

# Welcome to EME150A!

TA: Destiny Garcia

Mechanical & Aerospace Engineering

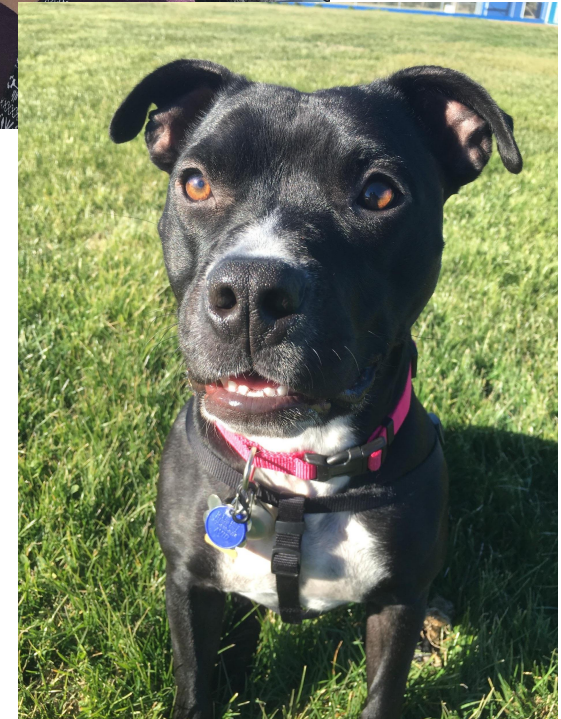
# Agenda

- Introduction
- Syllabus
- What is Mechanical Engineering Design?
- Discussion
- Wrap up!

# Introduction

## Destiny Garcia

- 3<sup>rd</sup> Year Mechanical & Aerospace Engineering PhD graduate scholar
- Research: Distortion Manufacturing due to clamping mechanisms and stresses
- Fun fact: Visited Germany over summer & I just taught my dog how to play dead!



# Get to know your neighbors

- Groups of ~4:
- In your groups:
  - Name
  - Major & year
  - What machines do you hope to design in the future?
  - Fun fact!

# Mechanical Design – 150A & 150B

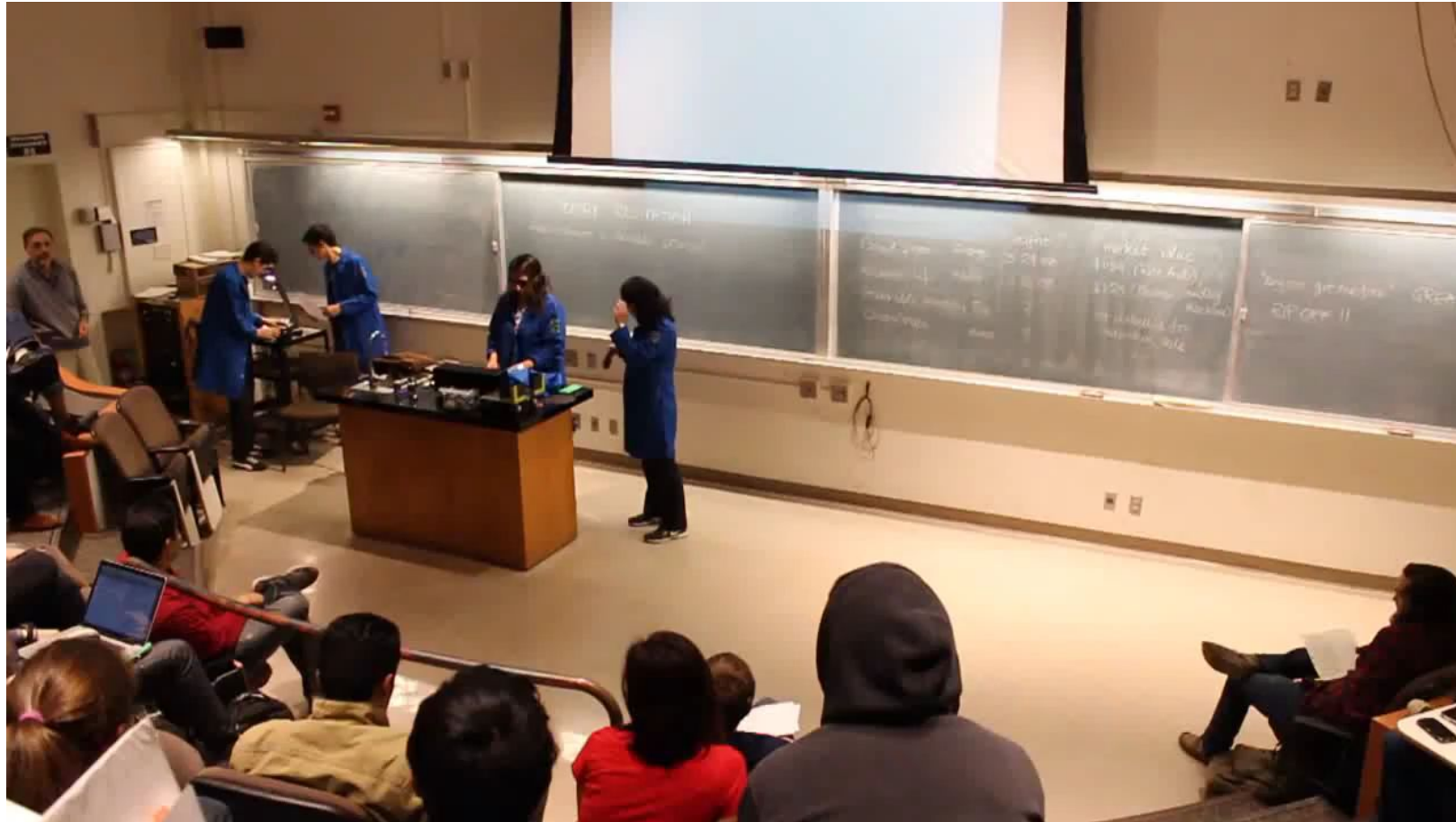
- 150A:

