



Game Design Syllabus CHS Business Department

Contact Information: Parents may contact me by phone, email, or visiting the school.

Teacher: Mr. Brian Lewis

Email Address: brian.lewis@ccsd.us

Phone Number: (740) 702-2287 ext. 16238

Online: <http://www.ccsd.us/1/Home>

CCSD Vision Statement: The Chillicothe City School District will provide tomorrow's leaders with a high quality education by developing high expectations and positive personal relationships among students, staff, and community members.

CCSD Mission Statement: The Chillicothe City School District empowers students to learn, to lead, and to serve.

Course Description and Prerequisite(s) from Course Handbook:

Game Design - 419

State Course#: 145090

Prerequisite: Successful completion of Programming, Visual Programming, 3D Techniques, or instructor approval

Elective

Grade: 10-12

Graded: Conventionally

Credit: 1

College Credits: None

This course will prepare students to design and program games using commercial and open source programs and applications. Students will learn industry standard programming language constructs to write programs that integrate classes, class methods, and class instances. Students will learn input method handling, animation, collision detection, game physics and basic artificial intelligence.

Required: 120 – 150 hours

Course Fee: Students will have the opportunity to be a part of a Career Tech Student Organization (Business Professionals of America) as part of this course. Students who choose to be a part of the

program's respective Career Tech Student Organization will have opportunities to be student officers, attend leadership activities, and participate in various leadership and skill competitions. Students who wish to be a part of the program's respective Career Tech Student Organization will be required to pay the dues associated with the organization prior to participation in activities outside the normal classroom. \$40.00 for BPA Membership.

Learning Targets: Defined below for clarity are the Unit Titles, Big Ideas of every Unit taught during this course, and the Essential Questions to be answered to better understand the Big Ideas. A student's ability to grasp and answer the Essential Questions will define whether or not he or she adequately learns and can apply the skills found in Big Ideas. This will ultimately define whether or not a student scores well on assessments administered for this course.

- **1st Quarter**

- **Unit I Title: Design Fundamentals**

- **Big Idea #1:** I can identify the effects of games on society.
 - *Essential Question #1: Identify and describe three places where games are used in non-entertainment ways.*
 - *Essential Question #2: How has digital media affected how we view content ownership?*
 - *Essential Question #3: What are the social responsibilities of a game developer?*
- **Big Idea #2:** I can write an efficient and effective design document.
 - *Essential Question #1: Define living document and explain how it relates to design documents.*
 - *Essential Question #2: Identify what sections should be included in a design document and describe what each section should detail.*
 - *Essential Question #3: Describe the conditions that might lead to a section being omitted.*
- **Big Idea #3:** I can create a proposal that accounts for product specifications and the software development life cycle (SDLC).
 - *Essential Question #1: Identify and describe the 5 typical phases of developing a game.*
 - *Essential Question #2: Define feature creep and explain why it is dangerous.*

- *Essential Question #3: Explain what a prototype is and why it is important to create one early in the process.*
 - **Unit II Title: Unity and the Box Puzzle**
 - **Big Idea #1:** I can identify and navigate through the sections of the Unity UI.
 - *Essential Question #1: Explain the purpose of project window and the content that can be found within it.*
 - *Essential Question #2: Explain what the scene/game views are and identify how they relate to the hierarchy window.*
 - *Essential Question #3: Explain what the inspector window contains and how it relates to the current scene.*
 - **Big Idea #2:** I can create a new scene using prefabs and built in game objects.
 - *Essential Question #1: Explain what a game object is and how they are added to a scene.*
 - *Essential Question #2: Describe the similarities and differences between prefabs and game objects.*
 - *Essential Question #3: Explain the parent/child relationship in relation to game objects.*
 - **Big Idea #3:** I can assign scripts, components and variables to turn my scene into a playable game.
 - *Essential Question #1: Explain what a script is.*
 - *Essential Question #2: Describe how you assign scripts or components to a game object.*
 - *Essential Question #3: Define variable and class and describe how you assign a value to a public variable or class.*
- **2nd Quarter**
 - **Unit III Title: Media Assets**
 - **Big Idea #1:** I can create 2d images for use within various forms of interactive media.
 - *Essential Question #1: What is the difference between raster art and vector art?*
 - *Essential Question #2: Explain what base grey is and why it's important.*
 - *Essential Question #3: Explain how to use 2d art to create different materials in Unity.*
 - **Big Idea #2:** I can create and animate 3D models.

