GAM 150 Project I

Summer-2020 **DigiPen Institute of Technology**

Prerequisites	GAM100 and CS120/CS120L		
Schedule: **Class Room:**			
	Tuesday 1:30pm -3:40pm Online Course	Thursday 1:30pm – 3:40pm Online Course	
Class Web Page:	Join GameCentralSG page in Moodle https://distance.sg.digipen.edu		
Instructor: **Contact:**	**Yannick Gerber** yannick.gerber@digipen.edu Phone: NA	**Elie Hosry** ehosry@digipen.edu Phone: NA	
Office hour:	Strictly by appointment		

GAM150 Syllabus

Description

This project focuses on the creation of a simple game or simulation. Students will work together on teams of three or four members. All projects must be written entirely in C (C++ is also allowed!).

Topics include effective team communication, planning, documentation, debugging, source control, testing, and iterative software development techniques.

Textbook

Required: **None**

Recommended:

C++ Coding Standards: 101 Rules, Guidelines, and Best Practices by Herb Sutter and Andrei Alexandrescu (ISBN: 9780321113580).

Game Design: Principles, Practice, and Techniques by Jim Thompson, Barnaby Berbank-Green, Nic Cusworth (ISBN: 978-0-471-96894-8).

Course Objectives and Learning Outcomes

Upon successful completion of the course, students should have achieved a basic, foundational knowledge of the following:

- Game Design Documents (GDD)
- Technical Design Documents (TDD)
- Game mechanics and gameplay
- Game production cycle
- Game marketing (packaging, screenshots, videos)
- Teamwork and team roles
- Pitch process and presentations
- Animation and multimedia
- Developer and publisher interactions
- Milestone schedules and checklists
- Production schedules, task lists, and task tracking
- Testing, focus groups, and quality assurance (QA)
- Weekly status reports

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Upon successful completion of the course, students should have basic, foundational knowledge of the following technical skills:

- C/C++ programming
- Finite state machines
- Basic animations – animation sequences, hotspots
- Collision detection and resolution
- Variables
- Game loop
- Pointers (to some degree)
- Keyboard and mouse input

Tools and Software

C/C++ (*CS120 level*)
Microsoft Visual Studio 2019
Adobe Creative Suite
3rd party libraries (*listed on GameCentralSG*): e.g. Fmod, TinyXML, Jsoncpp, RapidJson, Freetype …

Check "*Libraries for GAM and other Projects*" section, on the **GameCentralSG** page, for a list of approved libraries and software to use in the development.

Team Project

Students will work on teams to develop a Windows game, written entirely in C/C++, using a graphics library used for both the CS230 and GAM150 courses. Additional guidelines and instructions will be presented in class and posted on the class webpage (Moodle).

As with any team-based project, team conflict and personality issues may arise. It is the responsibility of the team members to notify the instructor of any issues that the team members have been unable to resolve on their own. If necessary, the instructor will meet with the team to discuss any outstanding issues and to suggest a course of action. It is typically in a team's best interests to address any and all issues of this type as soon as they are discovered.

In extreme cases a team may wish to drop a team member, which is a serious matter and should not be done lightly. Teams have until the end of the third week of the semester to drop a team member without any risk of incurring a penalty. After the third week the instructor should be notified immediately when a member is dropped from the team. Any student who is dropped from a team must immediately find a team within one week time, otherwise will automatically fail the course!

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Academic Integrity Policy

Academic dishonesty in any form will not be tolerated in this course. Cheating, copying, plagiarizing, or any other form of academic dishonesty (including doing someone else's individual assignments) will result in, at the absolute minimum, a zero on the assignment in question and a **-10% penalty** applied to the final grade, and could result in a failing grade in the course or even expulsion from DigiPen.

Note that in a team project class, working directly with your teammates, or even with other teams, is not cheating (and is highly encouraged). However, each student is required to accurately inform the instructor of the exact work they personally did on each project. Using code or tools from an outside source without permission or proper attribution is a violation of the Academic Integrity Policy.

