



## PROPOSED CHANGE #1: NEW COURSE CSCI-5110

<b>Course Field Terminology and Definitions</b>	
<b>Effective Term</b>	Fall 2013
<b>Subject</b>	CSCI
<b>Course Number</b>	5110
<b>Department</b>	Computer Science
<b>College</b>	College of Science and Engineering
<b>Career</b>	UGRD
<b>Effective Status</b>	Active
<b>Course Title Short</b>	VR and 3D Interaction
<b>Course Title Long</b>	Virtual Reality and 3D Interaction
<b>Max - Min Credits for Course</b>	3.0
<b>Catalog Description</b>	Introduction to software, technology and applications in virtual and augmented reality and 3D user interaction. Overview of current research. Hands-on projects.
<b>Print in Catalog</b>	Yes
<b>CCE Catalog Description</b>	
<b>Grading Basis</b>	Student Option
<b>Topics Course</b>	No
<b>Honors Course</b>	No
<b>Delivery Mode</b>	Classroom
<b>Instructor Contact Hours</b>	3.0 hours per week
<b>Years Most Frequently Offered</b>	Even years only
<b>Terms Most Frequently Offered</b>	Spring
<b>Component 1</b>	Lecture
<b>Component 2</b>	
<b>Component 3</b>	
<b>Auto-enroll</b>	No
<b>Graded Component</b>	Lecture
<b>Academic Progress Units</b>	3.0 credits; not allowed to bypass limits
<b>Financial Aid Progress Units</b>	3.0 credits; not allowed to bypass limits
<b>Repetition of Course</b>	Repetition not allowed
<b>Course Prerequisites</b>	4107 or 5107 or 5115 or equiv or #
<b>Course Equivalency</b>	No course equivalencies
<b>Consent Requirement</b>	No required consent
<b>Enforced Prerequisites</b>	No required consent
<b>Editor Comments</b>	
<b>Proposal Changes</b>	
<b>History Information</b>	New course proposed by D Keefe and V Interrante
<b>Faculty Sponsor Name</b>	
<b>Faculty Sponsor E-mail Address</b>	

<b>Student Learning Outcomes</b>	
<b>Student Learning Outcomes</b>	1. Can identify, define, and solve problems
<b>How This Outcome Will be Addressed</b>	Students will be required to independently plan and carry out a term project, with guidance from the instructor at critical intervals.
<b>Student Learning Outcomes</b>	2. Can locate and critically evaluate information
<b>How This Outcome Will be Assessed</b>	This course will include homework exercises that require students to do independent research in given topic areas.
<b>Student Learning Outcomes</b>	3. Have mastered a body of knowledge and a mod inquiry
<b>How This Outcome Will be Assessed</b>	The final project, which will be graded by the professor, will require substantial breadth and depth of understanding in the subject area. Individual homework exercises will each cover different topic areas in the field and will graded by the TA. Explicit grading criteria will be provided.
<b>Student Learning Outcomes</b>	5. Can communicate effectively
<b>How This Outcome Will be Assessed</b>	The final project will require an oral presentation as well as a written project report. Students will be given detailed guidance on how to successfully prepare for each of these.
<b>Student Learning Outcomes</b>	6. Understand the role of creativity, innovation, discovery, and expression across the disciplines
<b>How This Outcome Will be Assessed</b>	Lectures in this course will introduce students to current research in the fields of virtual reality and 3D user interaction. These are inherently interdisciplinary fields; applications of VR are found in diverse fields from architecture and design to engineering and medicine.
<b>Writing Intensive</b>	
<b>Propose this course as writing intensive</b>	No
<b>Course Syllabus</b>	
<b>Course Syllabus</b>	<see attached>
<b>Strategic Objectives &amp; Consultation</b>	
<b>Name of Department Chair Approver</b>	Vipin Kumar
<b>Strategic Objectives - Curricular Objectives and Core Curriculum</b>	This course improves both our graduate and undergraduate curricula by expanding the range of course offerings to encompass the fields of virtual reality and 3D user interaction. Virtual Reality is an area of increasing importance and interest, and we have several faculty members with a research focus in this field who are well-qualified to teach in this area.
<b>Consultation with Other Units</b>	

## Syllabus

This course will provide students with a broad overview of essential concepts in the fields of virtual reality, augmented reality, and 3D user interaction, reinforced by hands-on experience in application development. Through a combination of lectures, discussion, homework exercises, exams and a term project, students will gain a strong foundational understanding of critical concepts in the field, as well as practical knowledge that they will be able to strengthen and deepen through application experience. Topics to be covered include: an overview of VR technology development, including display technologies, tracking technologies, haptic technologies, and spatialized sound; an introduction to software systems for creating, managing, rendering, and interacting with virtual worlds; methods for interacting with virtual worlds, from locomotion techniques to gesture interfaces; avatars and self-representation in immersive virtual environments; and applications of VR in a wide range of areas, including: medicine, data and information visualization, social psychology, 3D geometric modeling, architecture, art and design, rehabilitation and therapy, and education and training.

Readings will be drawn from a combination of new and classical works in the field.

### Grading

Homework exercises .....	25%
Exams and quizzes .....	15%
Reading reports and class participation.....	10%
Final project .....	50%

### Week-by-week schedule

Week 1: Introduction to virtual reality; lab tours.

Week 2: Overview of Display Technologies in Virtual and Augmented Reality

Week 3: Tracking Technologies: hardware and software

Week 4: Software Systems for creating, managing, rendering, and interacting with virtual worlds

Week 5: Gestural interfaces

Week 6: Locomotion in Virtual Environments

Week 7: Haptics and Spatialized Sound

Week 8: Avatars and Self-Representation in Immersive Virtual Environments

Weeks 9-10: Applications of Virtual Reality in Medicine, Therapy and Rehabilitation

Weeks 11-12: Applications of Virtual Reality in Social Psychology, Education and

Training

Weeks 13-14: Applications of Virtual Reality in Architecture, Art, Design and Visualization