

Jan 2019

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| 1 | Course code | PHY422/PHY622 |
| 2 | Course Title | Nuclear and Particle Physics |
| 3 | Credits | 4 (BS-MS), 4 (iPHD), 4 (PHD) |
| 4 | Course Coordinator | Arun M. Thalapillil |
| 5 | Nature of Course | LT-Lecture and tutorial |
| 6 | Pre requisites(if any) | Quantum Mechanics II (PHY 322); Classical Electrodynamics (PHY 312) |
| 7 | Objectives | The course will focus on basic concepts in particle and nuclear physics. The principal audience is intended to be advanced undergraduate and Ph.D/IPh.D students, seeking an introduction to the fundamental constituents of matter and their interactions. The course should serve as a fair prelude to an advanced course on the Standard Model of particle physics and gauge theories. |
| 8 | Course contents | Historical introduction, Classification of fundamental particles, Relativistic kinematics, Interactions and particle dynamics, Symmetries and invariance principles, Bound States and the Quark model, Neutrinos, Neutral kaon system, Higgs mechanism, High energy physics experiments, Nuclear models. |
| 9 | Evaluation /assessment | <ul style="list-style-type: none"> • End-sem examination- 30% • Mid-sem examination- 30% • Quizzes - 40% |
| 10 | Suggested readings | <p>Recommended Book(s)</p> <ul style="list-style-type: none"> • Introduction to Elementary Particles, D. Griffiths (Wiley) • Particle Physics, B. R. Martin and G. Shaw (Wiley) • An Introduction to Nuclear Physics, W. M. Cottingham and D. A. Greenwood (Cambridge) |