Physics 777/778
Nuclear and Particle Physics I/II

Instructor: Jason Kumar
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Class meets:
T Th 12:00-1:15pm
WAT 417A

Optional Textbooks:
An Introduction to High Energy Physics (4th Edition)
Donald Perkins

Gauge Theories in Particle Physics
Aitchison and Hey

Topics to be covered:

An introduction to particle physics

The Standard Model

Hadrons

An introduction to cosmology

Supersymmetry and naturalness

Grand Unification

Dark matter

Neutrino physics

Heavy quark physics

Baryogenesis

Cosmic ray physics

Grading:

The course grade in each semester will be based on reports (3-5) and in-class presentations (2-3). The reports and presentations will be related to material discussed in class, but will require outside resources as well. Some reports and/or presentations may be collaborative. However, every participant must understand the contents of their reports and presentations.

Student Learning Outcomes:

At the successful completion of this course, students will be expected to:

1) Have a working understanding of the particles and interactions of the Standard Model.
2) Have a basic understanding of current issues in beyond-the-Standard-Model physics, with a focus on topics which are investigated by research groups at UH.
3) Have a basic understanding of the relevance of the above issues to current experiments, with a focus on those in which UH research groups participate.