

**PY5012: Introduction to Plasma Physics**  
**Course website: [tinyurl.com/tcdplasmaphysics](http://tinyurl.com/tcdplasmaphysics)**

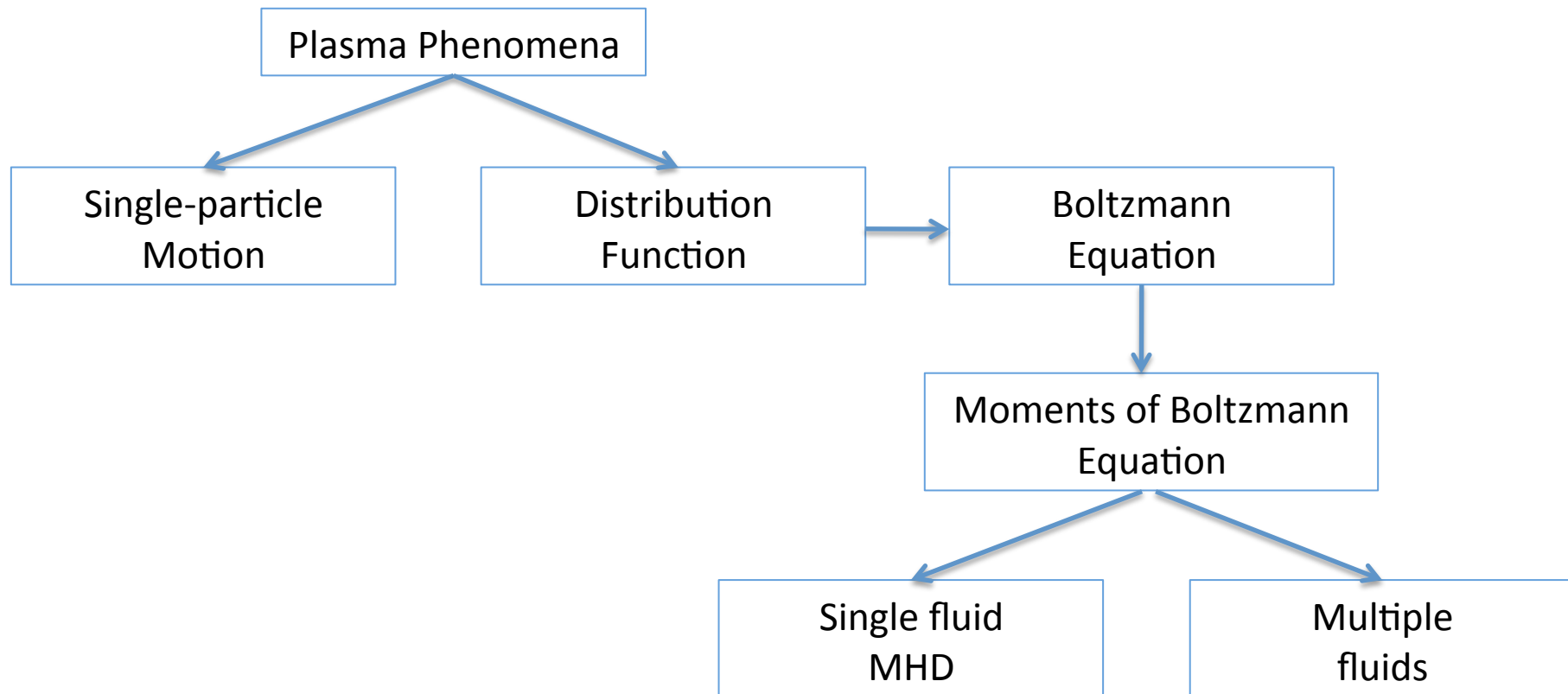


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# Course Content

- **Part I: Introductory Plasma Physics**
  - Week 1: Lectures 1 & 2
  - Week 2: Lectures 3 & 4
  - Week 3: Lecture 5 & Tutorial
- **Part II: Kinetic and Fluid Theories of Plasmas**
  - Week 4: Lectures 6 & 7
  - Week 5: Lectures 8 & 9
  - Week 6: Seminar (Tokamaks) & Tutorial
  
  - Week 7: Study week
- **Part III: Waves in Plasmas**
  - Week 8: Lectures 10 & 11
  - Week 9: Lectures 12 & 13
  - Week 10: Seminar (Astrophysical shocks) & Tutorial

# Hierarchy of plasma phenomena



# Recommended Texts

- **Principles of plasma physics for engineers and scientists**
  - Umran S. Inan and Marek Gołkowski
  - Berkeley Basement, HLs (HL-322-390)
- **Introduction to plasma physics and controlled fusion**
  - Francis F. Chen
  - Hamilton, Open Access 530.44 M41.1 Vol. 1
- **Plasma Physics**
  - Richard Fitzpatrick
  - <http://farside.ph.utexas.edu/teaching/plasma/>
- **Astrophysical Plasmas**
  - Steven Schwartz, Christopher Owens, and David Burgess
  - <http://www.sp.ph.ic.ac.uk/~sjs/APmaster.pdf>

# Assessment

- Attendance (5%)
- Essay (30%)
  - 5 page essay on a topic of your choice
  - Example topics: Ionospheres, laser-produced plasmas, stellar atmospheres, inter stellar medium, auroras, fusion devices, plasma deposition techniques, etc.
  - Deadline is last lecture in December.
- Tutorials (30%)
  - 3 tutorials
- Written exam (35%)