GAM150: Project I

Spring 2018

Prerequisite:

GAM100 and CS120/CS120L

Schedule:

Friday: 14:00 – 17:20

Class room:

Pascal

Instructors:

Elie Hosry
Michael David Thompson

Lab Teacher Assistants:

Ka June Chan
Dennis Chua
Yi Han Lim

Contact:

Phone:

Elie: 6577 1911
Michael: 6577 1946

Email:

m.thompson@digipen.edu
ehosry@digipen.edu
(Specify **GAM150** in the email subject field)

Office Hours:

Elie:	Wednesday	14:00 – 18:00
Michael:	Tuesday, Thursdays	14:00 – 17:00

Class Webpage: https://distance.sg.digipen.edu
The website is accessible via student's DIT log-in credential.

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) and cannot use external libraries or middleware of any kind (except those provided by the instructor). 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
- Target audiences and ESRB ratings
- 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

GAM150 Syllabus

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

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!

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.

Disabled Student Services

Students with physical, psychological, or learning disabilities that affect their ability to perform major life activities associated with this class may be eligible for reasonable accommodations under the Americans with Disabilities Act. If you have a documented disability please contact the Disability Support Services office to arrange for accommodations for this class.

GAM150 Syllabus

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 (80%)

25% Milestone presentations
5% Weekly production reports
5% Team exercises
5% Team documentation (average grade of all team documentation scores)
40% Final project submission – complete and playable, with all required materials supplied

Individual Scores (20%)

5% Individual assignment
10% Team documentation (individual contribution based on team role)
5% Teamwork as determined from observation and mutual evaluations

Individual Modifiers

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

Milestone Presentations

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

- Pre-production (prototype) (5%)
- Engine Proof (first playable) (5%)
- Alpha (5%)
- ~~Beta~~
- Final (10%)

During the last week of each milestone all teams are required to present the current state of their project to the class. 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.

The grade for each milestone presentation represents 5% of the overall student grade for GAM150. 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
    - ~~Beta – Demonstrate a game that is feature and content complete~~
    - Final – Demonstrate a game that is feature, content and polish complete
- Have all key features been presented?

Weekly Production Reports

Starting with week 3 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 2 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 a single team member; based upon their team role:

- Lead Designer — Game Design Document (GDD)
- Technical Director — Technical Design Document (TDD)
- Producer — Phased Plan Document (PPD)
- Product Manager — Marketing Materials (Assist with the above & packaging)
- Test Manager — Formal Playtest Report (*5-person teams only*)

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)
- Fun Factor
- Interactivity
- Visual Appeal
- Aural Appeal

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. With a three student team the Producer is also the Product Manager. With a five student team the fifth student has the title of Test 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.

- *Product Manager:* Writes the asset list, creates/finds models, textures, animations, bitmaps, etc., creates/finds audio and music files, ~~creates CD to be turned in at the end of each semester, creates manual, DVD case art~~, screenshots, video capture, etc. does the installer for the game.

- ~~*Test Manager (5 student teams only):* Writes the formal playtest report, tracks all bugs, writes questions for focus group testers, collects and evaluates all testing feedback, tests game on a variety of systems, tracks down (but does not have to fix) all memory leaks, memory trashing, and performance problems.~~

Attendance

Attendance does not count as a percentage of a student's overall grade. However, missing classes will have a direct impact on the final grade. Students with *three* unexcused absences will automatically receive a 10% penalty to their final grade. This penalty will increase by 2.5% for each additional unexcused absence. Note that students who are **more than 10 minutes late for a class** will be considered absent. Students should notify the instructor in the event of a planned absence. In order to be considered as excused absence, the student must submit the documents to Registrar's Office within **7 working days** from the date of absence.

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 (a +3% to +10% bonus for exceptional coding, a -5% or more penalty for poor coding).

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 does not code at all.

