

Texts and References

Required: R. Kulsrud; "Plasma Physics for Astrophysics"

Recommended: P. Sturrock; "Plasma Physics"

References:

- a.) *General Plasma Physics*
- i.) P. Sturrock; "Plasma Physics" - excellent physical insights, readable
 - ii.) N. Krall and A. Trivelpiece; "Principles of Plasma Physics" - encyclopedia
 - iii.) E. Lifshitz and L. Pitaevski; "Physical Kinetics" (Volume 10 of Landau and Lifshitz series) - good treatment of kinetic theory
 - iv.) B.B. Kadomtsev; "Tokamak Plasma: A Complex Physical System" - superb integrative approach to tokamak dynamics, but of general interest
 - v.) T. Boyd and J. Sanderson; "The Physics of Plasmas"
- b.) *General and Astrophysical MHD*
- i.) D. Biskamp ; "Nonlinear Magnetohydrodynamics" - broad, solid and easily accessible, focused on laboratory applications
 - ii.) H.K. Moffatt; "Magnetic Field Generation in Electrically Conducting Fluids" - superb treatment of basic dynamo theory and related topics available online at <http://www.igf.fuw.edu.pl/KB/HKM/>.
 - iii.) A.R. Choudhuri; "The Physics of Fluids and Plasmas" - good elementary text, deals with lab and astro
 - iv.) L. Mestel; "Stellar Magnetism" - excellent in-depth study of the subject
 - v.) E.N. Parker; "Cosmical Magnetic Fields" - broad but insightful coverage of all aspects of solar and galactic MHD, well written
 - vi.) P.A. Davidson; "An Introduction to Magnetohydrodynamics"
 - vi..) Goedbloed and Poedts; "Principles of Magnetohydrodynamics" - good basic MHD text with considerable detail provided
 - viii.) R.B. White, "Theory of Tokamak Plasmas" - overview of tokamaks, mainly focused on MHD

- ix.) K. Itoh, S.-I. Itoh, A. Fukuyama, "Transport and Structural Formation in Plasmas" - modern perspective on aspects of MHD
 - x.) J.P. Freidberg, "Ideal Magnetohydrodynamics" - in depth coverage of applications to laboratory plasmas
- c.) *General References*
- i.) L.D. Landau and E.M. Lifshitz; "Fluid Mechanics" - a classic
 - ii.) L.D. Landau and E.M. Lifshitz; "Electrodynamics of Continuous Media" - ditto
 - iii.) G.K. Batchelor; "An Introduction to Fluid Dynamics" - three in a row..., complements Landau
 - iv.) G.B. Whitman; "Linear and Nonlinear Waves" - yet another great one
 - v.) J. Lighthill; "Waves in Fluids" - excellent and accessible
 - vi.) T.H. Stix; "Waves in Plasmas" - encyclopaedic
 - vii.) F. Shu; "The Physics of Astrophysics, Vol. I, II" - good basic graduate text on MANY topics, including fluids, MHD and plasmas
 - viii.) J. Binney and S. Tremaine; "Galactic Dynamics" - super text on galactic dynamics, no MHD or plasma but treatment of self-gravitating matter makes it relevant. Try the problems :).