MARYLAND INSTITUTE COLLEGE OF ART

MPS Data Visualization
Capstone Project Requirements

The Graduate Capstone Project allows students to conclude the MPS degree by completing a project of their own design on a topic of their choosing. The project is interdisciplinary in approach and reflects an interest that the student has discovered or developed during the MPS program. This project provides the opportunity for the student to demonstrate the concepts and knowledge learned throughout the program applied to an independent project of their design.

PROJECT PROTOTYPE OPTIONS & MINIMUM REQUIREMENTS

Capstone project options and minimum deliverables are outlined below. Each student will choose one of the options to complete during the final intensive course, which will be presented during the capstone project final review to peers and a review panel. Students will provide a final project prototype, presentation and written project brief. Specific evaluation criteria and metrics are further outlined in the evaluation criteria and rubric sections of this document. Due date, submission details, and date of presentations will be provided by your instructor.

1. **2D Data Visualization:** The student must present variations of at least three visual representations of data. The visualizations can vary in size, format, purpose, audience, and/or content. The project should also include:
   - Project Archive: A zipped file of all project elements, including native files, linked images, and fonts; a PDF for each design; and a print specification sheet for each design.

2. **Interactive Data Visualization**: The student will present one developed interactive prototype that includes a web-based application and demonstrates at least three fully functioning variations of the data visualization. Examples of this type of project include but are not limited to a website, application, or game.
   - Within the project brief, the student must include screenshots of the landing page and interactive elements.
   - ARCHIVE: A zipped file of all project elements and a specification sheet (software, linked images, etc.) for unpacking the interactive.

3. **3D Data Visualization:** The student must present one physical three-dimensional prototype of an interpretation of data and at least three 2D images/sketches/renderings of the project in development.
   - Within the project brief, the student must include three 2D renderings of the project (sketches, mock ups, models, etc.) in development.
   - ARCHIVE: A zipped file of all project elements, including native file, images and fonts for the project; PDFs of concept sketches; and a mockup of the project.

4. **Virtual/Augmented Reality Data Visualization:** The student must present one virtual or augmented reality prototype based on data with at least three 2D images/sketches/renderings of the project in development

- Within the project brief, the student must include three 2D renderings of the project (sketches, mock ups, models, etc.) in development.
- ARCHIVE: A zipped file of all project elements and a specification sheet (software, linked images, etc.) for unpacking the project.

Students may propose an alternate data visualization option. However, the proposed option must be detailed and submitted for approval within the first week of the capstone course. Otherwise, students must choose from one of the above options.

CAPSTONE PROJECT PRESENTATION

Students will have 30 minutes to deliver their capstone presentation, including the demonstration of their project prototype. There will be a period of approximately 10 minutes for questions and answers. *Students must attend all presentations in order to participate in peer reviews. Peer reviews will be included in the evaluation criteria.*

Student presentations will be virtual and will take place over Zoom. The date and time slots for presentations will become available at least a month prior to the presentations.

Consent to share project: https://forms.gle/5b7p47MsKhAQP9Fq7

CAPSTONE PROJECT BRIEF

All students are required to write a project brief, which contextualizes the project into a formal summary. The Capstone Project Brief will be shared with the audience prior to the presentation as well as documented and evaluated as part of the Capstone Project. After the final capstone project has been submitted and graded, students are encouraged to also submit their projects for publication.
The brief content and structure are outlined below:

- Project Title Page: Title, Students Name, Date, Cohort #
- Content:
  - The brief should include a 150-250 word summary of the capstone project.
  - The brief should address the project questions outlined in this document. However, they may be addressed in a more concise and abbreviated format.
- Citations: Students should include at least 2 citations written in APA format.
- The length of the brief should be no less than 1,500 and no more than 2,500 words typed.
- Delivered format should be a pdf saved as: yyyymmdd_last name_first initial_course number.pdf

See further requirements of the project brief outlined within each project option.

CAPSTONE PROJECT EVALUATION CRITERIA

All sections of the project should address the key topics outlined within the project prototype rubric (rationale, data, target audience, design, application).

