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| **3D Team Prototyping Project: FINAL DELIVERABLE** |  |
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| "If you want to change the world, make something beautiful."  —Charlie Peacock; song writer and singer | |



## Industry Problem – How might we create an engaging and interactive educational experience for museum patrons? OUTCOME: a physically engaging way to reveal an answer/fun fact and learn something

Your assigned team has been tasked with creating an innovative way for museum patrons to interact and engage with an exhibit at a museum to reveal an answer or fun fact. Your team will conduct research, identify and talk to experts, interview users and non- users, ideate, and then design and 3-D print your prototype (using only parametric modeling) per the guidelines of the assignment.

Here are some additional guidelines for you to consider that may help frame your solution:

1. Creativity and cool factor
   * Is the experience engaging?
   * Will it attract visitors from across the room?
   * Does it allow the visitor to do something that they don’t get to do every day?
   * Is it fun?
2. Throughput\* and effectiveness at communicating a message
   * How much time does the experience require?
   * Will enough people get to try the experience when the exhibit is busy?
   * Can visitors get something from the watching someone else do it.  This is important for group tours and those who do not wish to do it themselves.

*\* Throughput is the term we use to describe the rate that people can go through an exhibit or attraction.  If an experience takes a minute per person to complete, and only one person can do it at a time, then the throughput would be 60 people/hour.*

1. Constructability, cost to produce, and value
   * Is it feasible to create the experience, will it function reliably as intended
   * Will it fit into the project budget
   * Is there enough “bang for the buck” or would the money be better spent on a different experience
2. Cost to operate, durability, and ease of maintenance
   * Will the experience function reliably for the long term
   * Will it withstand guest abuse
   * Can wearable parts be easily and inexpensively replaced
   * Do replaceable parts require custom manufacturing or can they be purchased “off the shelf”
   * Are all components easily accessible for maintenance staff
   * Is maintenance simple or does it require special training
3. Accessibility
   * Does the experience comply with ADA standards
   * Can people with varying abilities participate in the experience

# SCHEDULE

Week 1: February 10-14

Team assignments, begin research

Introduce Individual 3D skills assignment (not related to team assignment)

Week 2: February 17-21

Hands-on technical sketch exercise for Individual 3D skills assignment in class

In-class teamwork as time permits

Teams meet outside of class as needed for team project

Week 3: February 24-28

Pitch Individual 3D skills assignment PowerPoint Poster and innovations in class (not related to team assignment)

In-class teamwork as time permits

Teams meet outside of class as needed for team project

March 2-6

UF Spring Break

Take this time to visit a museum!

Teams may want to utilize Collaboration tab in Canvas to meet virtually as needed

Week 4: Beginning on Sunday night, March 8, and continuing March 9-13

Deadline to have TA check .stl file prior to taking to Marston Library (the night before your class)

Deadline to submit Fusion 360 file to Marston Library for 3D printing (refer to due date for your class section at end of this document). All submissions must be made in person.

NOTE: You must pay before they will print.

Practice pitch in class for peer feedback

See *3D Printing Guidelines for Marston Science Library below*

Deadline to submit Illustrator file to TAs if a component of your prototype needs to be laser cut. Submit to Laser Cut Team File Challenge 2 – (Optional) by midnight after your class meeting this week. Consider bringing the file to TA office hours in Beaty on a flash drive to have a TA check it before submission.

Week 5: March 16-20

Final pitch in class per the guidelines above and in Canvas.

Finalists will be chosen within the next week

April 1, 6:30-7:30pm, Carleton Auditorium

Finalists will pitch their ideas and prototypes to a panel of experts. One overall winner will be chosen.

Required event for all Creativity in Context students in lieu of Speaker Series #2.

## 3D Printing Guidelines for Marston Science Library

Marston 3D printing library video tour: <https://youtu.be/kn_CE5XaBX4>

Team will create final prototype in Fusion 360. All models must be modeled full scale.

Team will bring flash drive with .stl file to TA hours; TAs will look at file to diagnose any basic issues that need to be addressed. Export each body as an individual .stl file. Bodies that overlap and are intended to be printed as one model must be unified into one body using the Combine command in Fusion 360 before export.

