

**Fusion Reactor Engineering**  
**Nuclear Engineering 280**  
**Spring Semester 2004**

E. C. MORSE

Class meets at 3:30 to 5:00 PM Tuesday and Thursday, Rm. 72 Evans.

Text: *Fusion Research - Volume III - Technology*, J. Dolan.

Recommended Supplemental Text: *Plasma Physics*, by F. F. Chen

**Schedule of Lectures and Reading Assignments:** (Homework to be announced)

<b>Date</b>	<b>Week</b>	<b>Lecture Topics</b>	<b>Reading</b>
20 Jan	1	Energy Losses in Plasma Atomic Physics	Chs. 3, 8
27 Jan	2	Transport: General Braginskii Transport	Ch. 8
3 Feb	3	Neoclassical Transport Reactor Power Balance	Ch. 4
10 Feb	4	MHD Theory Tokamaks	Ch. 8
17 Feb	5	Compact Toroids Helicity Theory and Transport	Notes
24 Feb	6	Raman and Brillouin modes Laser Pellet Hydrodynamics First Exam	notes
2 March	7	Vacuum Systems Neutral Beam Injectors Polarized DT	Chs. 19 , 9
9 March	8	RF Heating Systems Waveguides and Antennae	Ch. 9 and notes

16 March	9	CTR Blanket Systems Shielding and Neutronics Thermal Hydraulics, Hartmann Flow	Ch. 26
23 March		Spring Break	
30 March	10	Materials Problems in CTR Swelling and Embrittlement	Ch. 24
6 April	11	Thermal Stress Crack Growth Fatigue and Creep	Ch. 24
13 April	12	Tritium, Sievert Law Low Activation Materials Second Exam	Chs. 24, 28
20 April	13	Magnet Design Superconductivity	
27 April	14	ICF Reactor Design Laser Optics	
4 May	15	Hybrids Neutronics	Ch. 29
11 May	16	Course Review	