- *Essential Question #1: Explain what box modeling is and how it related to video games.*
 - *Essential Question #2: Describe the process for texture wrapping.*
 - *Essential Question #3: Describe the difference between rigged animation and target morph animation.*
 - **Big Idea #3:** I can design and record audio clips for inclusion in interactive media.
 - *Essential Question #1: What types of audio clips might be included in a game?*
 - *Essential Question #2: Identify factors that might make getting quality audio clips difficult.*
 - *Essential Question #3: Describe when it is ok to use media assets that are not your own and identify where you may obtain them.*
- **Unit IV Title: Movement and Triggers**
 - **Big Idea #1:** I can make objects move through a scene.
 - *Essential Question #1: How do you make an object face a target?*
 - *Essential Question #2: Explain how you make an object move from one location to another.*
 - *Essential Question #3: Explain what a navmesh is and how it helps to control the path an object takes when moving.*
 - **Big Idea #2:** I can use the physics engine to detect collisions and initialize triggers.
 - *Essential Question #1: Explain what the rigidbody component is and how it is used.*
 - *Essential Question #2: What is a collider and how does it relate to triggers?*
 - *Essential Question #3: Define raycast and how it relates to the UI and hitscan.*
 - **Big Idea #3:** I can use triggers to allow players to interact with the world.
 - *Essential Question #1: Define trigger and explain how they relate to user interactions.*
 - *Essential Question #2: Compare and contrast the functions OnTriggerEnter and OnTriggerStay.*
 - *Essential Question #3: Explain how the UI, Conditions, and Triggers are related.*
- **MID-TERM EXAM**

- **3rd Quarter**

- **Unit V Title: Narrative**

- **Big Idea #1:** I can create utilize standard tools for developing a plan of action.
 - *Essential Question #1: Explain what a storyboard is and how they help with game development.*
 - *Essential Question #2: Explain what a flowchart is and how it is both similar and different from storyboards.*
 - *Essential Question #3: Describe the level of detail needed in both storyboards and flowcharts.*
 - **Big Idea #2:** I can select an appropriate narrative style.
 - *Essential Question #1: What is the difference between open world and level based games.*
 - *Essential Question #2: Identify three basic rules to follow when creating an open world environment.*
 - *Essential Question #3: Identify three basic rules to follow when creating a level.*
 - **Big Idea #3:** I can populate scenes appropriately.
 - *Essential Question #1: Describe the process of populating predefined content into a scene.*
 - *Essential Question #2: Explain how you could populate random content into a scene.*
 - *Essential Question #3: Identify the advantages and disadvantages of pre-populated scenes verses randomly populated scenes.*

- **Unit VI Title: Serialization**

- **Big Idea #1:** I can perform a data save.
 - *Essential Question #1: Explain what XML is.*
 - *Essential Question #2: Define node and nesting, then explain why nesting is important.*
 - *Essential Question #3: Identify what type of data is important to save when saving a game.*
 - **Big Idea #2:** I can perform a state save.
 - *Essential Question #1: Define serialization.*
 - *Essential Question #2: Explain how to serialize game objects for saving.*
 - *Essential Question #3: Identify what types of objects should be saved and explain why some types should not be included in a save.*

- **Big Idea #3:** I can load saved data to allow a player to continue their game.
 - *Essential Question #1: Describe the process of selecting a save file for loading.*
 - *Essential Question #2: How do you read information from a saved file?*
 - *Essential Question #3: Describe how you should handle corrupted saved files.*
- **4th Quarter**
 - **Unit VII Title: Advanced Concepts**
 - **Big Idea #1:** I can switch active objects for player control.
 - *Essential Question #1: Identify how a player might end up controlling something other than their character and explain how the process happens.*
 - *Essential Question #2: Describe how a player can control multiple characters.*
 - *Essential Question #3: How is switching between 3rd person controls and first person controls similar?*
 - **Big Idea #2:** I can create a basic method to procedurally generate content.
 - *Essential Question #1: Define 'procedural generation'.*
 - *Essential Question #2: Define 'seed' and explain how it's important to procedural generation.*
 - *Essential Question #3: Describe what considerations should be made for prefabs when using procedural generation.*
 - **Big Idea #3:** I can use physics to create a more realistic feel to the game.
 - *Essential Question #1: Explain what joints are and how they affect how objects interact with one another.*
 - *Essential Question #2: Define ragdoll as it relates to animation and explain how it's similar to joints.*
 - *Essential Question #3: Describe how you could create a wind effect in your game using physics.*
 - **Unit VIII Title: Post Production**
 - **Big Idea #1:** I can publish my game to multiple platforms.
 - *Essential Question #1: What does it mean to build your project?*