Disability Support Services:

Students who have special needs or medical conditions and require formal accommodations in order to fully participate or effectively demonstrate learning in this class should contact the Student Life & Advising Office (studentlife.sg@digipen.edu) at the beginning of each semester. A Student Life & Advising Officer will meet with the student privately to discuss how the accommodations will be implemented.

Mechanisms and Procedures

Attendance

You are expected to attend class and attendance will be tracked. **Every unexcused absence past the first will result in a -5% penalty to your final grade in the class**. To gain an excused absence, you MUST contact your instructor. You must register your attendance in Moodle, during class time, in order be counted as present.

Professionalism

All students in this class are expected to behave in a professional manner in their interactions with all students, faculty, and staff. This includes personal conduct in class, verbal discussions, and emails. Rude or otherwise unprofessional conduct will result in a penalty of up to 10% on the student's final grade in the class, or more in extreme cases or in cases involving more than a single incident, at the sole discretion of the instructor. Exceptionally professional conduct, above and beyond what is normally expected, can result in a bonus of up to 5%, also at the sole discretion of the instructor. More than any other role in the game industry, a designer's reputation for professional conduct is critical to their career.

No camera recordings or shots (except by instructor's approval).

All online content taught during sessions is for educational use. No distribution of photos, videos or materials from an online class conducted by the instructor is allowed outside of DigiPen. If you do wish to use something kindly contact your instructor first. This includes taking the videos/ pictures of an online class conducted at DigiPen and posting it in other mediums outside of the platforms provided by the school

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External Preparation

It is expected that the students in this class spend 6 hours on average per week for outside classroom activities through the trimester, including, but not limited to, project implementation, group discussions, preparation of presentations, etc.

Instructor Questions and Meetings

You will undoubtedly have many questions for the instructors and will often wish to have individual meetings as well. In addition to asking questions through email, if you talk with an instructor in person (whether in class or otherwise) and there is some follow-up action the instructor has agreed to perform, you must email that instructor with a reminder. If you don't send a follow-up email, whatever you talked about will be forgotten and not followed up on (regardless of what the instructor said at the time). Making follow-up emails a habit is excellent practice for the real-world of working with busy bosses, producers, executives, etc.

Last Day to Withdraw

In order to withdraw from a course it is not sufficient simply to stop attending class or to inform the instructor. In accordance with policy, contact your advisor or the Registrar to begin the withdrawal process. The last day for withdrawal from this course is cited in the official catalog.
Last Day to Drop Class without Academic Penalty: End of Week 2.
Last Day to Withdraw: End of Week 8.

Game Competitions

DigiPen games can only be submitted to competitions by the DigiPen faculty—you cannot enter them yourself. If you think you have a game good enough to be entered into competitions (or that is the goal you are aiming for), make sure you inform your instructors as soon as possible, as they can give you advice directly targeted at making your game better for competitions. As general rule, any game that doesn't get a final score of 90% or higher will not be submitted to a competition (unless it is later improved). To have a real chance of winning a competition, you'll usually need a 95% or more.

Game Content

DigiPen games must be able to get an EC, E, or E10+ ESRB rating. Anything that would require a T (13+) rating requires permission from an Assistant Dean. M (17+) and AO (18+) ratings are not allowed under any circumstances.

Violence: only cartoon / fantasy violence is allowed—no gore, body parts, realistic blood, etc. Social Issues: any references to real-world politics or alcohol/tobacco/drugs require approval. Sexual Content: nudity, sex, strongly suggestive sexual themes or references are not allowed. Language: profanity and disparaging / stereotyping of race / gender / culture / disability are not allowed.

Remember that all art and audio must either be created by a current DigiPen student/instructor or be from the DigiPen approved art and audio libraries. You cannot use your friends, family members, public domain material, or other students not in your class (unless you talk to your instructor first). You can never use outside artists / musicians at all.

