CanSat/ARLISS

- A Rocket Launch for International Student Satellites

- Held in fall in Black Rock, NV

- Two classes of competition

- Many more Japanese than American teams
The Black Rock Desert

The Black Rock Desert
The Launch
To Win...

- Survive launch and landing
- Autonomously move toward target
- Stop within 100m of target
- Prove the device utilized some control algorithm
CanSat Comeback Class

• Size and weight of Coke can

• Launched to ≈12,000 ft.

• Autonomously navigate to target location
CanSat Comeback Class

- Size and weight of Coke can
- Launched to $\approx 12,000$ ft.
- Autonomously navigate to target location
Open Class

- Must fit in 146mm diameter, 240mm deep cylinder and be less than 1050g

- Autonomously navigate to target

- Launched to ≈12,000 ft.
Open Class Examples
Open Class Examples
Open Class Examples
UL Lafayette’s *First-Ever* Team
UL Lafayette’s 2015 Team
UL Lafayette’s 2015 Team
UL Lafayette’s 2016 Team
UL Lafayette’s 2016 Team
UL Lafayette’s 2016 Team
UL Lafayette’s 2016 Team
2015 Launches

• Launch 1 – https://vimeo.com/docvaughan/arliss2015launch1

• Launch 2 – https://vimeo.com/docvaughan/arliss2015launch2
Testing on the desert

• Pre-launch – https://vimeo.com/docvaughan/2015prelaunchtesting

**flickr Albums from Past Teams**

- 2014 – [https://flic.kr/s/aHsk2LRZyC](https://flic.kr/s/aHsk2LRZyC)
- 2015 – [https://flic.kr/s/aHsk6Xt1hc](https://flic.kr/s/aHsk6Xt1hc)
- 2016 – [https://flic.kr/s/aHskC3FrAj](https://flic.kr/s/aHskC3FrAj)
- 2018 – [https://flic.kr/s/aHsmorEUtX](https://flic.kr/s/aHsmorEUtX)
Your Mission – Design an Open-Class Entry

- By 5pm, 2/8 – Initial Report Submission

- Week of 2/11 – Meet with one of us to review

- By 5pm, 2/22
  - Final Report
  - Final Presentation

- By 5pm, 3/1 – As an (individual) HW assignment
  - Comment on 2 other teams’ presentations
Final Report and Presentation

• Report – ≤4 pages of text

• Video – ≤5-minute presentation video to vimeo.com

• For both, you’ll need to explain:
  - Problem Understanding
  - Specifications
  - Necessary Functionality
  - Develop and evaluate 3 alternative concepts
  - Objectively select a concept (3rd level Eval. Matrix)
## Mini-Project 2 Timeline

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
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<tbody>
<tr>
<td>February 8</td>
<td>Initial Report due, 5pm</td>
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<tr>
<td></td>
<td>11  Review Report during this week</td>
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<tr>
<td></td>
<td>22  Final Report and Presentation due, 5pm</td>
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<tr>
<td>March  1</td>
<td>Presentation Comment HW due, 5pm</td>
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</tbody>
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Handouts for all plus team assignments are available at the class site.
• Propose a design *concept*

• Fully-detailed design *not* needed
  - You don’t need to specify bolt-sizes, etc.
  - CAD drawings are *not* required, but figures should:
    ✦ Be computer-generated
    ✦ Not be *just* photos (photos must only supplement drawings)
    ✦ Have enough detail to understand the functionality

• Report is *maximum* of 4 pages of text
  (figures, tables, etc. excluded)

• Have fun
To think about...

- I will likely have funding for a 2019 entry
- Ideally a multi-semester project
  - Design and prototyping, and building spring and summer
  - Attend contest mid-Sept 2019
  - Revise design after contest
- Goal is to continue to compete annually
- Also a great Senior Design project