PHY138 – Waves, Lecture 1

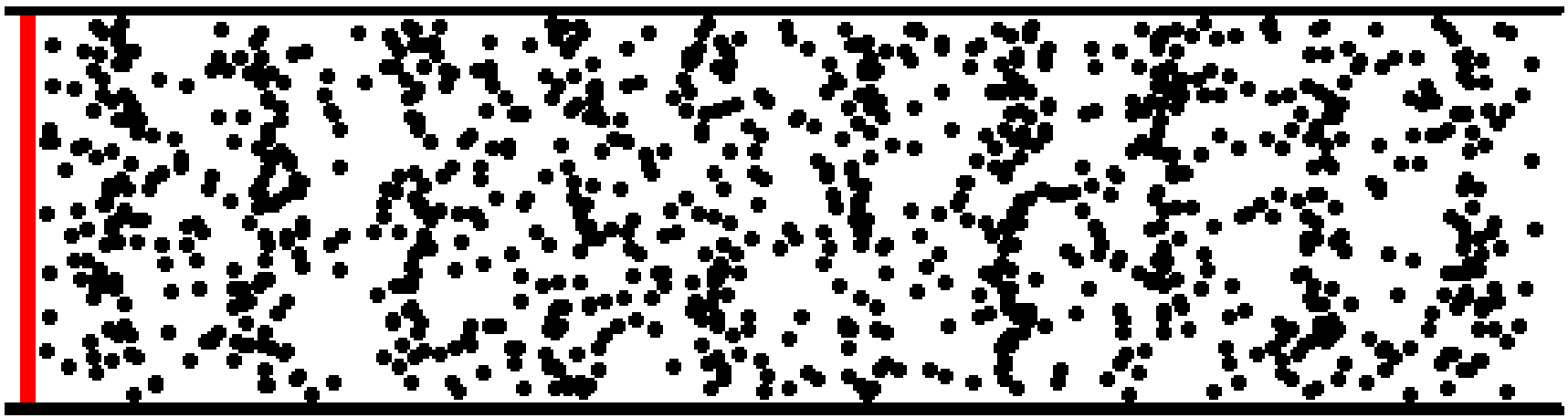
New Instructor for November and Demember:

Jason Harlow

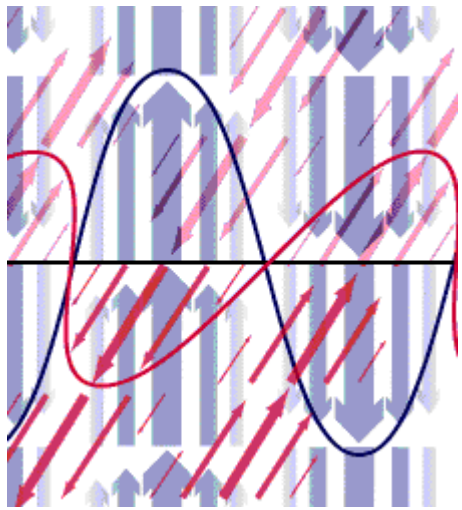
"Light is the only thing we see. Sound is the only thing we hear."

- Paul Hewitt

Sound Waves result from periodic oscillations of air molecules, which collide with their neighbours and create a propagating disturbance.



Electric and **Magnetic** fields, when oscillated, can create waves which carry energy. At the right frequency, we see electro-magnetic waves as **Light**.



Reading Assignment

Please read the following sections of Serway and Jewett *before* next class:

Chapter 12, Sections 12.1-12.4, 12.7

Chapter 13, Sections 13.1, 13.2

A Web-CT pre-class quiz on Chapter 13 is due on Wednesday morning, which tests basic familiarity with Ch.13 material.

