

# Physics 3306

Provides an introduction to a wide variety of topics in classical (pre-quantum) physics as a bridge to prepare students for subsequent upper-level courses in physics. The topics covered include thermodynamics, fluid mechanics, mechanical waves, optics, radiation, electromagnetic phenomena, atoms, and laboratory techniques. Prerequisites: C- or better in PHYS 1106; and in PHYS 1304 or PHYS 1308.



# A few announcements

- I have created assignments on Canvas
  - Now I am naming them a bit more clearly — instead of Lab 1 etc
- Did people have trouble interacting with them?
- From now on we will exclusively use Canvas
- You can convert the jupyter-notebook to PDF

# Safety

- I have placed bandaids here at the desk — use them as you see fit
- If you are injured or a classmate is injured, immediately call SMU emergency: 214-768-3333
  - This number is for a life threatening situation
  - For non-life threatening situations, call 214-768-2277
- In general, the SMU webpage on emergencies is very thorough:  
<https://www.smu.edu/studentaffairs/drboobsmithhealthcenter/counseling-services/emergencies>



# Today's lab - III

- Studying the Bernoulli's principle





# Today's lab

- The Bernoulli's equation is:

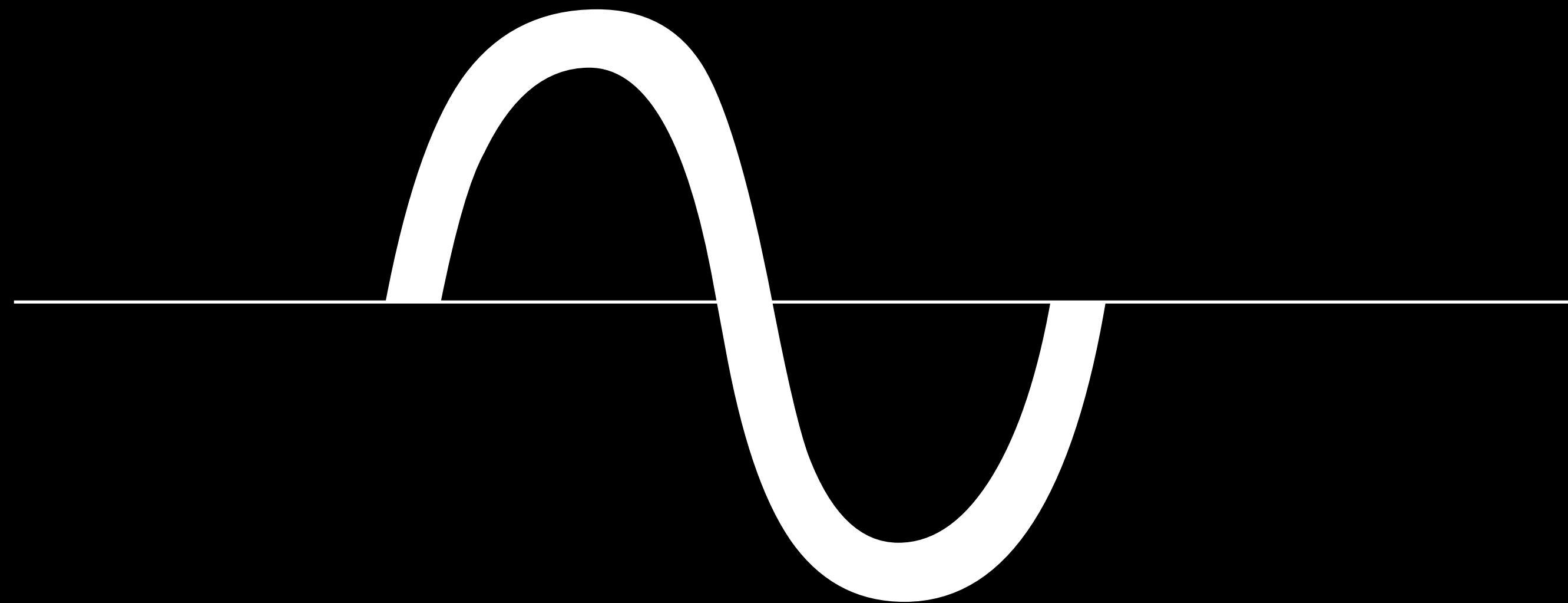
$$\frac{v^2}{2} + gz + \frac{p}{\rho} = \text{constant}$$

