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| **Assurance of Student Learning Report****2023-2024** |
| **Potter College** | **Department of Art & Design** |
| **Game Design Certificate** |
| **Program coordinator name: Kristina Arnold**  |
| ***Is this an online program***? [ ]  Yes [x]  **No** | Please make sure the Program Learning Outcomes listed match those in CourseLeaf. Indicate verification here [x]  Yes, they match! (If they don’t match, explain on this page under **Assessment Cycle)** |

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| ***Use this page to list learning outcomes, measurements, and summarize results for your program. Detailed information must be completed in the subsequent pages. Add more Outcomes as needed.*** |
| **Program Student Learning Outcome 1:**  Design and build a functioning game using industry-standard game design engine.

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| **Instrument 1** | Project 2 Game Design Documentation |
| **Instrument 2** | Project 2 Demonstration |
| **Based on your results, check whether the program met the goal Student Learning Outcome 1.** | **[x]  Met** | **[ ]  Not Met** |
| **Program Student Learning Outcome 2:**  Demonstrate practical skills in at least once industry-standard programming language. |
| **Instrument 1** | Project 2 Game Design Documentation |
| **Instrument 2** | Project 2 Demonstration |
| **Based on your results, check whether the program met the goal Student Learning Outcome 2.** | **[x]  Met** | **[ ]  Not Met** |
| **Program Student Learning Outcome 5:** Produce industry-standard documentation of relevant work. |
| **Instrument 1** | Project 2 Game Design Documentation |
| **Instrument 2** |  |
| **Based on your results, check whether the program met the goal Student Learning Outcome 5.** | **[x]  Met** | **[ ]  Not Met** |
| **Program Summary (Briefly summarize the action and follow up items from your detailed responses on subsequent pages.)**  |
| The Game Design Certificate Program is relatively new (Fall 2020) and has been revised once (Fall 2022) to enhance student outcomes. Based on the current assessment process, the program is undergoing a second revision. We have discovered that one course (CS 301) is not enough to create a functioning game that includes assets developed in animation courses. The goal of this revision is to reinforce learning outcomes across courses, and provide opportunities (in introductory and capstone experiences) for students to integrate interdisciplinary knowledge and experiences. A capstone experience will also enable all aspects of the program to be assessed (including SLOs 3 and 4). Working across departments is challenging but thanks to extensive faculty time, input, and collaboration from Art & Design and CS faculty, the program and its students continue to benefit from several fields of knowledge. We’ve revised the program using informal feedback which has so far produced positive change; with that said, we realize the need to make formal assessment more of an interdisciplinary project and expand our review beyond examination of one course. The upcoming program revision will address that need. |

