your own), 2) *copying code*, and 3) work deemed offensive to others.

**Honesty Policy** - As a student at the University of Florida, you have committed yourself to uphold the Honor Code, which includes the following pledge: “We, the members of the University of Florida community, pledge to hold ourselves and our peers to the highest standards of honesty and integrity.” You are expected to exhibit behavior consistent with this commitment to the UF academic community, and on all work submitted for credit 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.” It is assumed that you will complete all work independently in each course unless the instructor provides explicit permission for you to collaborate on course tasks (e.g. assignments, papers, quizzes, exams).

Furthermore, as part of your obligation to uphold the Honor Code, you should report any condition that facilitates academic misconduct to appropriate personnel. It is your individual responsibility to know and comply with all university policies and procedures regarding academic integrity and the Student Honor Code. Violations of the Honor Code at the University of Florida will not be tolerated. Violations will be reported to the Dean of Students
Office for consideration of disciplinary action. For more information regarding the Student Honor Code, please see: http://www.dso.ufl.edu/SCCR/honorcodes/honorcode.php.

**Accommodation for Students with Disabilities** – Students requesting classroom accommodation must first register with the Dean of Students Office. That office will provide the student with documentation that he/she must provide to the course instructor when requesting accommodation.

**UF Counseling Services** – Resources are available on-campus for students having personal problems or lacking clear career and academic goals. The resources include:
- University Counseling Center, 301 Peabody Hall, 392-1575, Personal and Career Counseling.
- SHCC mental Health, Student Health Care Center, 392-1171, Personal and Counseling.
- Center for Sexual Assault/Abuse Recovery and Education (CARE), Student Health Care Center, 392-1161, sexual assault counseling.
- Career Resource Center, Reitz Union, 392-1601, career development assistance and counseling.

**Software Use** – All faculty, staff and student 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.

**Attendance:** Attendance is not required and will not be graded. If you are sick or will be absent for a significant period, please contact me, and we will work out a way for you to catch up.

**Incompletes:** Incompletes will not be granted except under previous agreement of the professor. To be considered for an incomplete, the student *must* 1) let the professor know at in advance that they are seeking an incomplete, and 2) provide documentation to support the request.

**Undergraduate ABET:**

**Contribution of course to meeting the professional component (ABET only – undergraduate courses):**
This course contributes to meeting the 48 hour or 37.5% of total credit hours minimum required by ABET in the Engineering Topics Curricular Area of the professional component.

**Relationship of course to program outcomes: Skills student will develop in this course (ABET only undergraduate courses):**
This course is related to (but does not assess) the following ABET outcomes:

(c) an ability to design a system, component, or process to meet desired needs within realistic constraints such as economic, environmental, social, political, ethical, health and safety, manufacturability, and sustainability

(g) an ability to communicate effectively

**Miscellany** – To reduce distraction to your fellow classmates, please:

1. Turn off all cell phone ringers
2. No open laptops

**Late Assignments** – If you miss the assignment deadline, there will be a second deadline 3 days later and will incur a 20 point penalty.

If there is a reason as to why your assignment will be late (e.g. sickness, job interviews, etc.), you must contact me (email is fine) before the assignment due date. Otherwise, no extensions will be given.

**Collaboration** –

*Allowed:* Discussing general concepts and code fragments with other students. Using code or models found online – AS LONG AS IT IS REFERENCED.

*Not allowed:* copying code written for an assignment.

**Email** – Course information will be disseminated through email. Please check your email at least once a day to keep up to date on any last minute course information.

Some of the specialized equipment in the department is available to you for your projects. Be aware that some of these devices have specific operating systems and programming environments. If you feel like you need access to something (hardware or software) for your final project, please let me know ahead of time, and I'll try to accommodate.