

Introduction to Advanced  
Physics I: PHYS1101

# Welcome!

- In today's lecture we will explain how the course will work.
- And then start the mechanics section of the course with a look at the three great principles of Mechanics
- (and I don't mean Newton's laws...)

# Online Notes

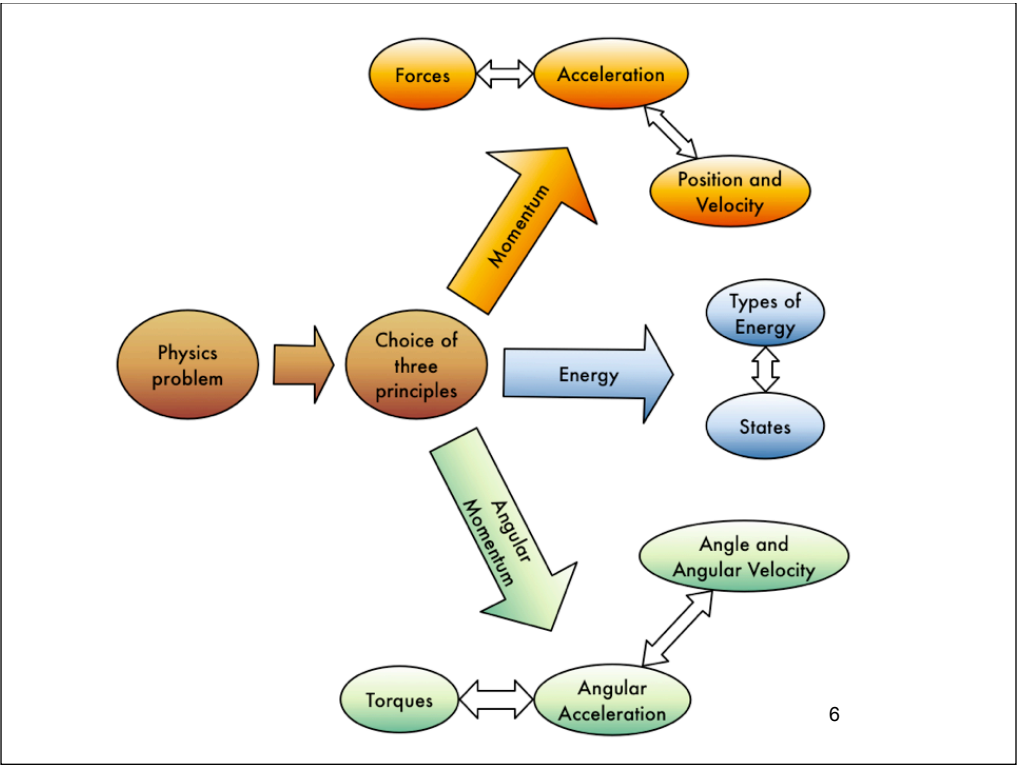
- <http://www.mso.anu.edu.au/~pfrancis/phys1101/Lectures/>
- Read along, and comment.
- Link to this can be found in Wattle (Mechanics section, lecture notes).

# Wattle Page

- Look at the
  - Course Description
  - News Forum
  - Education Research Page

# Three Great Principles

- Momentum (also known as Newtons Laws)
- Energy
- Angular Momentum



# Symmetry

- It turns out that these three principles come from fundamental symmetries:
  - Momentum comes from space symmetry (“It doesn’t matter where you are”)
  - Energy comes from time symmetry (“the time doesn’t matter”)
  - Angular momentum comes from angle symmetry (“It doesn’t matter which direction you are pointing”)

## The rest of the Mechanics Section

- ... will be fleshing out these three basic principles and how they are used.