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| **Program Student Learning Outcome 1** |
| **Program Student Learning Outcome**  | Design and build a functioning game using industry-standard game design engine. |
| **Measurement Instrument 1**  | DIRECT MEASURE OF STUDENT LEARNING: Game Design ProjectStudents in CS 301: Game Programming develop original playable computer games using the Unity game engine. Games include a minimum of 50% of these assets: 1. Game audio (sounds, music, etc.); 2. Game Physics (RigidBody, Area2D, KinematicBody2D, Ray-casting, etc.); 3. Game Math (vectors, Matrices, Curves, Paths, etc.); 4. Game Animation; 5. Game Score; 6. Player lives; 7. Collision detection; 8. User input (keyboard, mouse, microphone, touchscreen, etc.); 9. Saving a game; 10. Loading a previous game; 11. Pausing and resuming a running game; 12. Networking; 13. Multiplayer; 14. Particle System(s); 15. Heads Up Display (HUD); 16. Game Win/Lose Condition(s); 17. Enemy/GameObject AI; 18. Virtual Reality; 19. Level of Detail (LOD). Overall game quality includes length of the gameplay; animations and model detail; game/character control; game story; and character development.To evaluate SLO 1, students recorded a video of a playthrough of their game, which was evaluated based on the included rubric for this SLO. |
| **Measurement Instrument 2**  | DIRECT MEASURE OF STUDENT LEARNING: Game Design DocumentationStudents in CS 301: Game Programming developed written Game Design Documents for their Game Design Projects. This minimum-5-page document followed a required format and included: Project Summary; Project Scope; Functional and Nonfunctional Requirements; Hardware Details; Software Details; Schedule Organization (Gantt Chart for Project Pipeline); Storyboards; Wireframes; Main Characters and Story; Gameplay; Game Testing; Description of Attributes; Game Platform; Conclusions; Source Code with CommentsTo evaluate SLO 1, students submitted a copy of their documentation for review, which was evaluated based on the included rubric for this SLO. |
| **Criteria for Student Success** | Success is defined as meeting intermediate or proficient level on this outcome [as this is a certificate and not a major, intermediate level skill is an acceptable outcome] |
| **Program Success Target for this Measurement** | Two artifacts (game design project and game design documentation) were measured, via the same rubric, across three aspects, to assess whether students met novice, intermediate, or proficient levels on this SLO – for each of the three aspects. Target success = 75% of aspects assessed will be at intermediate or proficient level.  | **Percent of Program Achieving Target** | 86%  |
| **Methods**  | Projects and Documentation from all Game Design Certificate students in the Spring 2024 CS 301 course (*N*=7) were assessed together based on the three aspects in the attached rubric. Students were ranked for each item as “Novice,” “Intermediate,” or “Proficient,” yielding a total of 21 (7 \* 3) data points.Aspects of assessment were: 1) Ability to Navigate and Use Game Design Engine (Intermediate = 3; Proficient = 4); 2) Implementation of Game Mechanics and Features (Intermediate = 2; Proficient = 5); 3) Integration of Assets (Graphics, Audio, etc.) (Novice = 3; Intermediate = 2; Proficient = 2).(numbers reflect the number of students scoring in each category.) |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 1.** | **[x]  Met** | **[ ]  Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| The Game Design Certificate Program is relatively new (Fall 2020) and has been revised once (Fall 2022) to enhance student outcomes. Based on the current assessment process, the program is undergoing a second revision. We have discovered that one course (CS 301) is not enough to create a functioning game that includes assets developed in animation courses. The goal of this revision is to reinforce learning outcomes across courses, and provide opportunities (in introductory and capstone experiences) for students to integrate interdisciplinary knowledge and experiences. A capstone experience will also enable all aspects of the program to be assessed (including SLOs 3 and 4). Working across departments is challenging but thanks to extensive faculty time, input, and collaboration from Art & Design and CS faculty, the program and its students continue to benefit from several fields of knowledge. We’ve revised the program using informal feedback which has so far produced positive change; with that said, we realize the need to make formal assessment more of an interdisciplinary project and expand our review beyond examination of one course. The upcoming program revision will address that need. |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| We will introduce revisions to the Game Design program in Fall 2024 to take effect Fall 2025. This revision will include creating two new courses which we have current capacity to teach: GAME 200: The Theory, History, and Practice of Game Design (comprehensive introduction to program, discipline and industry) and GAME 400: a capstone course mirroring industry, in which students integrate knowledge from all courses in the program to create games in teams. Moving forward, program will be assessed via artifacts from GAME 400. |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| Based on the time it takes to bring new curricula online, our next assessment cycle (2024-2025) will likely mirror this one; meaning we will use artifacts created in CS 301 to assess the program. By 2025-2026, we hope to have enough students in the revised pipeline to run GAME 400, and enough artifacts collected to make assessing the program based on our new capstone GAME 400 course viable.  |

