PHYS S0596 / Particle Physics / Fall 2007

- **Course Description**:

  This course provides a qualitative introduction to modern elementary particle physics for undergraduate students. The focus of the course is the historical development and qualitative features of the Standard Model of particle physics, which has proved remarkably successful in describing the properties and behavior of elementary particles and fields. Topics of current interest, new developments, and outstanding problems will also be highlighted.

- **Class Year & Major**: Senior physics majors in Applied or Electro-optical Physics section

- **Course Credits**: Three (3) credit hours

- **Lectures**: Wednesday 15:10–16:00 in C012; Friday 10:10–11:50 in N203

- **Office Hours**: Monday and Friday 14:10–16:00; Wednesday 10:10-12:00; and by appointment

- **Lecturer**:

  Prof. Shang-Yung Wang (Office: Sa123; Ext: 3160; Email: `sywang@mail.phys.tku.edu.tw`)

- **Course Web Page**:

  Course information is available online at `http://taos.phys.tku.edu.tw/moodle`

- **Prerequisites**: Quantum Physics or equivalent

- **Textbooks and References**:

  1. *Particle Physics*, B. R. Martin & G. Shaw, John Wiley & Sons, 2nd Ed., 1997 (Textbook, available through Apex Book Company, Taipei)
  2. *Introduction to Elementary Particles*, D. Griffiths, John Wiley & Sons, 1987 (Reference)
  3. *Quarks and Leptons: An Introductory Course in Modern Particle Physics*, F. Halzen & A. Martin, 1984 (Reference)
  4. *Particle Data Group Data Tables*, http://pdg.lbl.gov (Reference)

- **Homework**:

  – *Homework is a very important part of the course*. Homework will be assigned in class every Tuesday, and is due the following Tuesday at the start of the class. Use A4 size paper (same size as this one) for solutions and have them stapled together if multiple sheets are used.

  – *Late homework will not be accepted unless special permission is granted in advance – no exceptions*.

  – Discussion on homework is allowed as well as encouraged, *however* you have to (i) write up your own solutions by showing your own work, and (ii) write down the names of anybody you discussed with.

– *Plagiarism is not tolerated and will be grounds for automatic rejection of your homework.*

Plagiarism

1. a piece of writing that has been copied from someone else and is presented as being your own work
2. the act of plagiarizing; taking someone's words or ideas as if they were your own

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- **Class Attendance**:

  You are expected to attend *all classes*. Excessive absences may result in a reduction of the final grade or a failure in the course.

- **Grading**: Homework (30%), Midterm (30%), and Final (40%)

- **Plan of Lectures (tentative)**:

1. Elementary Particles and their Interactions
2. Relativistic Kinematics
3. Symmetries and Conservation Laws
4. The Quark Model
5. Neutrinos and the Weak Interaction
6. CP-violation
7. The Standard Model and Beyond