Welcome to Electromagnetics!

- Things to do before next class:
  - Check out the class webpage:
    `http://www.willamette.edu/~jjrembold/classes/wu345/main/`
  - Read over syllabus
  - Make sure you have the book and **read sections 1.2 and 1.3**
  - Get added to the class in Gradescope
    - Invite emails should be going out
  - Get added to the class in Campuswire
    - Invite emails should be going out
  - Bring a phone or something that can connect to internet
- Things to do this week
  - Homework 1 is posted and WILL be due midnight on Monday (despite the holiday!)
  - Have Anaconda installed on a laptop you can bring to class on Friday
    - Ensure you can create or open a Jupyter Notebook

My Vitals

- Office: Collins 311 (it's shared)
- Office Hours: M,W,Th 2-5pm *and open door* (≈always)
- Goudy Hours: M–Th 1-2pm near the windows in Goudy Commons
- Email: jjrembold@willamette.edu
- Phone: 503-370-6860

Important Stuff

- Homework - 45%
  - Assignments due weekly on Monday at midnight
- Midterms - 15% each
  - Exam 1: Oct 12 over Ch 1-3
  - Exam 2: Nov 9 over Ch 4-5
- Final - 25%
  - Dec 14
  - Comprehensive
  - Weighted heavily towards Ch 6-7

Important Websites

- The class website
  - Where homework, and lecture slides will be posted
  - Where the updated schedule will have reading requirements!
- Gradescope
  - Where all homework will be submitted as pdfs
  - Please format homework questions with a new page for each problem
- Campuswire
  - Class forum for asking questions, responding to others questions, and general communication
  - Reputation system can earn you some small amount of extra credit

Computation

- We will be using Python and Jupyter notebooks to add computation and visualization elements to this course
- If you don't already have it, I'll be getting installation instructions posted on the website
- Any computational elements you use in your homework should be printed to pdf and turned in along with the rest of your homework to Gradescope
- If you get stuck or have questions, post to Campuswire so others can benefit!

Advice

- Read the assigned material before class, and submit major questions to Campuswire
- Go to class and participate in the questions and discussions
- Start your homework early to ensure it is making sense
- Don't work alone!
- Ask questions! Either in class or over Campuswire or in person.

Thinking about your education and this course, which of the following is the most important to you?

A. Acquiring information (facts, principles, concepts, procedures, etc)
B. Learning how to use information and knowledge in new situations?
C. Developing lifelong learning skills

Our time together here is unfortunately rather limited. Which of these three goals do you think you can do on your own (before or after class)?

A. Acquiring information (facts, principles, concepts, procedures, etc)
B. Learning how to use information and knowledge in new situations?
C. Developing lifelong learning skills

WILLAMETTE UNIVERSITY
ELECTRODYNAMICS

So what is Phys 345 really about?

In fond remembrance...

So what is Phys 345 really about?

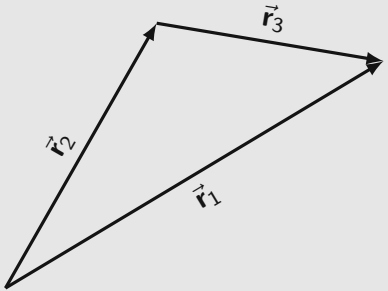
Electromagnetics is the foundational *field theory* course of physics!

Take 5 minutes with a partner to map out all the electromagnetic concepts you *already know* (there are a lot!), and how they are related to one another.

In a typical Cartesian coordinate system, say vector $\vec{\mathbf{A}}$ lies along the $+\hat{\mathbf{y}}$ direction and vector $\vec{\mathbf{B}}$ lies along the $+\hat{\mathbf{z}}$ direction. In what direction would $\vec{\mathbf{A}} \times \vec{\mathbf{B}}$ point?

A. $-\hat{\mathbf{y}}$
B. $-\hat{\mathbf{x}}$
C. $+\hat{\mathbf{x}}$
D. $-\hat{\mathbf{z}}$
E. Impossible to say without more info

How is vector $\vec{\mathbf{r}}_3$ related to $\vec{\mathbf{r}}_1$ and $\vec{\mathbf{r}}_2$?



A. $\vec{\mathbf{r}}_3 = \vec{\mathbf{r}}_1 + \vec{\mathbf{r}}_2$
B. $\vec{\mathbf{r}}_3 = \vec{\mathbf{r}}_1 - \vec{\mathbf{r}}_2$
C. $\vec{\mathbf{r}}_3 = \vec{\mathbf{r}}_2 - \vec{\mathbf{r}}_1$
D. None of these

In polar coordinates (so just 2D), what would be the correct description of the position vector $\vec{\mathbf{r}}$ of the point P shown at $(x, y) = (1, 1)$?

A. $\vec{\mathbf{r}} = \sqrt{2}\hat{\mathbf{s}}$
B. $\vec{\mathbf{r}} = \sqrt{2}\hat{\mathbf{s}} + \frac{\pi}{4}\hat{\phi}$
C. $\vec{\mathbf{r}} = \sqrt{2}\hat{\mathbf{s}} - \frac{\pi}{4}\hat{\phi}$
D. $\vec{\mathbf{r}} = \frac{\pi}{4}\hat{\phi}$