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| **Program Student Learning Outcome 2** |
| **Program Student Learning Outcome**  | Demonstrate practical skills in at least once industry-standard programming language. |
| **Measurement Instrument 1**  | DIRECT MEASURE OF STUDENT LEARNING: Game Design ProjectStudents in CS 301: Game Programming develop original playable computer games using the Unity game engine and its primary coding language C# (syntax and structure is similar to Java). Games include a minimum of 50% of these assets: 1. Game audio (sounds, music, etc.); 2. Game Physics (RigidBody, Area2D, KinematicBody2D, Ray-casting, etc.); 3. Game Math (vectors, Matrices, Curves, Paths, etc.); 4. Game Animation; 5. Game Score; 6. Player lives; 7. Collision detection; 8. User input (keyboard, mouse, microphone, touchscreen, etc.); 9. Saving a game; 10. Loading a previous game; 11. Pausing and resuming a running game; 12. Networking; 13. Multiplayer; 14. Particle System(s); 15. Heads Up Display (HUD); 16. Game Win/Lose Condition(s); 17. Enemy/GameObject AI; 18. Virtual Reality; 19. Level of Detail (LOD). Overall game quality includes length of the gameplay; animations and model detail; game/character control; game story; and character development.To evaluate SLO 2, students recorded a video of a playthrough of their game, which was evaluated based on the included rubric for this SLO. |
| **Measurement Instrument 2** | DIRECT MEASURE OF STUDENT LEARNING: Game Design DocumentationStudents in CS 301: Game Programming developed written Game Design Documents for their Game Design Projects. This minimum-5-page document followed a required format and included: Software Details (Game Engine and programming languages used) and the entire Source Code with Comments. The appendix of the Game Design Document included ‘source code with comments on how it works from all scripts used in the game. Each script should be a new section in the appendix.’To evaluate SLO 2, students submitted a copy of their documentation for review, which was evaluated based on the included rubric for this SLO. |
| **Criteria for Student Success** | Success is defined as meeting intermediate or proficient level on this outcome [as this is a certificate and not a major, intermediate level skill is an acceptable outcome] |
| **Program Success Target for this Measurement** | One artifact (game design project) was measured, across three aspects, to assess whether students met novice, intermediate, or proficient levels on this SLO – for each of the three aspects. Target success = 75% of aspects assessed will be at intermediate or proficient level.  | **Percent of Program Achieving Target** | 90% |
| **Methods**  | Projects and Documentation from all Game Design Certificate students in the Spring 2024 CS 301 course (N=7) were assessed together based on the three aspects in the attached rubric. Students were ranked for each item as “Novice,” “Intermediate,” or “Proficient,” yielding a total of 21 (7 \* 3) data points.Aspects of assessment were: 1) Basic Syntax and Structure (Intermediate = 1; Proficient = 6); 2) Problem Solving and Algorithm Design (Intermediate = 3; Proficient = 4); 3) Application and Implementation (Novice = 2; Intermediate = 2; Proficient = 3).(numbers reflect the number of students scoring in each category.) |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 2.** | **[x]  Met** | **[ ]  Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| The Game Design Certificate Program is relatively new (Fall 2020) and has been revised once (Fall 2022) to enhance student outcomes. Based on the current assessment process, the program is undergoing a second revision. We have discovered that one course (CS 301) is not enough to create a functioning game that includes assets developed in animation courses. The goal of this revision is to reinforce learning outcomes across courses, and provide opportunities (in introductory and capstone experiences) for students to integrate interdisciplinary knowledge and experiences. A capstone experience will also enable all aspects of the program to be assessed (including SLOs 3 and 4). Working across departments is challenging but thanks to extensive faculty time, input, and collaboration from Art & Design and CS faculty, the program and its students continue to benefit from several fields of knowledge. We’ve revised the program using informal feedback which has so far produced positive change; with that said, we realize the need to make formal assessment more of an interdisciplinary project and expand our review beyond examination of one course. The upcoming program revision will address that need. |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| We will introduce revisions to the Game Design program in Fall 2024 to take effect Fall 2025. This revision will include creating two new courses which we have current capacity to teach: GAME 200: The Theory, History, and Practice of Game Design (comprehensive introduction to program, discipline and industry) and GAME 400: a capstone course mirroring industry, in which students integrate knowledge from all courses in the program to create games in teams. Moving forward, program will be assessed via artifacts from GAME 400. |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| Based on the time it takes to bring new curricula online, our next assessment cycle (2024-2025) will likely mirror this one; meaning we will use artifacts created in CS 301 to assess the program. By 2025-2026, we hope to have enough students in the revised pipeline to run GAME 400, and enough artifacts collected to make assessing the program based on our new capstone GAME 400 course viable. |