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Grading Policy

Standards

All work will be graded according to the following standards:

A The work is outstanding and exceeds professional standards on all levels
B The work meets a professional standard on most levels
C Average student work
D Substandard work, although it shows some understanding of the basic principles
F Unacceptable work

Breakdown

Student grades are based on a combination of team scores, individual scores, and individual modifiers.

Team Scores (85%)

20% Milestone presentations (Pitch, Engine Proof, Alpha, Final)
10% Weekly production reports
5% Video Submission
50% Final project submission – complete and playable, with all required materials supplied

Individual Scores (15%)

5% Individual assignment
10% Documentation (individual contribution based on team role: TDD, GDD, PPD, Playtest)

Individual Modifiers

Attendance (see notes below)
Code contribution (see notes below)

Milestone Presentations

The semester will be divided into four milestones, each lasting approximately two to three weeks.

- Game Pitch (5%)
- Engine Proof (first playable) (5%)
- Alpha (5%)
- Final (5%)

During the last week of each milestone all teams are required to present the current state of their project to the class, or to the Lecturers. Presentation should consist of a PowerPoint slideshow (or the equivalent) and, starting with the Engine Proof milestone, a demonstration of the current functionality in the game. Each presentation will be followed by a brief Q&A session and feedback from the instructor.

Any team or team member that misses a presentation will receive a score of 0% for that milestone. Postponing a presentation is permitted only with prior written consent of the instructor and will automatically incur a late penalty.

The milestone presentation grades are determined by averaging two scores, team score and content score.

Team Score

The team score is determined by the quality of the presentation; based upon the following criteria:

- Planning – How well was the presentation planned out? Was the correct information covered? Was the information presented in an organized manner?
- Preparation – How well was the presentation prepared? Was the pacing and length of the presentation correct? Were there good supporting visuals (in PowerPoint format or the equivalent)?
- Participation – How well did the team present to the class? Did the presenters speak clearly and make good eye contact? Note, for team presentations all members of the team are expected to participate in some capacity.

Content Score

The content score is determined by how well the team demonstrates their progress towards the current milestone.

- Has the presentation met the objectives for the specific milestone?
    - Pre-production – Demonstrate an achievable, coherent, and interesting design
    - Engine Proof – Demonstrate working core functionality
    - Alpha – Demonstrate a game that is feature complete
    - Final – Demonstrate a game that is feature, content and polish complete
- Have all key features been presented?

Weekly Production Reports

Starting with week 4 and continuing through week 12, every team will be required to submit a weekly production report. During this time, team members will meet with each other or with instructors or with a teaching assistant (TA) to discuss existing achievements and objectives, technical issues, or team issues. The Producer is responsible for collecting the Achievements and Objectives (A's and O's) from each team member, collating them into a final report, submitting an electronic version of the report via Moodle, digitally signed by all team members.

The grade for the Weekly Production Reports starts at 100% and incurs a penalty for each incomplete, late or missing production report (-100%). This penalty is applied to the Weekly Production Reports grade for all team members. Additionally, each member might have an individual penalty. More details will be given during week 3 lecture.

Team Exercises

Team exercises will be announced in-class and must be completed according to the instructions provided at the start of the exercise.

Team Documentation

Every team is required to submit a set of documents and materials associated with their final project. Team members are encouraged to collaborate in the development of these documents but the ultimate responsibility for each is given to team members; based upon their team role:

One member for each role:

- Lead Designer — Game Design Document (GDD)
- Technical Director — Technical Design Document (TDD)
- Producer — Phased Plan Document (PPD)

One member to cumulate both roles:

- Product Manager — Marketing Materials (Assist with the above & packaging)
- Playtest Manager — Playtest Plan, Forms and Report

Each team member will receive an individual grade, representing 10% of the final grade, based upon the content and quality of the work that they submit. Any individual who fails to submit the work associated with their team role will receive a 0% for this grade.

