

ENME 204 Project and Deliverables

Project overview

Play is developmentally important. Despite the developmental importance of toys, they are often inaccessible kids with disabilities. For example, sometimes the activation mechanism of an electronic toy (i.e., squeezing a small button) is inaccessible to some users. To solve the inaccessibility, an electronic toy can be adapted. An adapted toy has an added universal jack that allows for activation by a variety of mechanisms such as tilting one's head, biting, or pushing a larger button that sits in front of the user. An adapted toy is an example of an accommodation.

As defined by DO-IT, universal design is “the process of creating products that are accessible to people with a wide range of abilities, disabilities, and other characteristics.” Universal design minimizes the need for accommodations by creating a design that is proactively accessible rather than reactively accessible.

The project in this class asks you to consider: what would toy look like if it was universally designed?

Project requirements and scope

Create a toy that is universally designed. For the purposes of this project, a “toy” can be defined broadly as any product that engages the user in play. You may aim to design a toy that is accessible to as many people as possible or you may choose to design a toy for individuals with a specific disability. You may also aim to design a toy compatible for collaborative play between kids with disabilities and kids without disabilities.

The budget for this project is \$50 per person on the team (i.e., \$250 for teams of five people). Teams must stay within their budget.

The timeline for this project is approximately 12 weeks. Each team must have at least one physical product by the end of the course.

Finally, the product must have at least one 3D-printed part and at least one engineering linkage/mechanism. Electronic motors/switches are allowed, but not required.

Recommendations for a successful project

The most successful projects in this course are typically:

- (1) well-motivated by an identified need (i.e., gap in the market),
- (2) designed in collaboration with needs experts,
- (3) fit well within the budget and time constraints of the course.

Project grading

The design project is worth 35% of the total course grade; 30% of this grade is team-based and 5% is individual. The column “% of design project grade” indicates how each deliverable will be weighted relative to each other to calculate the unweighted team total. Team grades will subsequently be weighted from 0.8 to 1.05 based on teamwork assessments.

Project deliverables

| | Description | Type | % of team project grade (total points: 2000) | % of individual project grade (total points: 500) | Due date |
|---------------------------------|---|---------------------|--|---|--|
| CATME | CATME to create teams | Individual | | 5% (25 points) | Feb 6 at 11:59pm |
| Deliverable 1A | Team Contract | Team | 2.5% (50 points) | - | Feb 18 at 1pm |
| Deliverable 1B | Project Definition and Planning Report | Team | 7.5% (150 points) | - | Feb 25 at 1pm |
| Deliverable 2A | Product definition, part 1 | Team | 5% (100 points) | - | March 4 at 1 pm |
| Deliverable 2B | Product definition, part 2 (QFD) | Team | 7.5% (150 points) | - | March 11 at 1 pm |
| CATME check-in #1 | Teamwork assessment | Individual | - | 5% (25 points) | March 13 at 11:59 pm |
| Deliverable 3 | Conceptual Design | Team | 7.5% (150 points) | - | March 25 at 1pm |
| Deliverable 4 | Midterm Presentation | Team and Individual | 10% (200 points) | 20% (100 points) | April 1; slides due at 1pm, midterm presentations in lab |
| 3D printing deadline (optional) | Deadline #1 for 3D printing | - | - | - | April 10 at 11:59 pm |
| Deliverable 5A | Team Status Report 1 | Team | 2.5% (50 points) | - | April 15 at 1pm |
| CATME check-in #2 | Teamwork assessment | Individual | - | 5% (25 points) | April 24 at 11:59 pm |
| 3D printing deadline (optional) | Final deadline for 3D printing | - | - | - | May 1 at 11:59pm |
| Deliverable 5B | Team Status Report 2 | Team | 2.5% (50 points) | - | May 6 at 1pm |
| Deliverable 6 | Poster and presentation of poster and prototype(s)/products | Team | 5% (100 points), 25% (500 points) | - | May 13 at 11:59pm – poster due if you want us to print it Presentation during final exam time (Tues May 20 1-3pm) |
| Deliverable 7 | Final Report | Team and Individual | 25% (500 points) | 50% (250 points) | May 21 at 11:59 pm |
| CATME check-in #3 | Teamwork assessment | Individual | - | 15% (75 points) | May 21 at 11:59 pm |