Capstone Project Presentation Rubric

*The presentation is worth **20%** of overall project grade. It will primarily be evaluated on the quality of content, quality of oral delivery and storytelling, visual presentation and meeting criteria.*

CRITERIA	Deficient	Adequate	Good	Excellent
Quality of Content (10%) *The degree to which evaluation topics (rationale, data, audience, design, application) are addressed as outlined within capstone guidelines,as well as evidence of research and knowledge of the topic.*	0 < score < 7	7 < score < 8	8 < score < 9	9 < score < 10
Quality of Delivery (5%) *Oral presentation is typically most successful when planned and practiced. How well is the story situated within a thoughtful sequence that supports the content.*	0 < score < 2	2 < score < 3	3 < score < 4	4 < score < 5
Visual Presentation (5%) *The degree to which the visual presentation is considerate of the design principles, supporting the story and content.*	0 < score < 2	2 < score < 3	3 < score < 4	4 < score < 5

Capstone Project Brief Rubric

*The project brief is worth **20%** of overall project grade. The brief will primarily be evaluated on the quality of content, quality of writing and meeting criteria. Further details on project brief requirements are outlined under the project brief requirements document.*

CRITERIA	Deficient	Adequate	Good	Excellent.
Quality of Content (10%) *The degree to which evaluation topics (rationale, data, audience, design, application) are addressed as outlined within capstone guidelines,as well as evidence of research and knowledge of the topic.*	0 < score < 7	7 < score < 8	8 < score < 9	9 < score < 10
Quality of Writing (5%) *The paper is free from grammatical and spelling errors, proper writing and citation format is followed, logical structure and sequence, etc.*	0 < score < 2	2 < score < 3	3 < score < 4	4 < score < 5
Requirements Met (5%) *Submitted on time, in proper format, proper documentation, original work, etc.*	0 < score < 2	2 < score < 3	3 < score < 4	4 < score < 5

Capstone Project Prototype Rubric

*The project prototype is worth **50%** of the overall project grade. The prototype will primarily be evaluated on the quality of the project rationale, data analysis and interpretation, how well the audience is considered and addressed, quality of design and application.*

CRITERIA	Deficient	Adequate	Good	Excellent.
Project Rationale (10%)**:** *The rationale should be apparent in the visualization and clearly articulated by the student within the capstone presentation and brief. The rationale should be supported with detail and be clearly articulated.*	0 < score < 7	7 < score < 8	8 < score < 9	9 < score < 10
Data Analysis & Interpretation (10%)**:** *The student should be able to demonstrate an in-depth understanding of their data. At minimum, this should include how the data was collected, cleaned, structured/formatted, analyzed, interpreted and visualized. The student should also be able to critique source data and identify applicable biases.*	0 < score < 7	7 < score < 8	8 < score < 9	9 < score < 10
Audience (10%)**:** *The target audience should be clearly identified and described. The student should be able to support why this target audience was chosen and successfully address their interests through the project prototype.*	0 < score < 7	7 < score < 8	8 < score < 9	9 < score < 10
Design (10%)**:** *The design should support the rationale, story, data, target audience and overall user experience. The medium should be appropriate for the subject matter. The visualization should reflect a thorough understanding of the design principles and effectively represent the data. The student should be able to explain their design process and how the executed design and experience contribute to the success of the entire project.*	0 < score < 7	7 < score < 8	8 < score < 9	9 < score < 10
Application & User Experience(10%): *The student should be able to explain how the application and user experience were informed by other aspects of the project. The application and user experience should effectively tell the story, key takeaways or convey the intent outlined within the rationale. The student should be able to articulate how the design and application work together to support the data, rationale and target audience.*	0 < score < 7	7 < score < 8	8 < score < 9	9 < score < 10

Capstone Project Peer Review Rubric

*Peer review is worth **10%** of overall project grade. This will primarily be evaluated on the quality of review the student provides for their peers as well as peer evaluations received.*

