Physics 357/457  (now Physics 5333)

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It is not necessary to purchase a text. Copies of the lecture notes will available. Note below References which will be useful for extra reading on the topics

A good reference for background material:
David Griffiths, Introduction to Elementary Particle Physics, Wiley, New York.
Course Outline:

1. The elementary particles: Quarks and leptons
2. Field Theories, Quantum Electrodynamics (QED) and Feynman diagrams
3. Unification of the Weak and Electromagnetic Interactions
4. The Standard Model, gauge invariance and gauge bosons
5. The Gluons and the Strong Force
6. Grand unified theories and Beyond
7. Particle Physics and Cosmology
Course Structure

There will be two exams (100 points each) plus a comprehensive final (150 points). Homework sets will count as one exam (100 points).

Total points = 200 + 100 + 150 = 450 points.
85% = A,
70% = B.
References for Elementary Particle Physics Topics

   [description of experiments & results; uses little field theory]


8. *Particles and Fields*, Readings from Scientific American, W. H. Freeman and Co. (1980) [a good introduction; written for nonspecialists; see also other recent articles appearing in Scientific American]


17. Quarks, Quasars and Quandries, Ed. G. Aubrecht, Published by American Assoc. Physics Teachers 5112 Berwyn Rd., College Park, MD 20740 (1987) (You can also purchase a poster from the publisher.)


22. J. M. Blatt and V. F. Weisskopf, Theoretical Nuclear Physics, John Wiley & Sons, New York (1952)


27. B. R. Martin and G. Shaw, Particle Physics, Wiley, NY 2008
MORE:

Dark Matter, Dark Energy (NOVA):
http://www.youtube.com/watch?v=NyZ-TH1OnLA&feature=related

Dark Energy:
http://www.youtube.com/watch?v=jez3ato2re8&feature=related

Feynman: Numbers 2
http://www.youtube.com/watch?v=ovx7whviO3k&feature=related

Feynman: Numbers 1
http://www.youtube.com/watch?v=F0LCVp0C-Ck&feature=related

Feynman: Electricity
http://www.youtube.com/watch?v=kS25vitrZ6g&feature=related

Feynman, counting and thinking:
http://www.youtube.com/watch?v=lr8sVailoLw&feature=related