

Physics 221A Fall 2023- Syllabus

Class website: http://scipp.ucsc.edu/~schumm/ph221/Physics_221A.html

Assessment: Three collaborative HW assignments and an individual final project.

Please be aware of the Physics Department Code of Conduct,

<https://www.physics.ucsc.edu/about/diversity/diversity-code-of-conduct.html>

Lecture	Date	Topic	Homework Due
1	09/28	Standard Model building blocks	
		Continuous and Discrete Symmetries	
2	10/03	Noether's Theorem, conserved quantities, angular momentum constraints	
3	10/06	Spin and isospin	
4	10/10	Discrete symmetries	
		Static Quark Model	
5	10/12	Experimental technique: partial wave analysis	
6	10/17	NO CLASS	
7	10/19	Experimental technique: kinematic analysis	I
8	10/24	Symmetry groups and their representations; $SU(3)_{\text{flavor}}$	
9	10/26	$SU(3)_{\text{flavor}}$ continued	
		Principles of Instrumentation	
10	10/31	$SU(3)_{\text{flavor}}$ applied; baryon magnetic moments	
11	11/02	Interactions in matter (descriptive); interaction length	
12	11/07	Ionization loss, brehmstrahlung, radiation length	II
13	11/09	Photon attenuation, Compton scattering, Coulomb scattering	
14	11/14	Ionization detectors and gas transport	
15	11/16	Monte Carlo methods, calorimetry	
16	11/21	Solid-state detectors	
17	11/28	Solid-state detectors continued	
		Topics	
18	11/30	Readout noise	
19	12/05	Cosmic rays	III
20	12/07	Phenomenology of hadronic scattering	