CRITERIA	Deficient	Adequate	Good	Excellent.
Quality of Review Given (5%) *Each student should fill out an evaluation form for their peers, which will include quantitative as well as qualitative feedback. Written feedback should include constructive critique as well as highlight positive attributes of each project.*	0 < score < 2	2 < score < 3	3 < score < 4	4 < score < 5
Evaluations Received by Peers (5%) *Scores received from peers will be averaged and contribute to each student's overall peer review evaluation.*	0 < score < 2	2 < score < 3	3 < score < 4	4 < score < 5

RUBRIC DEFINITIONS

Excellent
Student's work includes and demonstrates excellence in all, or nearly all of the areas listed in the criteria.

Good
Student's work includes all criteria and provides high quality content in all or all but one of the areas listed in the criteria. Or, student is missing 1-2 areas listed in the criteria.

Adequate
Student's work includes the minimum requirements to address all or all but one of the areas listed in the criteria. Or, student is missing 2-3 areas listed in the criteria.

Deficient
Student's work is lacking depth and content in several areas listed in the criteria, or, several areas listed in the criteria are missing.

CAPSTONE PROJECT PROMPTS

The below prompts are intended to serve as catalysts for addressing the basic principles within each topic. Students are encouraged to expand beyond these questions and to dive deeper into their data and subject matter.

Project Rationale

- Why did you choose this subject matter for your project? Who/what was your inspiration?
- Why is your subject matter/ data important or relevant?
    - How is the subject meaningful to others?
    - How does this project provide further insight or new perspective to the topic?
- What is the story, curiosity, and/or inspiration behind your visualization/ subject matter?
- What was your approach to the subject? Did you have an idea/story then find the data to support it, or did you discover your story through analyzing data and information?
- Is this topic new or unique? If so, how?

Data Analysis & Interpretation

- What kind of data/information was used?
    - Who is the source? How reliable is the source? What was their motivation?
    - What were the methods of collection? Did the dataset include documentation? Was there anything notable about the collection process that should be discussed/disclosed?
    - How was the data cleaned and structured?
- In the process of analyzing the data and information, what surprised you? What was challenging? Would you have done anything differently?
- What are the key findings? How are they relevant? Is the key takeaway apparent?
- What new questions arose from your research and analysis?
- How did the process inform the story?
- How did the data influence the design?

Audience

- Who is the target audience for the visualization? Why did you choose that target audience? Who are the key stakeholders?
- Is the target audience an appropriate and relevant fit for the subject matter and data?
- How did the target audience influence the narrative and design?
- How did the target audience influence the visualization medium and technology?
- How did you perform user research and testing with the intended audience? What feedback/ insights did they provide?
- What secondary audiences may be interested in the visualization?

Design

- Is the visualization new, unique, or creative? How?
- Why did you choose the medium used for your visualization? What unique attributes of this medium enhance the visualization compared to others that could be considered?
- How do the medium and design elements successfully:
    - support the rationale?
    - represent the data?
    - specifically influence or support the story?
    - support the target audience/ user in decoding the meaning or key takeaways?
    - support the overall user experience?
    - support the type of visualization (exploratory/ explanatory)?
- What were some of the design challenges? How did you resolve them?
- Is the design visualization aesthetically pleasing? Does it consider the design principles?

Application & User Experience

- What is the intended use of the visualization (to inform, to educate, to explore, to advocate)?
    - How is the intended use considered within the user experience?
    - Does the prototype successfully accomplish the intended use?
- What alternative methods were explored to visualize the data and information before the development of this final product? What was learned and applied from those alternatives?
- How does the application assist in conveying the project rationale, meaning/key takeaways?
- Is the prototype easy to use, understand or navigate?
- Did you learn something new to execute this project? What would you do next with this project if more time was available? What would you do differently?
- What findings or opportunities warrant further research or consideration?
- Does the final prototype include all required information:
    - Name of student/ creator
    - Project deliverables outlined in project option
    - Resources/ Reference/ Citations/ Collaborators
    - Link to data source and any important documentation on data source or analytics
    - Anything else that should be included to support the project prototype
