Lecture 1:

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

- Single semester long game project
  - Interdisciplinary teams of 5-6 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
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

**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(ish)
  - Special labs for programming or design
  - Complete according to your project role
  - Only INFO has a choice; CS is programming only

- **Playtest Sessions**: Thursday after milestones
  - 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
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*If this is a problem, let us know immediately*
Project Groups

- This is a **group-oriented** course
  - 5-6 person teams of diverse talents
  - At least one ≥ 3110 programmer
  - At least one visual designer/artist

- Groups are assigned by the staff
  - Taking your preferences into account
  - Assignments complete by this week
  - 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

• Must develop in XNA 4.0 or MonoGame
  • See website for getting software via MSDNAA
  • XNA 4.0 requires Visual Studio 2010
  • MonoGame is cross-platform but more limited

• All programmers must work in C#
  • Very easy to pick up if you know Java
  • Focus of the programmer game labs

• See website for help and resources
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 showing the traditional model stages: Pre-Production, Design, Implement, Test, Release]
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

Sprint

Feature Release

Features at the end

Features this Sprint

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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</thead>
<tbody>
<tr>
<td>Week 5</td>
<td>Nondigital Prototype</td>
<td>2/19</td>
</tr>
<tr>
<td>Week 7</td>
<td>Gameplay Prototype</td>
<td>3/6</td>
</tr>
<tr>
<td>Week 9</td>
<td>Technical Prototype</td>
<td>3/14</td>
</tr>
<tr>
<td>Week 11</td>
<td>Alpha (Code Complete)</td>
<td>4/7</td>
</tr>
<tr>
<td>Week 13</td>
<td>Beta (Feature Complete)</td>
<td>4/21</td>
</tr>
<tr>
<td>Week 15</td>
<td>Release (Balanced and Tested)</td>
<td>5/4</td>
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<tr>
<td>Week 16</td>
<td>GDIAC Showcase</td>
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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

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

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<th>Activity</th>
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<tr>
<td>Week 1</td>
<td>Form Groups</td>
<td>1/25</td>
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<tr>
<td>Week 2</td>
<td>Group Charter</td>
<td>1/30</td>
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<tr>
<td>Week 3</td>
<td>Concept Document (Project Kickoff)</td>
<td>2/6</td>
</tr>
<tr>
<td>Week 4</td>
<td>Gameplay Specification</td>
<td>2/13</td>
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<tr>
<td>Week 5</td>
<td>Nondigital Prototype</td>
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<tr>
<td>Week 6</td>
<td>Milestone Proposals Content Repository</td>
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<td>Gameplay Prototype</td>
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<tr>
<td>Week 8</td>
<td>Architecture Specification</td>
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**Pre-Production**

**Development**
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**Immediately after Feb. break**

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