Course Information
Course Number/Section          CS 6334.001
Course Title                  Virtual Reality
Term                          Fall 2021
Class Level                   Graduate
Activity Type                 Lecture
Days & Times                  Monday & Wednesday 8:30 AM – 9:45 AM
Location                      JSOM 12.214
Course Modality               Hybrid/Blended
Credit Hours                  3

Professor Information
Instructor                    Prof. Yu Xiang, Ph.D.
Office Phone                  (972) 883-3891
Email Address                 yu.xiang@utdallas.edu
Office Location               ECSS 4.702
Office Hours                  Monday & Wednesday 2:30PM – 3:30 PM
Schedule                      Email Appointment

Teaching Assistant Information
Teaching Assistant            Yatharth Singhal
Email Address                 yatharth.singhal@utdallas.edu
Office Location               Microsoft Teams
Office Hours                  Tuesday 2:00PM – 3:00PM

Course Pre-requisites, Co-requisites, and/or Other Restrictions
MATH 2418 Linear Algebra

Course Description
Theory and practice of virtual reality (VR). Provides in-depth overview of VR, including geometry and physics of virtual worlds, visual rendering, visual perception, pose tracking, interaction hardware, audio and haptics, locomotion, selection and manipulation, and robotic interfaces.

Student Learning Objectives/Outcomes
• Ability to develop 3D virtual environments
• Ability to render 3D virtual worlds into images
• Ability to understand human visual system and visual perception
• Ability to understand audio and haptics
• Ability to develop head tracking, eye tracking and pose tracking techniques
• Ability to develop locomotion, 3D selection and manipulation techniques
• Ability to develop robotic interfaces
Required Textbooks and Materials


Textbooks and some other bookstore materials can be ordered online or purchased at the UT Dallas Bookstore.

Technical Requirements
In addition to a confident level of computer and Internet literacy, certain minimum technical requirements must be met to enable a successful learning experience. Please review the important technical requirements on the Getting Started with eLearning webpage.

Course Access and Navigation
This course can be accessed using your UT Dallas NetID account on the eLearning website.

Please see the course access and navigation section of the Getting Started with eLearning webpage for more information.

To become familiar with the eLearning tool, please see the Student eLearning Tutorials webpage.

UT Dallas provides eLearning technical support 24 hours a day, 7 days a week. The eLearning Support Center includes a toll-free telephone number for immediate assistance (1-866-588-3192), email request service, and an online chat service.

Communication
This course utilizes online tools for interaction and communication. Some external communication tools such as regular email and a web conferencing tool may also be used during the semester. For more details, please visit the Student eLearning Tutorials webpage for video demonstrations on eLearning tools.

Distance Learning Student Resources
Online students have access to resources including the McDermott Library, Academic Advising, The Office of Student AccessAbility, and many others. Please see the eLearning Current Students webpage for more information.

Server Unavailability or Other Technical Difficulties
The University is committed to providing a reliable learning management system to all users. However, in the event of any unexpected server outage or any unusual technical difficulty which prevents students from completing a time sensitive assessment activity, the instructor will provide an appropriate accommodation based on the situation. Students should immediately report any problems to the instructor and also contact the online eLearning Help Desk. The instructor and the eLearning Help Desk will work with the student to resolve any issues at the earliest possible time.
Grading Policy

Credit Distribution

- Homework (40%)
  - (10%) Homework #1
  - (10%) Homework #2
  - (10%) Homework #3
  - (10%) Homework #4
- Team Project (55%)
  - (5%) Project proposal
  - (10%) Project mid-term report
  - (15%) Project presentation
  - (25%) Project final report
- In-Class Activity (5%)

Grading Scale

- A   93 or above
- A-  90-93
- B+  87-90
- B   83-87
- B-  80-83
- C+  77-80
- C   70-77
- F   70 or below

Course Policies

- eLearning is the official information portal for this course. Course announcements, homework, lecture slides, assignments, and grades will be communicated via eLearning
- Final course grade will be posted in Galaxy by the Records Office
- Attendance:
  - Required for mandatory class sessions. There will be 1-point deduction for each mandatory class absence in Team Project participation score (5%). There will be zero point for class participation if the number of absences is three or more.
- If you decide to stop attending class, be sure to drop or withdraw from the course. Otherwise, you risk receiving an ‘F’ or ‘NF’ for the course.
- No additional individual assignments can be assigned for extra credit. Only assignments that are available to the entire class may count toward the course grade.

UT Dallas Syllabus Policies and Procedures

Please visit http://go.utdallas.edu/syllabus-policies for other policies
### Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Monday</th>
<th>Wednesday</th>
<th>Deadlines</th>
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<tbody>
<tr>
<td>1</td>
<td>8/23</td>
<td>8/25</td>
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<tr>
<td></td>
<td>Introduction to Virtual Reality</td>
<td>Geometry of Virtual Worlds</td>
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<tr>
<td>2</td>
<td>8/30</td>
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<td>Camera Models</td>
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<td>3</td>
<td>9/6</td>
<td>9/8</td>
<td>Project description release on 9/8</td>
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<td>Labor Day</td>
<td>Lenses</td>
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<td>9/13</td>
<td>9/15</td>
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<td>Pose Tracking I</td>
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*The descriptions and timelines contained in this syllabus are subject to change at the discretion of the Professor.*