- Design
- Failure & fatigue analysis
- Product Lifetime
- Design project to prep 185 (Senior Design/Capstone Project)

- 150B:

- Gears
- Motors
- Drive trains
- Design and manufacture “Shigley Hauler”

# Flashback to EME150B winter 2014



# 150A Project: Bicycle Rack for Unitrans Bus

- Design a bike rack for Unitrans busses
- Concepts from:
  - ENG 35
  - ENG 45
  - ENG 104
  - EME50



<http://sf.streetsblog.org/2015/05/05/three-bike-bus-racks-on-muni-a-solution-for-late-night-transit-woes/>

# Syllabus

- <http://moorepants.github.io/eme150a/>
- <https://login.canvas.ucdavis.edu>
- <https://piazza.com/class/it3yfhga4t66u6>



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EME 150A 001 FQ 2016 > Syllabus

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## EME 150A 001 FQ 2016

[Jump to Today](#) [Edit](#)

The syllabus and all public information related to this course can be found on the course website:

<http://moorepants.github.io/eme150a>

### Assignments Summary:

Date	Details	
Wed Sep 21, 2016	<a href="#">Fill out the CATME Survey</a>	due by 11:59pm
Fri Sep 23, 2016	<a href="#">Purchase a Design Notebook</a>	due by 9am
Fri Sep 30, 2016	<a href="#">30 Design Aspects</a>	due by 9am
Fri Oct 28, 2016	<a href="#">Midterm</a>	due by 10:50am
Wed Dec 7, 2016	<a href="#">Final</a>	due by 10am

- Import from Commons
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- View Course Analytics



Assignments are weighted by group:

Group	Weight
Assignments	0.0%
Homework	10.0%
In Class	10.0%
Design Project Part 1	20.0%
Design Project Part 2	20.0%
Exams	40.0%
<b>Total</b>	<b>100%</b>

plazza.com

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bus bicycle rack - Google... Confirmation of Enrollmen... Syllabus Comparing moorepants:m... EME 150A 001 FQ 2016 Piazza | Class Settings EME 150A

plazza EME 150A Q & A Resources Statistics Manage Class Careers Feed Destiny Garcia

hw1 hw2 hw3 hw4 hw5 other

Unread Updated Following

New Post Search or add a post...

PINNED

Private Search for Teammates! 9/14/16

THIS WEEK

Is it possible I use older edition of text... Mon

LAST WEEK

Private Introduce Piazza to your stu... Wed

Private Get familiar with Piazza Wed

Private Tips & Tricks for a successf... Wed

Welcome to Piazza!  
Piazza is a Q&A platform designed to get you great answers from classmates and instructors fast. We've put together thi

### Class at a Glance

Updated 29 seconds ago. [Reload](#)

- ✓ no unread posts
- ✓ no unanswered questions
- ✓ no unresolved followups

6 total posts  
7 total contributions  
1 instructors' responses  
0 students' responses  
n/a avg. response time

Student Enrollment ..out of (estimated) [Edit](#)

7 enrolled

### Careers at a Glance


- ✓ 1629 total connections
- ! 12% profile completed
- ! 0 companies viewed

2016 Job Status:

Worked at: [edit](#)

Visa requirement: Not set [edit](#)

Companies recently added



\*Companies will never, ever see your questions or answers on Piazza, and we do not expose any personal information unless you allow it.

# What is Mechanical Engineering Design?

- In your groups:
  - Define mechanical engineering design in 1-2 sentences.
  - Think about what you've learned in previous courses, or class readings.

# Mechanical Engineering Design

“The process of creating a solution to a problem or need utilizing mechanical systems and principles under constraints such as limited resources, limited knowledge, or codes and standards. The process involves creativity, ideation, ingenuity, and analysis that may need to guarantee safety, maintainability, sustainability, ethical standards, etc.”

-Jason Moore

# Typical mechanical design process:

1. Identify the needs
2. Rewrite needs as engineering specifications
3. Generate concepts
4. Evaluate concepts to see if they meet the needs and specs
5. Select best concepts
6. Test prototypes best concepts to see if they actually meet the needs and specs
7. Select best concept
8. Refine the design until specifications are met
9. Develop a implementation plan
10. Implement

NOTE: this is iterative!

# Wrap up!

- Come to Bainer 2071 on Friday at 9 AM (Design Studio (CAE lab))
- Bring a design notebook
- Fill out CATME by midnight tonight!!