

Introduction to Plasma Physics, 2st semester 03-04
Faculty of Physics, University of Tabriz
Syllabus

- Instructor:** M. Hosseinpour, Room 459, Faculty of Physics, University of Tabriz
Email: hosseinpour@tabrizu.ac.ir , Office Tel: (0411) 339 33 56
Web site: <http://asatid.tabrizu.ac.ir/fa/pages/default.aspx?hosseinpour>
Lectures: Sat. & Wed. 10-12, Room 203
Office hours: Sat. 10-12, Mon. 10-12, 14-16
Textbook: Francies F. Chen, Introduction to Plasma Physics and Controlled Fusion. Vol. 1: Plasma Physics, Plenum Pub Corp; Second Edition, 1984.
- Recommended:**
- Bellan, P. M., Fundamentals of Plasma Physics, Cambridge Un Press, 2008
 - R. J. Goldstein and P. H. Rutherford, Introduction to Plasma Physics, IOP, 1995
 - S. Eleizer, The fourth state of Matter: An introduction to plasma science, IOP, 2001
- Prerequisite:** Electromagnetism I
Homework: Assigned every week and must be submitted in class on the indicated due date. Homework and lectures can be accessed through the above mentioned website.
- Grading:** Homework: 10%, Quizzes: 10%, Midterm: 30%, Final Exam: 50%
- Midterm Exam: Sat. 04/2/20 14-16** **Final Exam: Mon. 04/4/2 8-10 AM.**

Course Content

Part I: Introductory Plasma Physics

- Week 1: Introduction, Basic concepts
- Week 2: Basic concepts
- Week 3: Single - Particle motion
- Week 4: Single - Particle motion
- Week 5: Magnetic Mirrors

Part II: Kinetic and Fluid Theories of Plasmas

- Week 6: Kinetic Theory
- Week 7: Moments of Boltzman – Vlasov Equation
- Week 8: Multiple – Fluid Theory of Plasmas
- Week 9: Midterm Exam
- Week 10: Magnetohydrodynamics (MHD), Single-Fluid Theory of Plasmas
- Week 11: MHD Equilibria and Applications I
- Week 12: MHD Equilibria and Applications II

Part III: Waves in Plasmas

- Week 13: Waves I
- Week 14: Waves II
- Week 15: Seminars