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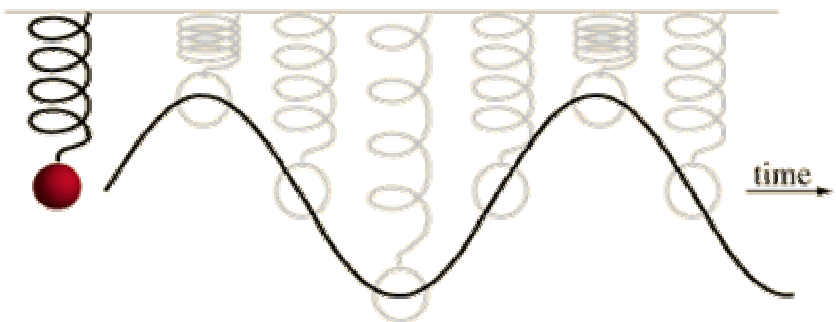
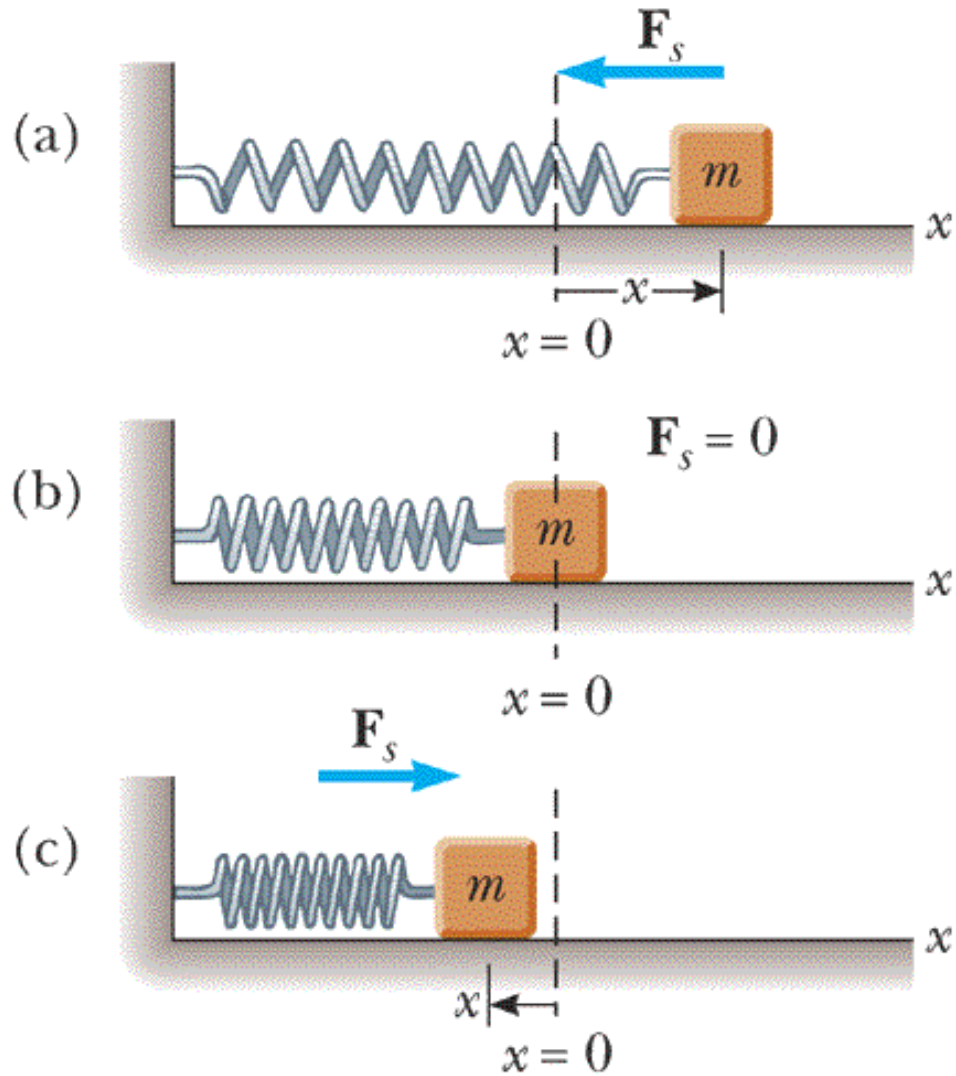
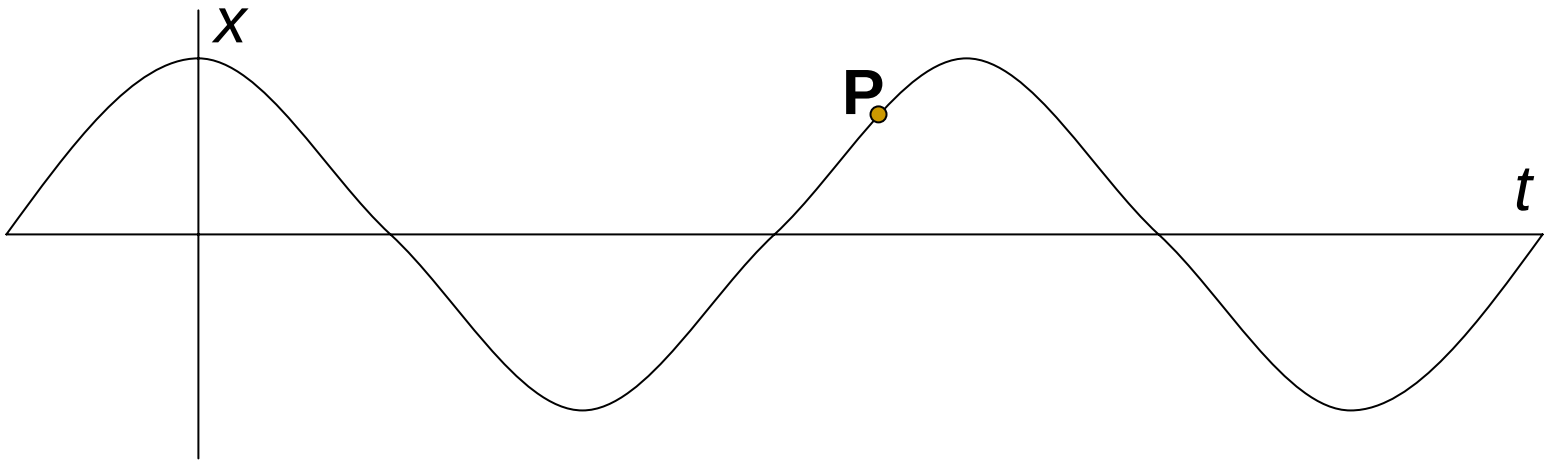
Today's overview

- Hooke's Law for Springs
- Motion of a mass on a spring
- Simple Harmonic Motion
- Energy in S.H.M.



Restoring Force provided by Hooke's Law





A mass attached to a spring oscillates back and forth as indicated in the position vs. time plot above. At point, **P**, the mass has

1. positive velocity and positive acceleration.
2. positive velocity and negative acceleration.
3. negative velocity and positive acceleration.
4. negative velocity and negative acceleration.
5. positive velocity and zero acceleration.

x,v,a for Simple Harmonic Motion