After a successful consultation with the TA, the TA will schedule your team’s consultation time with the 3D lab in Marston. As many team members as possible need to attend the consultation at the library (approximately 15 minutes), so work with the TA to schedule a good time for your team. Time slots are available on a first come, first served basis. Please remember the time of your consultation.

During consultation, lab staff will ensure file is water tight, aid in sizing, and generate invoice for payment once your file is submitted. Final files must be submitted in person with lab staff – NOT via the on-line submission process.

Team leader will receive an e-mail after final file is submitted to the lab with a payment link. Payment must be made by on-line (credit/debit card); models will not be sent to print until they are paid. Decide amongst your team how you will handle payment.

Each team member should be prepared to spend no more than $25/each for this project. A team of 5 members could have up to $125 to spend on the 3D model. Models should be printed large enough to allow effective demonstration and audience interaction. Don’t make poor decisions about model size to save money. Models that integrate laser cut components should not be scaled unless the laser cut file is scaled the same amount.

Models are 15 cents/gram (For example, a 4-inch cube with 20% standard infill would cost $54.60 and take approximately 14 hours to print with standard resolution and 2.5mm layer thickness.) During your consultation, the lab staff can scale your model to fit your budget and let you know how long the print will take.

Team leader will receive e-mail notifications from the library when printing has started for your model, and when it is ready for pick up. You may pick up any time the library is open from the circulation desk. When you pick up, account for post-processing time for your model (so you will want to do this at least 1 day prior to your in-class presentation). The desk has tools you can check-out on-site to clean up your model. The TAs can also help with post-processing clean up during office hours.

If there is a problem with printing your model, the team leader will also receive an email. Please forward this email to your instructor if the problem will cause a delay in your project.

All models can be only ONE COLOR. Max size: 10.5” x 10.5” x 8.5” (this is the machine limit). Minimum size: 4” x 4” x 4” or 64 cubic inches or 1048 cubic centimeters. 3D printed model may be a scaled version of the life-sized version.

If your final prototype also includes a laser cut component, be sure to scale the size of your Illustrator file to match your Fusion file.

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| **Order** | **# 3D Teams** | **Faculty** | **Course** | **Section#** | **Day** | **Periods** | **Location** | **Due to TA** | **Due to Lab** | **Pick-up** |
| 1 | 5 | Cummings | IDS 1940 | 2C72 | T | 2-3 | Beaty | 9-Mar | 10-Mar | 16-Mar |
| 2a | 5 | Cummings | IDS 1940 | 14E2 | T | 8-9 | Infirmary | 9-Mar | 10-Mar | 16-Mar |
| 2b | 5 | Castronovo | IDS 1940 | 14E3 | T | 8-9 | Beaty | 9-Mar | 10-Mar | 16-Mar |
| 2c | 4 | Neumann | IDS 1940 | 14E1 | T | 8-9 | Jennings | 9-Mar | 10-Mar | 16-Mar |
| 3 | 4 | Roberts | IDS 1940 | 2D49 | W | 2-3 | Beaty | 10-Mar | 11-Mar | 17-Mar |
| 4a | 5 | Suarez | IDS 1940 | 2C95 | W | 8-9 | Infirmary | 10-Mar | 11-Mar | 17-Mar |
| 4b | 5 | Castronovo | IDS 1940 | 2D14 | W | 8-9 | Beaty | 10-Mar | 11-Mar | 17-Mar |
| 5 | 4 | Cummings | IDS 1940 | 2D24 | R | 2-3 | Beaty | 11-Mar | 12-Mar | 18-Mar |
| 6 | 3 | Roberts | IDS 1940 | 2D42 | R | 3-4 | Infirmary | 11-Mar | 12-Mar | 18-Mar |
| 7a | 5 | Cummings | IDS 1940 | 2D47 | R | 8-9 | Infirmary | 11-Mar | 12-Mar | 18-Mar |
| 7b | 5 | Neumann | IDS 1940 | 2E24 | R | 8-9 | Beaty | 11-Mar | 12-Mar | 18-Mar |
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***Two TAs will be available on Sunday night, March 8, following Spring Break. Take advantage of this time for consultation on your Fusion 360 file!***