Physics 777/778 Nuclear and Particle Physics I/II

Instructor: Jason Kumar WAT 436 jkumar@hawaii.edu (808)956-2972

Class meets: T Th 9:00-10:15am WAT 417

Recommended 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

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 in-class presentations (the expected number of presentations is two).

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.