- *Essential Question #2: Identify what platforms Unity can publish to and describe the process of building to it.*
- *Essential Question #3: Describe some of the difficulties involved in a cross platform release.*
- **Big Idea #2:** I can run user experience benchmarking test to determine market viability.
 - *Essential Question #1: What is the benefit of benchmark testing?*
 - *Essential Question #2: What is the main purpose of beta testing a product?*
 - *Essential Question #3: Explain what an NDA is and why it is important to the beta testing.*
- **Big Idea #3:** I can troubleshoot bugs and create patches to solve issues that arise post production.
 - *Essential Question #1: How does SVN software help facilitate bug tracking and patch development?*
 - *Essential Question #2: What methods are usually used to deliver patches and what are their benefits?*
 - *Essential Question #3: Explain why one player might experience a bug but another player never come across it.*
- **END OF COURSE EXAM**

Course Materials:

- Google Chromebook
- Flash Drive, 16 GB or greater (Optional)
- Computer lab access
- Project files
- Unity3D
- Visual Studio
- 3DS Max
- Photoshop
- Audacity

Textbook:

- None

Electronic Resources:

- <https://unity3d.com/learn>
- <https://academy.autodesk.com/>
- <https://docs.microsoft.com/en-us/dotnet/csharp/>

Course Expectations:

- **Respect your fellow classmates and community.** We practice unconditional positive regard in the classroom.
- **Obey all faculty instructions.**
- **Follow along with lessons during lecture time.** Not paying attention robs yourself and those around you of time for questions and clarifications which goes back to the first item, be respectful.
- **Don't be afraid to be wrong,** especially during lecture/discussion time. The best lectures and usually most rewarding lectures happen when you're brave enough to give an answer that may not be right. This opens up opportunity to learn more and shows that you're taking the time to think about the course content.
- **Complete your classroom projects on time and in the classroom** (they all build upon each other). There will be plenty of opportunity to complete in class work in class. If you have the ability to work on projects at home, then more power to you, but that does not excuse you from using the classroom time to work.
- Begin work on bell ringers before the bell rings and have try to finish it before attendance is complete. You may use Google to help find the answer for bell ringers. This is a tech class and the answers tend to change over the course of a few short years so it's more important that you know how to find and apply the answers than memorizing the answers.
- **Do not give textbook definitions.** Tell us what the definition actually means in your own words. If you provide a textbook definition during discussions, you will be asked to explain your definition as they tend to carry little meaning to most people.
- Respect the lab. **Do not deface or damage any equipment or furniture within it.** Not only is it criminal, but as you are NOT the only person using the equipment, it is disrespectful to the other students. This also means that you should make sure to keep your workspace clean and orderly.

Grading:

Unit Exams	50%
Assessments (Including: Quizzes, Essays, Labs, and Projects)	30%
Class work/Homework	20%

- Each nine week's grade comprises 20% of a student's final grade.

- The Mid-Term Exam and End of Course Exam each comprise 10% of a student's final grade.

Grading Scale:

The grading scale for Chillicothe High School can be found in the student handbook or online at <http://www.chillicothe.k12.oh.us/1/Content2/studenthandbook>.

Late Work: Late work will be subject to the Board-adopted policy on assignments that are submitted late (to be reviewed in class).

- Regardless of the absence type (excused, unexcused, OSS, etc.), students are expected to make up work and be held accountable for learning all material they missed.
- Any student who is absent from school will receive one (1) additional day for every day he/she missed to make up his/her work for full credit (100%).
- Any student who exceeds the allotted time to turn in an assignment for full credit may still submit work late for partial credit.
 - Any student who turns in work up to 1 week late must at least be given the opportunity to earn 75% on that assignment.
 - Any student who turns in work between 1 and 2 weeks late must at least be given the opportunity to earn 60% on that assignment.
- The end of the 9 weeks is the cut off point for teachers to accept late work from students for full or partial credit unless the teacher decides to give the student an incomplete for the 9 weeks due to extenuating circumstances.

Performance Based Section: Writing**Assignments/Exams/Presentations/Technology**

One or more of the End of Unit Exams may be Performance Based. According to the Ohio Department of Education, "Performance Based Assessments (PBA) provides authentic ways for students to demonstrate and apply their understanding of the content and skills within the standards. The performance based assessments will provide formative and summative information to inform instructional decision-making and help students move forward on their trajectory of learning." Some examples of Performance Based Assessments include but are not limited to portfolios, experiments, group projects, demonstrations, essays, and presentations.

CHS Game Design Course Syllabus

After you have reviewed the preceding packet of information with your parent(s) or guardian(s), please sign this sheet and return it to me so that I can verify you understand what I expect out of each and every one of my students.

Student Name (please print):

Student Signature:

Parent/Guardian Name (please print):

Parent/Guardian Signature:

Date:
