




## Fabulous Fridays in Engineering Fundamentals




One of the recent advances in teaching pedagogy is a flipped, or inverted, class. The basic concept is that students watch the lecture outside of classroom time, and work on homework during class time, with the professor acting more as a coach. Within the engineering field, most implementations of the flipped class concept add active learning to the course. In our review of the literature, a common phrase is the flipped class creates time. A typical flipped class in engineering will have students watch the lecture outside of class time, have active learning activities during class time rather than having a traditional lecture, and still have the same amount of homework. Our engineering fundamentals classes have always had the active learning component through our recitations, and thus have had that aspect of the flipped classroom model. Students in our classes report spending about 7 hours a week on homework, so we cannot ask students for any more time. We have implemented the flipped class model by making videos available for the Friday lecture, and having Friday class be optional. The lecture is broken up into about 6 minute videos, and there is a short concept question or two the student

has to answer after watching each video. A sample screen shot of the video/concept question is shown. In EF 151, we give students the choice of either coming to class or watching the videos (or both). About 30% of the students come to the lecture. In EF 152 we initially tried just having the instructors available for help during the lecture time on Friday. Very few students took advantage of this, so we are trying an approach where we come to class, provide a 5-10 minute review of the lecture, and then spend the rest of the time providing homework help. We will report the results and provides updates in future newsletters.

5.

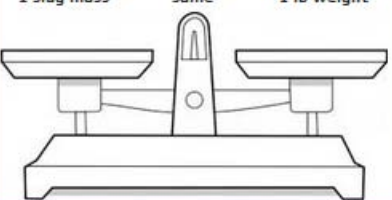

**Conversion Factors**

- Force
  - 1 Newton = 0.2247 lb
  - 1 lb = 4.448 Newtons
  - An apple weighs about: 
  - What is your weight in Newtons?
- Mass
  - 1 kg = 0.06846 slugs
  - 1 slug = 14.594 kilograms
  - What is your mass in kg? \_\_\_\_\_ slugs? \_\_\_\_\_
- Weight – force of gravity  $W =$  \_\_\_\_\_
- Lazydog weighs 43 lb on the earth and  $g_{\text{moon}}$  is 5.31 ft/s<sup>2</sup>
  - what is the dog's mass on the moon? \_\_\_\_\_
  - what is the dog's weight on the moon? \_\_\_\_\_

EF 151 Fall, 2013 Lec 2-3

Note: All weights used below are measured on Earth.

Part	Description	Answer	Chk	History
A.	<p>Click on the side of the scale that will tip down. Click in the center if it will balance.</p> <p style="text-align: center;">1 slug mass      same      1 lb weight</p> 	<input type="text"/>	 2.5 pts., 50% 10% try penalty	# tries: 0 (show details)