Course:	**Physics 701B–Elementary Particles**
Time:	Spring 2003, 5:35-6:50 MW, 042 JB
Instructor:	Tom DeLillo, 348 JB, 978-3974(office), 264-7806(home)
Email:	delillo@math.twsu.edu
Office hours:	11:30-12:30 TTh, or by appointment

Texts:
1. David Griffiths, *Introduction to Elementary Particles,* (1987) John Wiley & Sons, Inc., ISBN 0-471-60386-4.
2. W. N. Cottingham and D. A. Greenwood, *An Introduction to the Standard Model of Particle Physics,* (1998) Cambridge University Press, ISBN 0-521-58832-4 (pb).

Some additional references available locally, e.g., Borders or Barnes & Noble:

M. Kaku, *Quantum Field Theory, a Modern Introduction,* (1993) Oxford University Press, ISBN gives overview of QFT and the Standard Model, but many mathematical details are only presented briefly.
C. F. Stevens, *The Six Core Theories of Modern Physics,* (1995) MIT Press, ISBN 0-262-69188-4 (pb), concise presentation without skipping steps, uses path integral formulation of QFT.
S. Weinberg, *The Quantum Theory of Fields,* 3 vols., (1995, 1996, 2000), develops QFT from a "particles point-of-view"based on special relativity, quantum mechanics, and the cluster decomposition principle, thorough with very detailed notation.

Suggested prerequisites: Physics, including some special relativity and quantum mechanics, up to the level of our modern physics course, Phys 551, or instructors consent. Special relativity, quantum mechanics, and mathematics will be developed or reviewed, as needed.
Syllabus: Read Chapters 1 and 2 of text 1 and Chapter 1 of text 2 on your own. We will attempt to cover most topics from both texts. The first part of the course will be devoted to special relativity, Lagrangian mechanics, and EM review, symmetries and group theory, the Dirac equation and QED following material from Chapters 3, 4, 6, 7 text 1 and Chapters 2 to 8 and Appendices A, B, and C from text 2. Chapter 4 on group theory from the Math 714 text by Arfken and Weber will also be a useful reference.
Grades will be based on homework, (possible) exams, and a presentation at the end of the semester. Potential topics for presentations will be chosen after the spring break. Team presentations will be possible. Regular attendance is mandatory.

Important dates:

Spring break: 3/17–3/23.
Last day to drop with a "W": 4/4.
Last day of class: 5/12.
Final exam: Wednesday 5/14, 5:40-7:30 PM, in classroom.