

(70 pts) Approx. 8 days

This first unit is all about getting used to the Lathrop Makerspace again. Your job in this unit will be to pick a favorite game of yours, design your own special version of that game, and then to build it here in the makerspace. The game you choose will need to be something that has some flexibility in its design and construction, and something that interests you enough to spend three weeks redesigning and rebuilding it. The game you eventually build should be super nice and sturdy... the kind of thing you would give as a gift to someone and they'd be super impressed.

We've had lots of games built over the years, here's some ideas to get you thinking:

Connect Four	Checkers	Chess	Stratego
Operation	Jacks	Don't Break the Ice	3D Tick-Tack-Toe
Cribbage (the board)	Jenga	D&D (within reason)	Backgammon
Go	Chinese Checkers	3D Chess	Strategema
Croquet	Bean Bag Toss	Barrel of Monkeys	Pick Up Sticks

The kind of games we want to generally avoid are card games (because printing and cutting cards isn't fun), or games that rely on millions of tiny pieces (like Monopoly or Risk). In the end, you can choose the game you want!

1. Start the whole process by reviewing the Game Design Overview and think about what you might build or what tools you might use. Take a few notes in your engineering notebook as you get started.
2. Watch the three videos "The Design Brief", "Building Your Game", and "Documentation" and take some more notes on each topic. Be sure to be thinking about your own work as you go through them.
3. Now, following the guidelines from "The Design Brief", write out a complete design brief in your engineering notebook. Your design brief must include at least:
 - a. A clear statement of the problem or challenge being tackled
 - b. The deadline for the project and other deadlines you want to set for yourself
 - c. The criteria for success
 - d. The constraints you are limited by
 - e. The audience for your game and the scope of the project
4. Brainstorm at least 10 different ideas for games you could make or ideas for how you could make different games unique by building them in our makerspace. Be sure to write down your brainstormed ideas in your engineering notebook.
5. Select the game you want to build and start designing. As you create a design and a drawing of your idea, keep in mind that your design **must use 3 of the tools/machines in the makerspace**. The tools and machines available for you to choose from are:

<i>Woods Tools</i>	<i>Metalworking Tools</i>	<i>Laser</i>	<i>3D Printer</i>	<i>Electronics/Soldering</i>
<i>Vinyl Cutter</i>	<i>CNC Router</i>	<i>Heat Press</i>	<i>Large-Format Printers</i>	<i>Resins/Molding</i>

6. Have your plan approved by Mr. Benshoof so that he can confirm we have the supplies you want/need. Then, get into the makerspace and start building! Be sure to keep your deadline in mind as you work and make a plan!
7. When your game is complete, finish the project by playing 3 games with other students and getting feedback from them about how well it works and what could be improved.
8. Complete the Game Design Reflection by writing a page that answers the reflection questions given.



Part 1: Game Design Tasks		5 points	4-3 points	2-1-0 points
📄 Game Design & Design Brief Notes		+ You took at least 1 full page of notes on the unit presentations. + Your notes include the entire Design Brief expectations	- Less than a full page of notes in total.	- Design Brief notes missing - Notes completely missing or inadequate
		5 points	4-3 points	2-1-0 points
DESIGN BRIEF FOCUS	📄 Project Design Brief	+ Design Brief includes clear problem statement	- Problem statement is vague or poorly written	- Problem statement is missing
	📄 Project Design Brief	+ Design Brief includes the correct deadline		- Deadline is not listed
	📄 Project Design Brief	+ Reasonable criteria are listed and explained in the design brief	- Only 1 or 2 criteria listed - Criteria not well explained	- Only 1 poorly explained criteria - No criteria
	📄 Project Design Brief	+ Reasonable constraints are listed and explained in the design brief	- Only 1 or 2 constraints are listed - Only constraints are "time and money"	- Only 1 poorly explained constraint - No constraints
	📄 Project Design Brief	+ The audience and scope of the project are defined and some details given	- Audience and scope is not explained	- No audience/scope defined
		5 points	4-3 points	2-1-0 points
📄 Brainstorm		+ At least 10 game ideas or game improvements are brainstormed and recorded	- Only 6-9 ideas brainstormed	- Fewer than 6 ideas - Ideas not recorded
⊕ Draw & Design Game		+ Game idea and plan are drawn in engineering notebook before building		- Ideas not drawn in notebook before building
		20-16 points	15-10 points	9-0 points
⊕ Build Game		+ Game works as intended + Build process used 3 machines + Quality construction & durability	- Game mostly works - Process used 2 machines - Construction is weak	- Game not finished - Process used 1 machine
		10-9 points	8-5 points	4-0 points
📄 Game Design Reflection		+ Reflection questions answered in engineering notebook	- 2 or 3 questions answered	- 1 or 0 questions answered
★ Achievement		+ Finish the construction of your game on time and play a round with Benshoof		

Game Design Reflection Questions: Answer these questions in your engineering notebook

1. What game did you decide to make, and how did you try and make it special or unique?
2. What tools and machines did you use? What was new to you, and what did you learn as you used that new machine/tool?
3. What feedback did you get on your game from your classmates or Benshoof? How do you think it could be improved if you had the time to build another one?
4. In this unit, you had to budget your time carefully and complete your project by the deadline. What strategies worked well for keeping you on track? What will you do differently in our next project to make scheduling easier and possibly less stressful?

