

PHYS 5380 Syllabus- Fall 2020

Aug 24 (Mon)	Introduction, discovery of atom's substructure, electron, neutron,
Aug 26 (Wed)	Quantum mechanics, relativity, units
Aug 28 (Fri)	History 1920-1940: angular momentum, spin, beta decays
Aug 31 (Mon)	Muons, neutrinos, pions, interactions with matter
Sep 2 (Wed)	Forces and interactions, cross sections
Sep 4 (Fri)	Forces – what keeps atom, nucleus, nucleons and mesons together
Sep 7 (Mon)	Lifetime, resonances, particles ZOO
Sep 9 (Wed)	Particles as waves, e^+e^- , conservation laws
Sep 11 (Fri)	Symmetries P, C, CP
Sep 14 (Mon)	Isospin, quark model
Sep 16 (Wed)	Dynamic evidence for quarks, e-m interactions
Sep 18 (Fri)	Strong and weak interactions
Sep 21 (Mon)	Cosmic rays
Sep 23 (Wed)	Neutrinos part 1
Sep 25 (Fri)	Neutrinos part 2
	Particle detectors
Sep 28 (Mon)	Tracking
Sep 30 (Wed)	Solid state trackers
Oct 2 (Fri)	Fibers + TOF
Oct 5 (Mon)	Cosmic rays
Oct 7 (Wed)	Calorimetry part 1
Oct 9 (Fri)	Calorimetry part 2
Oct 12 (Mon)	
Oct 14 (Wed)	Accelerators part 1
Oct 16 (Fri)	Accelerators part 2
Oct 19 (Mon)	ATLAS detector systems
Oct 21 (Wed)	Electronic readout
Oct 23 (Fri)	Monte Carlo techniques ,Trigger
Oct 26 (Mon)	Feynman diagrams
Oct 28 (Wed)	
Oct 30 (Fri)	Probability and statistics part 1
Nov 2 (Mon)	Probability and statistics part 2
Nov 4 (Wed)	Cosmology part 1
Nov 6 (Fri)	Cosmology part 2
Nov 9 (Mon)	Student's presentations
Nov 11 (Wed)	Student's presentations
Nov 13 (Fri)	Student's presentations
Nov 16 (Mon)	Student's presentations
Nov 18 (Wed)	Student's presentations
Nov 20 (Fri)	Student's presentations
Nov 23 (Mon)	Applications
Nov 25 (Wed)	no class
Nov 27 (Fri)	Thanksgiving – no class
Nov 30 (Mon)	no class

Dec 2 (Wed).

Future machines: proton-proton - HL-LHC, FCC
Neutrino - DUNE,
electron-positron - NLC, CEPC

Dec 4 (Fri).

Future of particle physics: Grand unification, superstrings