Lecture 1:

Course Overview; Development Process
CS/INFO 3152: Game Design

- Single semester long game project
  - Interdisciplinary teams of 4-6 people
  - Design is entirely up to you
- First 3-4 weeks are spent preparing
  - Labs to develop basic game concepts
  - Design activities to solidify your ideas
  - Group activities to help you collaborate
- Remainder of class spent on project
CS/INFO 3152: Game Design

- We provide a basic milestone schedule
- **Today’s focus**: the development process
- Deliverables every two weeks (after week 4)
- Details on course website:
  [http://www.cs.cornell.edu/courses/cs3152](http://www.cs.cornell.edu/courses/cs3152)

- Games demonstrated at **Showcase**
  - Like BOOM, open to the public
  - Public reaction is part of your grade
  - Submissions posted on the GDIAC website
Course Structure

● **Lectures**: Mondays, Wednesdays, Fridays
  • Of general design and development interest
  • Programming-specific around Spring Break
  • Lecture notes posted on website (but incomplete!)

● **Communication Labs**: Tuesday or Thursday
  • Create documents and presentations
  • Satisfies the technical writing requirement
  • See schedule for exact dates
Course Structure

• **Game Labs**: First four Tuesdays
  - Special labs for programming or design
  - Complete according to your project role
  - Only INFO has a choice; CS is programming only

• **Playtest Sessions**: Alternate Tuesdays
  - Submit a **playable** prototype every two weeks
  - Others will playtest your prototype in class
  - We will critique each other’s games
This course is a lot of work!

- Expect at least **10 hours/week** outside of class
  - Once the project “starts” in four weeks
  - Typically bare minimum to finish game
  - But if you do this, guaranteed at least a B

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**Includes**

- Time working on game
- Time writing documents
- Time meeting with group

**Does Not Include**

- 5 days/week in class
- Time spent on readings

Introduction
This course is a lot of work!

- Expect at least **10 hours/week** outside of class
  - Once the project “starts” in four weeks
  - Typically bare minimum to finish game
  - But if you do this, guaranteed at least a B

**Includes**
- Time working on game
- Time writing documents
- Time meeting with group

**Does Not Include**
- 5 days/week in class
- Time spent on readings

If this is a problem, let us know immediately
Project Groups

• This is a group-oriented course
  • 4-6 person teams of diverse talents
  • At least one $\geq 3110$ programmer
  • At least one visual designer/artist

• Groups are assigned by the staff
  • Taking your preferences into account
  • Assignments complete by Wednesday
  • Groups must be in the same section
Game Requirements

• Must be unique with innovative **gameplay**
  • Avoid standard **point & click adventures**
  • But can take elements from other games
    • **Example**: platformer + something new

• Must be feasible in a semester
  • Avoid full-blown **RPGs** or **real-time-strategy games**
  • But can have basic elements of these games

• Must have a single player mode
Game Requirements

- Games must be developed in XNA 4.0
  - See website for getting software via MSDNAA
  - Need XNA 4.0 and Visual Studio 2010

- All programmers must work in C#
  - Very easy to pick up if you know Java
  - Focus of the programmer game labs
  - Help resources available on web page

- See website for other requirements
Intellectual Property

- Your **group** retains all ownership
  - You can commercialize it later
  - You can make derivative works
  - Individual ownership is your responsibility

- But Cornell gets a non-exclusive license
  - Non-commercial use of final version submitted
  - We can post this version on our website
  - We claim no other rights to your game
Grading Policy

• Mixture of **group** and **individual** grades

• Group grades are same for all group members
  • Group game grade (25%)
  • Technical writing (20%)
  • Class presentations (5%)

• Individual grades distinguish group members
  • Individual game grade (25%)
  • Game Labs (20%)
  • Attendance (at demos) (5%)
Game Grade

- Group grade reflects the game quality

<table>
<thead>
<tr>
<th>Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>Bug-free, Fun-to-play</td>
</tr>
<tr>
<td>B</td>
<td>Complete and playable</td>
</tr>
<tr>
<td>C</td>
<td>Complete but unplayable</td>
</tr>
<tr>
<td>D/F</td>
<td>Serious delinquencies</td>
</tr>
</tbody>
</table>

- Individual grade represents contribution

<table>
<thead>
<tr>
<th>Grade</th>
<th>Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; Group</td>
<td>Visionary, group MVP</td>
</tr>
<tr>
<td>= Group</td>
<td>Good attitude, hard worker</td>
</tr>
<tr>
<td>&lt; Group</td>
<td>Produce negative work</td>
</tr>
<tr>
<td>D/F</td>
<td>Abandon the group</td>
</tr>
</tbody>
</table>
Software Development

• **Design** process
  • Decide what game you want to make
  • Create a *specification* of your design

• **Development** process
  • Implement your specification
  • Test result to make sure it works

• **Release** (yeah!)
The Traditional Model

- Document extensively; design to specification
  - Design and documents done before coding starts
  - Development follows a specified project timeline
- A general software engineering model
  - Often called the *waterfall* model

![Diagram of the Traditional Model]

1. Pre-Production
2. Design
3. Implement
4. Test
5. Release

Introduction
Waterfall Model

Pre-Production

Design

Implement

Test

Release

Cannot start stage until previous step finished. Result: Lots of delays

What if you discover the game is not fun? Result: Start Over?
The Iterative Model

- Cannot evaluate game without playing it first
  - **Iterate**: Rethink design from intermediate results

- Should be playing 20% into development!
  - This requires *prototypes* (may be nondigital)
SCRUM & Agile Development

• Iterative model is called **agile development**
  • The most popular agile method is **SCRUM**

