

**Duke University
Department of Physics**

Physics 305

Spring 2008

305 Electromagnetic and Weak Interactions in Nuclear Physics

Course Outline

<u>Lecture</u>	<u>Date</u>	<u>Subject</u>
1	Wed Jan. 9	Lagrangian Formalism
2	Mon Jan. 14	Conservation laws
3	Wed Jan. 16	Phase invariance in QM and field theory
4	Wed Jan. 23	Review of Dirac Equation
5	Mon Jan. 28	Feynman rules for Electromagnetism
6	Wed Jan. 30	Elastic Electron Proton Scattering
7	Mon Feb. 4	Deep-in-elastic Scattering
8	Wed Feb. 6	Compton scattering from electron
9	Mon Feb. 11	Compton scattering from nucleon
10	Wed Feb 13	Nucleon polarizabilities
11	Mon Feb 18	Gauge theories of Weak Interaction (I)
12	Wed Feb 20	Gauge Theories of Weak Interaction (II)
13	Mon Feb. 25	Parity-violating electron scattering& weak form factors
14	Wed Feb. 27	Neutrinos scattering
15	Mon Mar. 3	Neutron and nuclear β -decay (I)
16	Wed Mar. 5	Neutron and nuclear β -decay (II)
17	Mon Mar. 17	Physics of Ultracold neutrons (I)
18	Wed Mar. 19	Experiments with UCNs on β -decay
19	Mon Mar. 24	Neutrino oscillations
20	Wed Mar 26	Neutrino mass and double beta decay
21	Mon Mar 31	CP violations (I)
22	Wed Apr 2	CP violations (II)
23	Mon Apr 7	Electric Dipole Moment search (I)
24	Wed Apr 9	Electric Dipole Moment search (II)

25 Mon Apr 14 Class Presentation (I)
26 Wed Apr 16 Class Presentation (II)