	TENTATIVE SCHEDULE FOR PHYSICS 798S, SPRING 2006, Prof. Anlage					
Date	**Mtg.#**	**Tinkham**	**Annett**	**Waldram**	**Orlando+Delin**	**Topics**
Week 1						
26-Jan	1	1.1-1.9	3.1-3.6	1.1-1.6, 3.1, 3.4	1.1-1.4	Introduction to the course, 3 Hallmarks of SC, phenomenology, thermod
Week 2						
31-Jan	2	1.2, 2.1, 2.2	3.8	2.1-2.6	2.4-2.6, 3.1-3.2	London's Eqs., penetration depth, screening of a magnetic field
2-Feb	3	1.3, 2.5		2.1, 2.2, 10.12	3.4-3.5, 4.1-4.2	SC electrodynamics, Two-fluid model, complex conductivity
Week 3						
7-Feb	4	1.7		2.6-2.7	5.1-5.5	Macroscopic Quantum Model of SC, fluxoid quantization
9-Feb	5	1.4, 3.1, 3.2	6.3	7.1-7.3		Cooper pairing instability
Week 4						
14-Feb	6	3.2, 3.3, 3.4	6.1-6.2	7.2, 7.10, 16.11-16.13	10.4	Origin of the attractive interaction, dynamic screening, isotope effect, Co
16-Feb	7	3.3	5.1-5.4	Appendix		BCS Theory I, creation/annihilation operators
Week 5						
21-Feb	8	3.3, 3.4	5.7, 6.4	7.3-7.5		BCS Theory II, ground state WF
23-Feb	9	3.4, 3.5	6.5	7.6-7.7		BCS Theory III, variational calculation, excitations
Week 6						
28-Feb	10	3.6	6.6	7.8		BCS Theory IV, finite temperature
2-Mar	11	3.6		7.9, 8.1	10.5	BCS Theory V, gap function, Tc, thermodynamic properties
Week 7						
7-Mar	12	3.7	6.7	8.2-8.7		BCS Theory VI, coherence effects
9-Mar	13	4.1	4.1-4.4	4.1-4.2	10.1-10.2	Ginzburg-Landau (GL) Theory, free energy expansion
Week 8	**APS March Meeting in Baltimore**					
14-Mar	14	4.2	4.5-4.7	4.3-4.6	10.3	GL differential equation, boundary conditions, coherence length
16-Mar	15	4.3, 4.4		4.7, 4.9	6.1	Domain wall energies, Type I, II SCs, critical current
20-24 March, SPRING BREAK						
Week 9						
28-Mar	16	4.8, 4.11	4.8-4.9	4.10, 5.5-5.6	6.5	H_c2 and Abrikosov vortices
30-Mar	17	5.1			6.2-6.3	H_c1 and structure of an isolated vortex
Week 10						
4-Apr	18	5.2, 5.4	4.11	5.7-5.11	7.1-7.5	Theory of vortex interactions, pinning
6-Apr	19	6.1, 6.2	5.8	6.1-6.5, 8.8-8.10	8.1-8.2	The Josephson Effect, gauge-invariant phase
Week 11						
11-Apr	20	6.4		6.6-6.8	8.5-8.6	Josephson junction (JJ) magnetic diffraction
13-Apr	21	6.3		6.1-6.3	9.1-9.4	The RSJ model of the JJ, Shapiro steps
Week 12						
18-Apr	22	6.5	5.9	18.3-18.7	8.4, 9.5	The DC SQUID, SC QuBits
20-Apr	23	8.1, 8.6	4. 10	15.9-15.12		Fluctuations in superconductors (GL treatment)
Week 13						
25-Apr	24	8.3, 8.4, 8.6, 8.7		15.11		Fluctuation conductivity
27-Apr	25	8.2		17.6		Kosterlitz-Thouless phase transition theory
Week 14						
2-May	26		2.1-2.8			Phenomenology of Superfluidity in He-4, vortices
4-May	27		1.2-1.4			Bose-Einstein Condensation
Week 15						
9-May	28		7.1-7.4			Superfluidity in He-3 and Unconventional SCs
11-May	29	9.1 - 9.9	7.5	16.1-16.13, 17.1-17.11		Theories of the HTS pairing mechanism