### Course Description:
This course is an introduction to game engines and their uses. Students will learn the basic techniques for creating interactive applications and how this techniques can be used for Virtual Reality (VR) and Augmented Reality (AR) projects. (2-hour lecture, 4-hour lab)

### Course Competency

#### Competency 1: The student will demonstrate ability to prepare Assets for Implementation by:

1. Defining how polygon counts can influence performance in real time visualizations.
2. Listing the steps involved in the creation of 3d objects.
3. Recognizing valid file formats to exchange 3D information between applications.
4. Defining optimal polycount limits for different platforms.

#### Learning Outcomes
- Numbers / Data
- Critical thinking
- Computer / Technology Usage

#### Competency 2: The student will demonstrate ability to build and deploy game engine projects by:

1. Defining best practices while compiling for different platforms.
2. Identifying steps on how to debug an application.
3. Recognizing data structures and its uses on a program.
4. Defining how to access different app distribution platform.

#### Learning Outcomes
- Numbers / Data
- Critical thinking
- Computer / Technology Usage
- Aesthetic / Creative Activities

#### Competency 3: The student will demonstrate ability to incorporate 3d models into interactive experiences by:

- Numbers / Data
- Critical thinking
- Computer / Technology Usage
- Aesthetic / Creative Activities
1. Identifying proper geometry for game engine use.
2. Defining game compatible image formats and their differences.
3. Recognizing when to use high resolution textures and when to tile lower resolution images.
4. Identifying how to use lighting in a 3d scene to create mood and exaggerate depth.

**Competency 4:** The student demonstrate how to add GUI elements such as menus and player controls by:

- Numbers / Data
- Critical thinking
- Computer / Technology Usage
- Aesthetic / Creative Activities

| 1. Distinguishing between GUIS and HUDS and their respective applications. |
| 2. Recognizing GUI elements created inside the engine and interface elements created using external applications. |
| 3. Defining relationships between in game data and graphic elements inside the GUI. |
| 4. Defining variables and using them to control game outcomes. |