• Key (but not only) idea: **SCRUM sprint**
  • Focus on a small, but testable deliverable
  • 3-4 weeks in industry; 2 weeks in this class

• **Sprint Backlog**: features left to implement
  • Chosen to implement for this sprint
  • Re-evaluate features at end of every sprint
SCRUM Sprint

Product Backlog

Sprint Backlog

Features at the end

Features this Sprint

Sprint

Feature Release

Introduction
Milestones

- **Suggestions** for your sprint backlog
  - Flexible enough to handle set-backs
  - Can renegotiate if you get seriously behind

<table>
<thead>
<tr>
<th>Week</th>
<th>Milestone</th>
<th>Date</th>
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<tbody>
<tr>
<td>4</td>
<td>Nondigital Prototype</td>
<td>2/13</td>
</tr>
<tr>
<td>6</td>
<td>Gameplay Prototype</td>
<td>2/28</td>
</tr>
<tr>
<td>8</td>
<td>Technical Prototype</td>
<td>3/14</td>
</tr>
<tr>
<td>10</td>
<td>Alpha (Code Complete)</td>
<td>4/3</td>
</tr>
<tr>
<td>12</td>
<td>Beta (Feature Complete)</td>
<td>4/17</td>
</tr>
<tr>
<td>14</td>
<td>Release (Balanced and Tested)</td>
<td>4/29</td>
</tr>
<tr>
<td>15</td>
<td>GDIAC Showcase</td>
<td>5/11</td>
</tr>
</tbody>
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Documentation

• Major part of the development process
  • Why course counts for technical writing
  • Ensures group is always on “same page”

• At every point of development
  • Pre-production: concept document, gameplay
  • Sprints: reports, architectural specification
  • Release: game manual, post-mortem

• Challenge is understanding your audience
Pre-Production Documentation

- **Concept Document**
  - Describes the basic idea behind your game
  - Communicate core vision without too many details
  - Focus of Communication Lab next week
  - **Audience**: a game publisher (to get funding)

- **Gameplay Specification**
  - Thorough overview of your gameplay
  - Include formal design elements shown in class
  - May change as part of your sprints!
  - **Audience**: new team members (hired later)
Sprint Documentation

- **Reports (every 2 weeks)**
  - Outlines the upcoming sprint (who does what)
  - Reflects on previous sprint (did you meet goals?)
  - You must be honest! **Not** graded on progress.
  - **Audience**: your game producer

- **Architectural Specification**
  - Outline of your software organization
  - Used to distribute tasks to programmers
  - **Audience**: team programmers
Sprint Documentation

• **Reports (every 2 weeks)**
  - Outlines the upcoming sprint (who does what)
  - Reflects on previous sprint (did you meet goals?)
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  - Not graded on progress.
  - Audience: your game producer

• **Architectural Specification**
  - Outline of your software
  - Used to distribute tasks to programmers
  - Audience: team programmers

- Responsibility of **Project Leader**
- Responsibility of **Lead Programmer**
Release Documentation

• **Game Manual**
  - Concise description of gameplay
  - Instructions on how to play the game
  - Story, other material to improve the setting
  - **Audience**: your players

• **Postmortem**
  - *Honest* reassessment of what happened
  - What went right; what went wrong
  - **Audience**: yourself (for next time…)
Development Process Review

- **Pre-production**
  - Initial design
  - Concept Document
  - Gameplay Spec

- **Two-Week Sprints**
  - Playable prototypes
  - Reports
  - Architecture Spec

- **Release**
  - Public Showcase
  - Game Manual
  - Postmortem
## Semester Schedule

<table>
<thead>
<tr>
<th>Week</th>
<th>Activity</th>
<th>Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 1</td>
<td>Form Groups</td>
<td>1/23</td>
</tr>
<tr>
<td>Week 2</td>
<td>Group Charter</td>
<td>2/2</td>
</tr>
<tr>
<td>Week 3</td>
<td>Concept Document (Project Kickoff)</td>
<td>2/9</td>
</tr>
<tr>
<td>Week 4</td>
<td>Gameplay Specification</td>
<td>2/16</td>
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<tr>
<td></td>
<td>Nondigital Prototype</td>
<td></td>
</tr>
<tr>
<td>Week 5</td>
<td>Milestone Proposals Content Repository</td>
<td>2/23</td>
</tr>
<tr>
<td>Week 6</td>
<td>Gameplay Prototype</td>
<td>2/28</td>
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<tr>
<td>Week 7</td>
<td>Architectural Specification</td>
<td>3/9</td>
</tr>
<tr>
<td>Week 8</td>
<td>Technical Prototype</td>
<td>3/14</td>
</tr>
</tbody>
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*Spring Break*
## Semester Schedule

### Spring Break

<table>
<thead>
<tr>
<th>Week 9</th>
<th>Level Design Document</th>
<th>3/30</th>
</tr>
</thead>
<tbody>
<tr>
<td>Week 10</td>
<td>Alpha Release (Code Complete)</td>
<td>4/3</td>
</tr>
<tr>
<td>Week 11</td>
<td>Game Manual (Based on Alpha Gameplay)</td>
<td>4/13</td>
</tr>
<tr>
<td>Week 12</td>
<td>Beta Release (Feature Complete)</td>
<td>4/17</td>
</tr>
<tr>
<td>Week 13</td>
<td>Final Portfolio</td>
<td>4/27</td>
</tr>
<tr>
<td>Week 14</td>
<td>Final Presentation (Balanced &amp;Tested)</td>
<td>4/29</td>
</tr>
<tr>
<td>Week 15</td>
<td>GDIAC Showcase</td>
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**Development**

**Release**