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| **Program Student Learning Outcome 5** |
| **Program Student Learning Outcome**  | Produce industry-standard documentation of relevant work. |
| **Measurement Instrument 1**  | DIRECT MEASURE OF STUDENT LEARNING: Game Design DocumentationStudents in CS 301: Game Programming developed written Game Design Documents for their Game Design Projects. This minimum-5-page document followed a required format and included: Project Summary; Project Scope; Functional and Nonfunctional Requirements; Hardware Details; Software Details; Schedule Organization (Gantt Chart for Project Pipeline); Storyboards; Wireframes; Main Characters and Story; Gameplay; Game Testing; Description of Attributes; Game Platform; Conclusions; Source Code with CommentsTo evaluate SLO 5, students submitted a copy of their documentation for review, which was evaluated based on the included rubric for this SLO. |
| **Criteria for Student Success** | Success is defined as meeting intermediate or proficient level on this outcome [as this is a certificate and not a major, intermediate level skill is an acceptable outcome] |
| **Program Success Target for this Measurement** | One artifact (game design documentation) was measured, across three aspects, to assess whether students met novice, intermediate, or proficient levels on this SLO – for each of the three aspects. Target success = 75% of aspects assessed will be at intermediate or proficient level.  | **Percent of Program Achieving Target** | 100% |
| **Methods**  | Projects and Documentation from all Game Design Certificate students in the Spring 2024 CS 301 course (N=7) were assessed together based on the three aspects in the attached rubric. Students were ranked for each item as “Novice,” “Intermediate,” or “Proficient,” yielding a total of 21 (7 \* 3) data points.Aspects of assessment were: 1) Familiarity with the Industry Standard Game Design Documentation (Intermediate = 5; Proficient = 2); 2) Clarity and Organization of Content within the Game Design Documentation (Intermediate = 2; Proficient = 5); 3) Completeness and Detail of Content within the Game Design Documentation (Intermediate = 6; Proficient = 1).(numbers reflect the number of students scoring in each category.) |
| **Based on your results, highlight whether the program met the goal Student Learning Outcome 5.** | **[x]  Met** | **[ ]  Not Met** |
| **Actions** (Describe the decision-making process and actions for program improvement. The actions should include a timeline.) |
| The Game Design Certificate Program is relatively new (Fall 2020) and has been revised once (Fall 2022) to enhance student outcomes. Based on the current assessment process, the program is undergoing a second revision. We have discovered that one course (CS 301) is not enough to create a functioning game that includes assets developed in animation courses. The goal of this revision is to reinforce learning outcomes across courses, and provide opportunities (in introductory and capstone experiences) for students to integrate interdisciplinary knowledge and experiences. A capstone experience will also enable all aspects of the program to be assessed (including SLOs 3 and 4). Working across departments is challenging but thanks to extensive faculty time, input, and collaboration from Art & Design and CS faculty, the program and its students continue to benefit from several fields of knowledge. We’ve revised the program using informal feedback which has so far produced positive change; with that said, we realize the need to make formal assessment more of an interdisciplinary project and expand our review beyond examination of one course. The upcoming program revision will address that need. |
| **Follow-Up** (Provide your timeline for follow-up. If follow-up has occurred, describe how the actions above have resulted in program improvement.) |
| We will introduce revisions to the Game Design program in Fall 2024 to take effect Fall 2025. This revision will include creating two new courses which we have current capacity to teach: GAME 200: The Theory, History, and Practice of Game Design (comprehensive introduction to program, discipline and industry) and GAME 400: a capstone course mirroring industry, in which students integrate knowledge from all courses in the program to create games in teams. Moving forward, program will be assessed via artifacts from GAME 400. |
| **Next Assessment Cycle Plan** (Please describe your assessment plan timetable for this outcome) |
| Based on the time it takes to bring new curricula online, our next assessment cycle (2024-2025) will likely mirror this one; meaning we will use artifacts created in CS 301 to assess the program. By 2025-2026, we hope to have enough students in the revised pipeline to run GAME 400, and enough artifacts collected to make assessing the program based on our new capstone GAME 400 course viable. |

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| **Game Design** | SLO 1: Design and build a functioning game using industry-standard game design engine. | SLO 2: Demonstrate practical skills in at least one industry-standard programming language. | SLO 3: Demonstrate basic computer animation techniques. | SLO 4: Demonstrate basic 3D modeling for animation and game design. | SLO 5: Produce industry-standard documentation of relevant work |
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| **CS 146/ CS 170 / CS 180** |  | Introduced |  |  | Introduced |  |
| **ANIM 210** |  |  |  Introduced / Reinforced |  |  |  |
| **ANIM 220** |  |  |  |  Introduced / Reinforced |  |  |
| **ANIM 310/320** |  |  | Reinforced | Reinforced |  |  |
| **CS 301** | Introduced/ Reinforced/ Assessed | Reinforced / Assessed |  |  | Reinforced/ Assessed |  |
| **elective** |  | Depends upon elective | Depends upon elective | Depends upon elective |  |  |

