**Course:** CSCI5460  
**Course ID:** 002645  
**Eff Date:** 2024-07-01  
**Crse Status:** Active  
**Apprv. Status:** Approved  
*Virtual Reality 虛擬現實*

This course introduces the fundamental and advanced research topics in virtual reality (VR), including VR tools & metaphors, multi-sensory interactions, geometric and behavior modelling, touch-enabled interfaces, real-time immersive navigation, human factor in VR, augmented reality systems, internet-based VR applications. The web-based virtual reality interfaces plus 3D graphics engines build up the developing tools for testing the innovative ideas/solutions for the advanced VR research and real-time applications.

本科旨在介紹虛擬現實（VR）研究中的基礎及進階課題，包括VR工具及模擬，多感知交互，幾何與行爲建模，可觸摸式介面，實時空間漫遊，沉浸感的人工因素，增強現實系統，基於互聯網的VR應用等。基於網上的虛擬現實交互介面連同3D圖形引擎，為進階的VR研究及實時應用中的創新提供了有力的開發工具。

**Grade Descriptor:**

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<th>Grade</th>
<th>Description</th>
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<tbody>
<tr>
<td>A</td>
<td>EXCELLENT – exceptionally good performance and far exceeding expectation in all or most of the course learning outcomes; demonstration of superior understanding of the subject matter, the ability to analyze problems and apply extensive knowledge, and skillful use of concepts and materials to derive proper solutions.</td>
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<tr>
<td>B</td>
<td>GOOD – good performance in all course learning outcomes and exceeding expectation in some of them; demonstration of good understanding of the subject matter and the ability to use proper concepts and materials to solve most of the problems encountered.</td>
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有關等級說明的資料，請參閱英文版本。
FAIR – adequate performance and meeting expectation in all course learning outcomes; demonstration of adequate understanding of the subject matter and the ability to solve simple problems.

D

MARGINAL – performance barely meets the expectation in the essential course learning outcomes; demonstration of partial understanding of the subject matter and the ability to solve simple problems.

F

FAILURE – performance does not meet the expectation in the essential course learning outcomes; demonstration of serious deficiencies and the need to retake the course.

Equivalent Offering:
Units: 3 (Min) / 3 (Max) / 3 (Acad Progress)
Grading Basis: Graded
Repeat for Credit: N
Multiple Enroll: N
Course Attributes: MSc Computer Science
Topics: MPhil-PhD Computer Sci & Erg
COURSE OUTCOMES

Learning Outcomes:
At the end of the course of studies, students will have acquired the ability to
1. Learn fundamental methodology in VR projects/systems.
2. Build VR environments and web-based virtual effects.
3. Realize the virtual immersion and interactions in VR.
4. Apply VR techniques to the application via 3D graphics tools.

Course Syllabus:
This course introduces the fundamental and advanced research topics in virtual reality (VR), including VR tools & metaphors, multi-sensory interactions, geometric and behavior modelling, touch-enabled interfaces, real-time immersive navigation, human factor in VR, augmented reality systems, internet-based VR applications. The web-based virtual reality interfaces plus 3D graphics engines build up the developing tools for testing the innovative ideas/solutions for the advanced VR research and real-time applications.

Assessment Type:

<table>
<thead>
<tr>
<th>Assessment Type</th>
<th>Percentage</th>
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<tr>
<td>Essay test or exam</td>
<td>40%</td>
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<tr>
<td>Others</td>
<td>50%</td>
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<tr>
<td>Presentation</td>
<td>10%</td>
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Feedback for Evaluation:
1. Quiz and examinations
2. Course evaluation and questionnaire
3. Reflection of teachers
4. Question-and-answer sessions during class
5. Student consultation during office hours or online

Required Readings:
To be provided by course teacher.

Recommended Readings:
5. Selected research papers in VR journals and conferences (e.g MIT PRESENCE, ACM VRST).
   ARToolKit homepage: http://www.hitl.washington.edu/artoolkit/

OFFERINGS
1. CSCI5460  Acad Organization=CSEG; Acad Career=RPG

COMPONENTS
LEC : Size=30; Final Exam=Y; Contact=3
TUT : Size=30; Final Exam=N; Contact=1

ENROLMENT REQUIREMENTS
1. CSCI5460  Enrollment Requirement Group:
   For students in MSc Computer Science; or
   For students in MPhil-PhD Computer Science & Engineering; or
   For students in UG Computer Science; or
   For students in UG Computer Engineering;
   Prerequisite: CSCI3260 or its equivalent;
   Exclusion: CMSC5716

Additional Information
VTL-Onsite face-to-face hrs  0
VTL-Online synch. hrs      0
VTL-Online asynch. hrs     0

<END OF REPORT>