GAM150 Syllabus

Outline and Tentative Dates

Week 1 (Jan 12th)

Lab: Introduction, class overview, team rosters, team roles and team meetings
Lecture: GDD and TDD review
Homework:

- Read the entire course syllabus before next week's lecture
- Teams assemble and determine team roles
- Teams brainstorm design ideas
- Producer creates team roster

Week 2 (Jan 19th)

Lab: *"Brainstorming"* (game design, technical requirements, milestone schedules, etc.)
Lecture: "*How to Start a Team Project*", weekly production reports
Due:

- Read the syllabus
- Producer submits team roster by end of lab

Homework:

- Lead Designer prepares the preliminary GDD for submission
- Team prepares for the pre-production milestone presentation

Week 3 (Jan 26th)

Lab: **Milestone Presentations – Pre-production (GDD)**
Lecture: Asset Management (SVN, Trac)
Due:

- Weekly Production Reports begin
- Lead Designer submits preliminary GDD by midnight of lab day

Homework:

- Tech Director sets up team SVN account before next week's lab
- Individual assignment (*Rules, Guidelines and Best Practices*) announced

Week 4 (Feb 2nd)

Lab: Students work on their games
Lecture: Scheduling, Phased Plan Documents (PPD)

Week 5 (Feb 09th)

Lab: Team exercise (testing, bug reports, debugging)
Lecture: *Critical and technical analysis of games, code refactoring*
Homework:

- Producer prepares the PPD for submission
- Tech Director prepares the TDD for submission
- Team prepares for the Engine Proof milestone presentation

Week 6 (Feb 16th) **Feb 16th - 17th – CNY – Class Rescheduled to Feb 14th**

Lab: **Milestone Presentations – Engine Proof (TDD-PPD)**
Lecture: Team Management, Conflict Resolution
Due:

- Producer submits the PPD by midnight of lab day
- Tech Director submits the TDD by midnight of lab day

Week 7 (Feb 23rd)

Lab: Team-on-one meetings with instructor
Lecture: Intellectual Property and Copyright, Software Vulnerabilities

Week 8 (Mar 2nd)

Lab: Questions and meetings, team exercise
Lecture: Fun, User Interfaces (UI), Maps, Menus
Homework:

- Team prepares for the Alpha milestone presentation

Week 9 (Mar 09th)

Lab: **Milestone Presentations - Alpha**
Lecture: QA, focus groups and formal play testing
Due:

- Individual assignment (*Rules, Guidelines and Best Practices*) due before midnight of lab day

Week 10 (Mar 16th)

Lab: Formal play testing, questions and meetings
Lecture: Balancing and testing, bug reports, debugging and tracking
Homework:

- Test Manager prepares the test plan document (5-person team only)
- Team prepares for formal play testing

Week 11 (Mar 23rd)

Lab: Questions and meetings
Lecture: Debug vs. Release builds, final submission checklist
Homework:

- Test manager prepares the formal play testing report (5-person team only)
- Team implements remaining content and addresses issues identified during play testing
- Team prepares for the Beta milestone presentation

Week 12 (Mar 30th) **Mar 30th – Good Friday – No Class**

Lab: ~~**Milestone Presentations - Beta**~~

Lecture: Marketing and market analysis, marketing materials

Lecture: Post-mortems, games business, game company research

Due:

- Test manager submits the test plan document (5-person team only)
- Test manager submits the formal play testing report (5-person team only)

Homework:

- Team addresses any remaining issues identified during play testing

Week 13 (Apr 06th)

Lab: Informal play testing, questions and meetings

Lecture: Game future – 2018 and beyond, student course evaluations

Homework:

- Team applies the finishing touches to the game
- Team prepares for the Final milestone presentation
- Product manager prepares the final project submission

Week 14 (Apr 13th)

Lab: **DigiPen Student Showcase - Final**

Lecture: Cancelled due to the Student Showcase

Due:

- Video assignment due
- Final project submission due
- Marketing materials due
- Team evaluations due

Week 15 (Apr 20th)

Final Exams Week – No classes or final exam for GAM150

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 2018 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 19th (Week 02).

_____ _____

Student Name (Printed) Student Signature

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.

Student name, printed _____

Student signature _____

Date _____