Unit 1: Digital Assets - Program of Learning (Game Dev)

* <http://www.bsss.act.edu.au/__data/assets/word_doc/0004/454261/Digital_Technologies_A-T-M-V_20-24.docx>
* All of the below are **suggestions** on a possible sequence to deliver using the Digital Technology Course of the BSSS Technology Framework.
* Depth of the topics covered should be dependant on the skills/background of the teacher and students and are **suggestions** of experiences and skills the students could be exposed to.
* They are not expected to be delivered at significant depth unless the teacher/students are able to do so.

# Game Design PoL

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| **Wk** | **Topic** | **Fundamental Concepts** | **Possibilities Classroom Activities / Assessment Items** | **Resources** | **Connections to Curriculum** |
| 1 | Game Theory and the Design Process | * What is a Game? * What is meant by Game Theory? * What Is the Design Process? * Steps involved in the design process. * What is a Game Asset? | * Research what is a game and what is meant by a game asset. * Overview how the assets developed over the semester will interact in future semesters. * Provide context for the asset creation (i.e. game development) * Make notes in the general design process/Design Cycle. Steps involved tasks that are performed. * Use of project management tools such as a Gantt chart(Trello)   **Possible Assessment Task**   * Journal/Logbook: Ongoing notes, sketches of models, algorithms, code snippets, reflections on the work, sources of data, tutorials etc. | <https://www.gamedesigning.org/learn/tutorials/>  [Trello Tutorial](https://www.google.com/search?q=trello+tutorial&rlz=1C1GCEU_enAU826AU826&oq=trello+tutorial&aqs=chrome..69i57j0l5.3419j0j7&sourceid=chrome&ie=UTF-8#kpvalbx=_dXFTXc65KpDWz7sP4PW6-Ak14)  [Free online project managing software](https://zapier.com/blog/free-project-management-software/) | 1a.  3a.  3d.  4a.  4b.  5a. |
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| 3 | Creating Digital Assets Part 1 – 3D Models | * What is 3D Modelling? * How do we create a 3D Model? * What programs are there to create a 3D Model? * Concepts of 3D Models   + Meshes   + Textures   + UV Mapping   + Rendering   + Simple Animation   + Rigging   + Weight Mapping   + Lighting * How can these be used in creating game assets? | * Develop 6 - 8 models ranging from simple primitives to compound models * Acquire textures (either create or download existing ones) and wrap them onto models   + Use this as a platform to discuss development pipelines in the context of the design process * Simple Animations   + Motion Tweening   + Slide Transitions * Lighting and simple rendering of a scene containing previously designed and textured models   **Possible Assessment Task**   * Portfolio of models created, * Documentation of each model’s development process; screenshots, explanation of tools used etc). Could be included in their logbook/journal. | **Maya:**   * <http://aie.edu.au/introduction-to-maya/> * [http://docs.autodesk.com/MAYAUL/2015/ENU/GettingStarted/](http://docs.autodesk.com/MAYAUL/2015/ENU/GettingStarted/?_ga=2.158812153.214880342.1561692042-2126855201.1518485859#!/url=./files/landing_page.htm)   **Blender:**   * Beginner’s Guide to Blender (2.7): <https://www.blenderhd.com/wp-content/uploads/2015/08/BeginnersGuideToBlender.pdf> * Blender Basics 5th Edition:<http://www.cdschools.org/Page/455> * CG Cookie * Blender Guru * BornCD (YouTube Channel, Blender 2.7)   **Textures:**   * [Poliigon](https://www.poliigon.com/) * <https://www.textures.com/>   **Other:**   * <https://www.mixamo.com/> * [World Machine](https://www.world-machine.com/)   + Terrain generation tool | 1a.  1b.  1c.  2a.  2b.  2c.  2d.  2e.  2f.  3a.  3b. (implicit)  3c.  3d.  4a.  4b.  5a.  5b.  5c.  5d.  6a. |
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| 10 | Digital Assets Part 2 - Audio in Game Design | * What role does audio play in games? * What types of audio are found in games? * How can we create audio for games? * What are the legal issues in using audio? | **Simple audio manipulation**   * Using Audacity or similar. * Manipulation could include:   + Changing timing   + Cutting   + Inserting   + Simple effects such as fade in/fade out | <https://manual.audacityteam.org/#tutorials>  Adaptive music - <https://en.wikipedia.org/wiki/Adaptive_music>  [Audio Sauna](http://www.audiosauna.com/): Electronic Music - Copyright Free !! | 2b.  2c.  3a.  3b. (implicit)  3c.  3d.  4a.  4b.  5a.  5b. |
| 11 | Digital Assets Part 3 - Programming Principles | * What is a computer program? * How do we create a computer program? * What game development environment should we use? * What are the standard ways in which a program is assembled? * What programming language is best to use? * What are data structures and how are they used in a computer program? | **Programming Theory**   * Data types   + Integer, Character, Float * Control Structures:   + If Statements   + For Loops   + While Loops * Data Structures   + Arrays   + Lists   **Possible Assessment Task**   * Series of small programming projects within the context of your chosen engine. | Unity:   * <https://unity3d.com/learning-c-sharp-in-unity-for-beginners> * Learn to Program with C# - Unity Beginner Tutorial: <https://youtu.be/BasabtdErXQ>   UE4:   * <https://docs.unrealengine.com/en-US/Programming/Tutorials/index.html> * <https://www.youtube.com/watch?v=3JpNil0_gm4&list=PL3gCaTLUSAUs6I21Kh_SStwDZuWF87kp6&index=5>   UDEMY Courses: They are relatively cheap when on special around $10 - $20   * <https://www.udemy.com/course/unrealcourse/> (Goes on sale quite often, currently 94% off) | 1b.  1c.  2a.  2d.  2e.  2f.  3a.  3b.  3c.  4a.  5a.  5b.  5c.  5d. |
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| 17 | Catch-up / Final Assessment | * Spare weeks that are usually lost over the course of a semester. This extra time means more time can be spent (up to two weeks) on other areas as needed. | **Possible Assessment Task**   * Summative, authentic, examination of knowledge and understanding |  |  |
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