

**Physics 613: Particles
Syllabus
Spring 2018**

Lecture #	Date	Topic
1	1/16	Review of Quantum Mechanics and Special Relativity
2	1/18	Dirac Equation
3	1/23	Solutions of Dirac Equation
4	1/25	Field Theory
5	1/30	Quantized Fields
6	2/1	Gauge Invariance
7	2/6	Vector Fields
8	2/8	The Standard Model
9	2/13	SU(2) and SU(3) Gauge Invariance
10	2/15	Electroweak Unification
11	2/20	Higgs Mechanism
12	2/22	The Standard Model Lagrangian
13	2/27	Interactions
14	3/1	Perturbation Theory
15	3/6	Charged Scalar Scattering
16	3/8	Elastic Scattering Cross Sections
17	3/20	Electron Scattering
18	3/22	Electron-Muon Scattering

Lecture #	Date	Topic
19	3/27	Muon Decay
20	3/29	Running Coupling Constants
21	4/3	QCD
22	4/5	Structure of Matter
23	4/10	Deep Inelastic Scattering
24	4/12	Flavor Mixing
25	4/17	CP Violation
26	4/19	Neutrino Scattering
27	4/24	Beyond the Standard Model
28	4/26	Future of Particle Physics