

# Kentucky Derby

MCHE 201: Introduction to Engineering Design  
Spring 2019 – Final Project

Presentation: Thursday, May 9th, 5pm

Report Due: Tuesday, May 7th, 5pm

Assignment: Teams should report and present on the complete Kentucky Derby design process, including evaluation of the results. Details on the requirements of these reports are included in the following pages.

Submission: The report and presentation should be submitted via email:

- to [joshua.vaughan@louisiana.edu](mailto:joshua.vaughan@louisiana.edu)
- with subject line **TeamX-MCHE201-FP3** where the **X** in **TeamX** is your team number, and
- all team members copied on the submission email.

The report submission email should include a single pdf of the report with file name **TeamX-MCHE201-FP3.pdf** where the **X** in **TeamX** is your team number for the report submission.

The presentation submission email should include a link to your team's presentation on vimeo.

*Note:* Submissions with incorrect filenames or submitted as multiple images/pdfs will be rejected.

## 1 Introduction

Report on the design of your Kentucky Derby robot. The report should introduce your chosen design and support its selection in a document containing at *most* 10 pages of text (figures, tables, etc. are excluded from this page count). This support should include final versions of the design tools used to generate the concept. In addition, two alternative designs (for a total of three) and evaluation of them via an Evaluation Matrix should be included. Finally, the robot's performance in the Kentucky Derby contest and judging should be documented, and the design process evaluated using this new data (*i.e.* What assumptions about the contest did you get right? What did you get wrong?) A suggested outline and required formatting for the report are attached to this document.

## 2 Presentation

This presentation should discuss the design for the Kentucky Derby contest. Because of our large class size, you will create a video presentation and post it online. The chosen design should be presented and support for its selection given. This support includes reporting on the House of Quality, the Specification Sheet, the Function Tree, and Evaluation Matrices. At least 2 alternative concepts should be presented and evaluated, using the Evaluation Matrices, along with the chosen design. Finally, the design performance should be evaluated in terms of the assumptions made during the design process. This presentation is limited to 10 minutes per team.

All presentations must adhere to the specifications for the video submission posted on the class website.

## 3 Report

The chosen concept for entry into the Kentucky Derby contest should be presented. This report should present the chosen design, then provide support for its selection. Problem understanding tools should be used support the chosen the design. In addition, two alternative concepts should be presented and evaluated, along with the chosen design, using Evaluation Matrices. Finally, the performance of the design in the contest should be reported and used to evaluate design process. The report should be no *more* than 10 pages of text, excluding the abstract and figures.

A suggested outline for the report is attached to this document. You may also refer to Chapters 10–13 of the textbook and/or the **C.R.A.W.LAB** Style Guide, found at:

[http://shared.crawlab.org/CRAWLAB\\_StyleGuide.pdf](http://shared.crawlab.org/CRAWLAB_StyleGuide.pdf)

Formatting requirements and a report template, including a L<sup>A</sup>T<sub>E</sub>X source file, can also be found on the class website.

## Suggested Outline

Title Page

Abstract – Standalone summary of the report’s contents, on a separate page

### I. Introduction

- Introduce the problem and its challenges
- End with a “roadmap” sentence outlining what is in the remainder of the report

### II. Final Design

- Present the functionality of the final conceptual design
- Start with a complete system discussion and work toward detail
- Use computer-generated sketches to support your description
- Label key parts in the sketches, matching labels to the text description
- Do *not* use only pictures. You may include pictures, but they should supplement your figures, *not* replace them.

### III. Problem Understanding

- Give concise presentation of the problem understanding process followed
- As support, include and discuss:
  - House of Quality
  - Specification List
  - Function Tree

### IV. Concept Evaluation

- Present two alternative designs (So, the report should include three total designs.)
- Support the selection of your final design via a Third-level Evaluation Matrix

### V. Design Performance Evaluation

- Present an analysis of your robot’s performance
- Evaluate your design process using this new data (*i.e.* What assumptions about the contest did you get right? What did you get wrong?)

### VI. Conclusions

- Summarize what was presented in the report
- *No* new information is presented here

### VII. References (if needed)