**Assessment Rubric for Student Learning Outcome 1**

**Student Outcome 1:** Design and build a functioning game using industry-standard game design engine.

**Course:** **Semester:** **Evaluator:**

**Material Assessed:**

**Considering the outcome listed above, assess the material according to the rubric scoring guide below.**

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| **Evaluation item** | **Novice** | **Intermediate** | **Proficient** |
| **Ability to Navigate and Use Game Design Engine** | Struggles to navigate the engine and use basic functionalities. | Can navigate the engine with moderate ease, utilizing most common features effectively. | Demonstrates advanced proficiency in navigating and effectively utilizing all features. |
| **Students At Above Level** |  |  |  |
| **Implementation of Game Mechanics and Features**  | Game mechanics and features are poorly implemented or missing. | Game mechanics and features are implemented adequately but with some inconsistencies or flaws. | Game mechanics and features are implemented creatively and effectively, enhancing gameplay. |
| **Students At Above Level** |  |  |  |
| **Integration of Assets****(Graphics, Audio, etc.)** | Assets are poorly integrated, detracting from the overall game experience. | Assets are integrated well, enhancing the overall experience, but may lack detail in some areas. | Assets are seamlessly integrated into the game, significantly enhancing the overall game experience. |
| **Students At Above Level** |  |  |  |

**Assessment Rubric for Student Learning Outcome 2**

**Student Outcome 2:** Demonstrate practical skills in at least one industry-standard programming language.

**Course:** **Semester:** **Evaluator:**

**Material Assessed:**

**Considering the outcome listed above, assess the material according to the rubric scoring guide below.**

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| **Evaluation item** | **Novice** | **Intermediate** | **Proficient** |
| **Basic Syntax and Structure** | Struggles to understand basic syntax and structure of the programming language. | Demonstrates understanding of the basic syntax and structure of the programming language, but with frequent errors and inconsistencies. | Demonstrates mastery of the language’s syntax and structure, and correctly utilizes advanced language features. |
| **Students** |  |  |  |
| **Problem Solving and Algorithm Design** | Struggles to apply problem solving techniques and design algorithms effectively in programming tasks. | Applies problem solving skills and designs basic algorithms for simple tasks, with some guidance. | Applies advanced problem solving techniques and designs efficient and effective algorithms for complex tasks, independently. |
| **Students** |  |  |  |
| **Application and Implementation** | Struggles to translate problem requirements into code, with frequent errors and inefficient implementation. | Implements solutions to basic problems into code, demonstrating basic proficiency in coding practices and techniques. | Implements solutions to complex problems effectively, optimizing code for efficiency and clarity. |
| **Students** |  |  |  |

**Assessment Rubric for Student Learning Outcome 5**

**Student Outcome 5:** Produce industry-standard documentation of relevant work.

**Course:** **Semester:** **Evaluator:**

**Material Assessed:**

**Considering the outcome listed above, assess the material according to the rubric scoring guide below.**

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| **Evaluation item** | **Novice** | **Intermediate** | **Proficient** |
| **Familiarity with the Industry Standard Game Design Documentation** | Limited understanding of the documentation template used in the game design industry. | Basic understanding of the documentation template, able to complete most sections with some guidance. | Comprehensive understanding of the documentation template, adeptly completing all sections. |
| **Students** |  |  |  |
| **Clarity and Organization of Content within the Game Design Documentation** | Content is disorganized and lacks clarity, making it difficult to understand. | Content is partially organized, but lacks clarity in some sections, reducing overall comprehension. | Content is well organized and presented with clarity, enhancing readability and understanding. |
| **Students** |  |  |  |
| **Completeness and Detail of Content within the Game Design Documentation** | Content is incomplete, with many sections missing or lacking detail. | Content is mostly complete, with some sections lacking depth or detail. | Content is complete, providing comprehensive detail in each section. |
| **Students** |  |  |  |