- $v$  = fluid flow speed at a point
- $g$  = acceleration due to gravity
- $z$  = elevation of the point above a reference plane, with positive z-direction pointing upward — so in the direction opposite to the gravitational acceleration
- $p$  = static pressure at a given point
- $\rho$  = density of the fluid at all points in the fluid

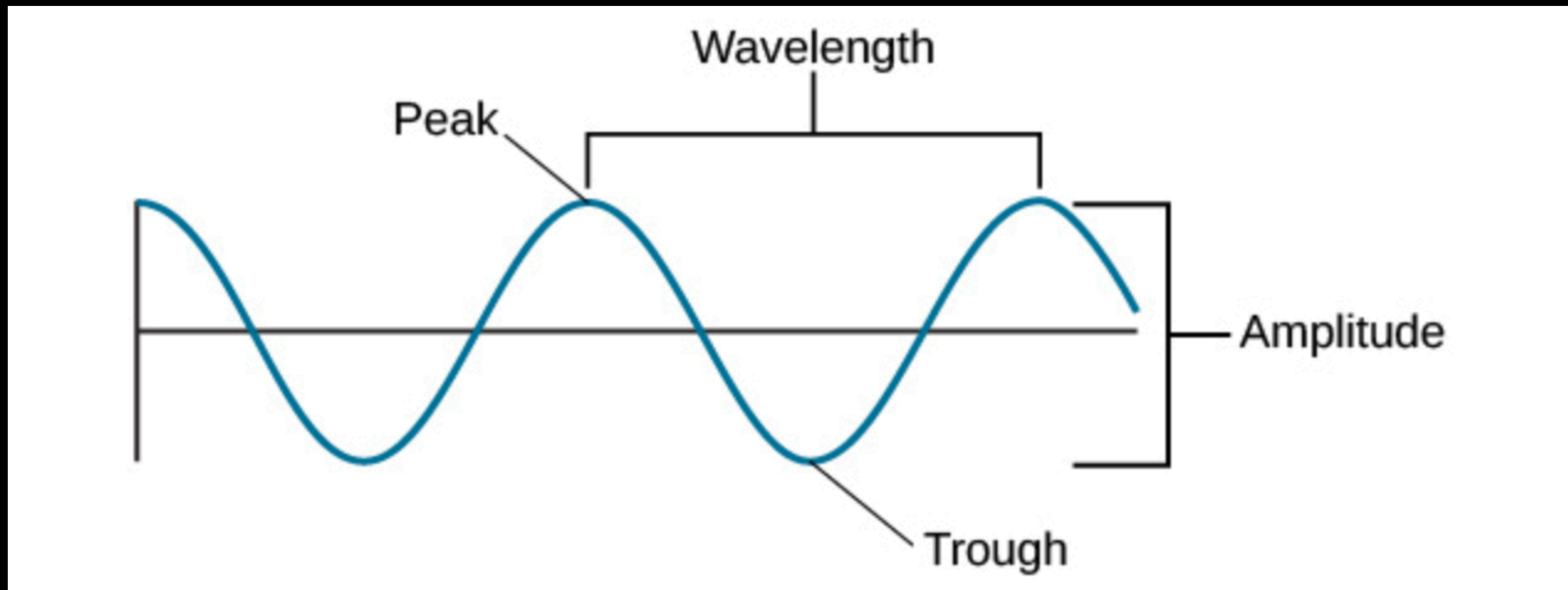
# Waves

- Any motion that repeats itself is periodic motion
- For wave motion, displacement of a particle  $x$  of the particle from the origin as a function of time is given by:
  - $x(t) = x_m \cos(\omega t + \phi)$
  - $x_m$ ,  $\omega$  and  $\phi$  are constants

# Waves



# Waves - II





# Waves - III

