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Arts, Digital Media, and Communications Division
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COURSE OUTLINE
Game Design 1

Course Description
ID 118. Game Design 1. 3 credit hours. Prerequisites: ID 110 or ID 101 with a C or better. This course will enable the student to design, create, and deploy video games and simulations, using the Unity 3D game engine, basic/intermediate video games and interactive experiences. The student will use the tools needed to create interactive 3D experiences, through 3D manipulation and scripting.

Required Materials
For complete material(s) information, refer to https://bookstore.butlercc.edu

Portable storage device (Portable hard drive recommended)

Personal earbuds/headphones for lab use

Butler-Assessed Outcomes
The intention is for the student to be able to do the following:
1. Design and create basic/intermediate game levels using the Unity 3D game engine.
2. Create and use simple scripts to create interactive systems.

Learning PACT Skills that will be developed and documented in this course
Through involvement in this course, the student will develop ability in the following PACT skill area(s):

Technology Skills
- Discipline-specific technology - Through the use of the Unity 3D game engine, the student will gain basic/intermediate level design and scripting creation skills.

Major Summative Assessment Task(s)
These Butler-assessed Outcome(s) and Learning PACT skill(s) will be demonstrated by the following:
1. Creating and scripting an indoor level/simulation.
2. Creating and scripting an outdoor level/simulation.

Skills or Competencies
These actions are essential to achieve the course outcomes:
1. Create basic/intermediate Indoor game levels/simulations.
2. Script basic/intermediate indoor game levels/simulations.
3. Create basic/intermediate outdoor game levels/simulations.
4. Script basic/intermediate outdoor game levels/simulations.
5. Deploy basic/intermediate indoor or outdoor game levels/simulations

Learning Units

I. Introduction to Unity3D
   A. Interface
   B. Keyboard shortcuts
   C. Game design vocabulary

II. Introduction to scripting
   A. Variables
   B. Methods
   C. Creating a script

III. Standard assets
   A. Character controllers
   B. Prototyping assets

IV. Variables in detail
   A. Creating a variable
   B. Permission Levels
   C. Camel case

V. Custom 3D shapes creation
   A. 3D primitives
   B. Modular level design

VI. Methods in detail
   A. Creating a method
   B. Calling a method

VII. Materials and lighting
   A. Color and transparency
   B. Shadows and light range
   C. Quality settings

VIII. Decision-making
   A. If statements
   B. Else-if statements
   C. AND / OR operators

IX. Terrain development
   A. Sculpting Heightmaps
   B. Importing Heightmaps
   C. Adding meshes
   D. Adding textures

X. Loops
   A. Foreach loop

B. For loop
C. While loop

XI. Audio and sound
A. Playing sound
B. Reverb zones
C. BFXR

XII. Lists
A. Arrays
B. Lists
C. Dictionaries
D. Collection initializers

XIII. External assets
A. Asset store
B. Importing FBX
C. Unity collaborate

XIV. Dot syntax
A. Object communication
B. Finding objects with script
C. Movement physics

XV. User Interface
A. Connecting levels
B. Canvas UI
C. Build the game
D. Publish the game

Learning Activities
Learning activities will be assigned to assist the student in achieving the intended learning outcomes through lectures, class discussions, team research, individual research, readings, viewing tutorials and study material, quizzes, tests, and other activities at the discretion of the instructor. These activities may be either face-to-face or online.

Grade Determination
The student will be graded on the learning activities and assessment tasks. Grade determinations may include the following: class participation, projects, team and individual participation, research assignments, quizzes, tests, and other methods of evaluation at the discretion of the instructor.