Each team member will receive an additional grade, representing 5% of the final grade that is the average grade for all documentation required.

Final Project Submission

Final Project Submissions will be graded based upon overall quality in the following categories:

- Technical (achievements and requirements)
- Engagement
- Interactivity
- Aesthetics
- Feedback

The score for the Final Project Submission will be determined by averaging the score from each of these five categories. Any submissions turned in late or missing required elements will receive an automatic -10% penalty to the combined score. In the event that a resubmission is required, an additional -5% penalty will be applied each additional day required to resubmit the project following the initial notice sent to the team.

Teamwork

Students are responsible for working on their project and fulfilling their role within the team. Each student will assume one of the following titles: Technical Director, Lead Designer, Producer, or Product Manager/Playtest Manager. With a three student team the Producer is also the Product Manager, and the Game Designer is also the Playtest Manager. With a five student team the fifth student has the title of Playtest Manager. Five student teams are allowed ONLY at the discretion of the instructor.

Grading for teamwork is based on the team score for work (Technical Director, for example, working on the TDD gets the overall team score plus the score of doing the TDD itself, usually 10% of the overall grade.)

- *Technical Director:* Writes the technical design document (TDD), determines project directory/file hierarchy, creates project file, creates basic architecture/framework, determines formats used and naming conventions, sets up and administers source control software, writes core systems such as memory managers, timers, etc.

- *Lead Designer:* Writes the game design document (GDD), designs game play, enemies, items, traps, levels, etc. Responsible for design changes, game pacing, game balance, etc. Creates and tweaks levels and gameplay settings. Writes any back story or dialog.

- *Producer:* Writes the phased plan document (PPD), tracks project progress, creates weekly status reports, schedules time for the team to meet and work together, helps resolve any team conflicts, helps team members prioritize and focus on the most important tasks.

- *Playtest Manager:* Writes the formal playtest plan, all the forms required for the playtest. Analyze the Playtest results and write a report.

- *Product Manager (5 student teams only, Playtest manager if team of 4):* Writes the asset list, creates/finds models, textures, animations, bitmaps, etc., creates/finds audio and music files, screenshots, video capture, etc. does the installer for the game.

Code Contribution

Every student is required to have significant code in the final version of the game to pass GAM150.
Code contribution is a modifier that may be applied to an individual student's **final score** based upon the quantity, quality, and complexity of the code personally written by the student (up to +10% bonus for exceptional coding or contribution, down to -40% penalty for lack of effort).

For example, coding the entire game engine, including amazing graphics and physics could result in a +5% to +10% bonus. Only coding a moderate amount (just the sound, just the user interface, just tools, etc.) will generally result in a penalty. Only coding a few hundred lines of code can easily result in a penalty of -10% or more. The maximum penalty is -40% for a student who nearly does not code at all.

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Outline and Tentative Dates

Week	Lecture
1	[Lecture] Introduction to the class, GDD and TDD. [Lab] Introduction to Alpha Engine, class overview, team rosters, team roles and team meetings [Homework] • Read the entire course syllabus before next week's lecture • Teams assemble and determine team roles • Producer creates team roster
2	[Lecture] "How to Start a Team Project", "Weekly production reports" [Lab] Brainstorming (game design, technical requirements, milestone schedules, etc.) [due] • Read the syllabus • Producer submits team roster by end of lab
3	[Presentation] **Milestone Presentations – Pre-production** [Homework] • Tech Director sets up team GitLab account before next week's lab • Individual assignment (*Rules, Guidelines and Best Practices*) announced
4	[Lecture] Phased Plan Documents (PPD) [Lab] Project work [due] • Lead Designer submits preliminary GDD by midnight of lab day • Weekly Production Reports begin
5	[Lecture] Coding Guidelines and best practices [Lab] Project work
6	[Presentation] **Milestone Presentations – Engine Proof (to instructors)** [Due] • Producer submits the PPD by midnight of lab day • Tech Director submits the TDD by midnight of lab day
7	**Study break**

