

# Physics 761 – Plasma Physics Part I

Fall Semester 2017

**Lecture:** TuTh 11:00-12:15 in CHE 2136

**Instructor:** Prof. James Drake

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**Course Description:** An introduction to the basic concepts and phenomena of plasma physics. Topics include: Ionization and collisional processes, kinetic and fluid treatments, wave-particle interactions and quasilinear theory, MHD theory, plasma waves, particle orbits and plasma stability. These topics will be discussed as they apply to laboratory and space plasmas.

**Class Web site:**

The syllabus, homework assignments and solutions to the homework will be posted on the class web site ([www.terpconnect.umd.edu/~drake/classes/physics761/](http://www.terpconnect.umd.edu/~drake/classes/physics761/)).

**References:**

R. J. Goldston and P. H. Rutherford, Introduction to Plasma Physics, IOP, 1995

P. M. Bellan, Fundamentals of Plasma Physics, Cambridge University Press, 2006

Arana Rai Choudhuri, The Physics of Fluids and Plasmas, Cambridge University Press, 1998

NRL Plasma Formulary, [http://wwwppd.nrl.navy.mil/nrlformulary/NRL\\_FORMULARY\\_07.pdf](http://wwwppd.nrl.navy.mil/nrlformulary/NRL_FORMULARY_07.pdf)

Richard Fitzpatrick, The Physics of Plasmas (Lecture Notes), <http://farside.ph.utexas.edu/teaching/plasma/plasma.html>

**Homework:**

Homework assignments will be made weekly. All assignments must be completed. Grades will be assigned based on homework.

**Exams:** There are no exams for this class.

