OPTIONAL COURCES

Phys 4305	**INTRODUCTORY PARTICLE PHYSICS**	**(CR3)**
Preq.	**Phys 3301**	

Objectives

This course will provide an introductory survey of modern particle physics.

Syllabus

Particle Classification, Quantum numbers, leptons, quarks, hadrons, baryons, mesons, strange particles, the eightfold way, the fundamental interactions: Primitive vertices for EM, strong and weak interactions, Feynman Diagrams, The electromagnetic coupling, the strong coupling, the weak coupling, Vacuum Polarization, Symmetry Transformation and Conservation Laws, Translation in space, Rotation in space, The group SU (2), isospin, extended Pauli principle, consequence of isospin conservation, Systems of identical particles, Parity, Charge conjugation, Time reversal, G parity, CPT theorem, polarization and photon spin, gauge invariance and Maxwell's equations, angular momentum, parity and C-parity of photons,. The quark model, The group SU (3) and its representations, notion of colour, quarks, hadrons (baryons, mesons in quark model).

Recommended Books

1. *Introduction to Elementary Particles by D. Griffiths (2nd Edition), Wiley, (2008).*
2. *Nuclear and Particle Physics by E. E. Burcham, and M. Jobes, Longman, (1995).*
3. *Nuclear and Particle Physics by R. B. Martin, Wiley, (2006)*
4. *Concepts of Particle Physics by K. Gottfried, and F. Weisskopt, Vol. 1, Oxford, (1986).*
5. *Nuclear and Particle Physics by W. S. C. Williams, Oxford, (1995).*
6. *A Modern Introduction to Particle Physics by Fayyazudding and Riazuddin, World Scientific, (1992)*
7. *Quarks and Leptons by F. Halzen and A. D. Martin, Wiley, (1984).*