8	[Lecture] • Project Rubrics and TCRs presentation • Advanced Debugging with Visual Studio [Lab] Project work
9	[Lecture] "Play testing" [Lab] Project work **[Due]** • Individual assignment (*Rules, Guidelines and Best Practices*) due before midnight of lab day
10	[Presentation] **Milestone Presentations – Alpha (to instructors)** [Lecture] Polish your game [Lab] Project work
11	[Lab] Project Work [Lab] Playtest **[Homework]** • Test manager prepares the formal play testing report • Team implements remaining content and addresses issues identified during play testing
12	[Lecture] • Road to Final Delivery, Final presentations • Post-mortems [Lab] Project Work **[Homework]** • Team addresses any remaining issues identified during play testing • Product manager prepares the final project submission **[Due]** Playtest Report (Playtest Manager)
13	[Presentation] **Milestone Presentations – Final Project** **[Due]** • Final project submission due • Marketing materials due • Team evaluations due **Project Submission**
14	**No class**
15	**No class**

GAM150 (Project I) EULA

IMPORTANT: READ CAREFULLY – THIS IS *NOT* A LEGAL DOCUMENT. However, please read this document carefully before the second week of class. This agreement provides important information concerning the course and failing to read this information may result in a penalty to your final grade for the course.

1. Terms of License

   This license allows you to:

   a. admit that you've read the syllabus; and
   b. ask questions regarding the contents of the syllabus; and
   c. avoid receiving a -1% penalty to your final grade for GAM150 (spring 2020 only)

2. Restrictions on Use

   All GAM150 students are expected to read the GAM150 Course Syllabus prior to the second week of class and refer to it, as necessary, during the course of the semester. By printing and signing this license you are claiming to actually have read the GAM150 Course Syllabus. In the event that you have not read the syllabus and ask the instructor a question that is answered in the syllabus, then the instructor may, in good conscience, smile at you and tell you to go find the answer for yourself in the syllabus.

3. Ownership

   DigiPen retains the rights to all projects that are developed for GAM150. However, you should still take pride in the work that you do for the project and deliver the best work possible. Do remember that others are counting on you to do your part for the team, so you should always check your work to make sure that it has been done properly.

Reading the GAM150 Course Syllabus is considered an assignment for the course. In order to avoid receiving a -1% penalty to your final grade for the course you should print and sign this document and submit it to the instructor at the beginning of the lab class on Friday, January 17th (Week 02).

X Goh WeiZhe Goh Wei Zhe 190520

Signature, Name & Date
The Student

DIGIPEN INSTITUTE OF TECHNOLOGY SINGAPORE PTE LTD

Art, Music and Audio Copyright Agreement

As a student of DigiPen Institute of Technology Singapore (the "Institute"), engaging in project work for display internally at the Institute or externally on the internet, or as demonstrations or presentations at festivals or other events, I recognize the importance of respecting international copyright law as well as the Institute's rules regarding the inclusion of art, music and audio content in animation and game projects.

I also recognize that the inclusion of art, music and audio content, which is not owned, licensed or approved by the Institute will result in a grade of zero for such projects, and may also result in disciplinary action.

I agree to solely use art, music and audio assets which are generated by the students or staff of the Institute, or are purchased and owned by the Institute, in any animation or game project work as described above.

I recognize that failure to abide by this agreement may result in disciplinary action at the Institute, which may include expulsion from the DigiPen Institute of Technology Singapore for intentional copyright infringement, and possible legal action.

I agree to indemnify and hold DigiPen Institute of Technology Singapore, its officers, directors, employees, contractors and agents harmless from any damages and/or claims arising out of the breach of this agreement.

X Goh Wei Zhe Goh Wei Zhe 190520

Signature, Name & Date
The Student