First Course Handout for PHY501/502

Academic Year: 2024-2025, 1st Semester
Instructors: Nilay Kundu, Gopal Hazra, Sudeep Bhattacharjee, R. Vijaya

1) ***Objectives and course content:*** The main objective of the course is to let the students do an intensive literature survey on their research interests to transition to the PhD component of the dual-degree program smoothly. Every student is expected to do a literature survey on a topic assigned by her/his project supervisor (preferably the prospective PhD supervisor). If the student wants to study a topic of her/his own choice, then that is even better, but it should be made sure that the project supervisor approves it. Apart from doing a substantial literature survey, it is also important that the student should be able to communicate her/ his work in the form of a short talk in front of the course committee. Additionally, the students are expected to learn how to summarize their literature survey in the form of a respectable scientific journal paper. Although it is not at all expected that there must be original research work done in the project, it should not deter a motivated student from trying to augment the summary of their literature survey with her/his own original calculations or experiments.

2) ***Evaluation Components & Policies: Exams, Quizzes, Assignments, Attendance, Participation etc.:***

A) Strictly, within 5:30 p.m. of 5th August 2024, the students should submit a short write-up (maximum one page) mentioning the tentative title, the supervisor(s), and the tentative project plan. Those continuing a project done in the preceding semester must add a paragraph detailing what has already been done in the project. If the write-up is not received, it will be assumed that the corresponding student intends to drop the course, and action will be initiated to deregister the student from the course.

B) A mid-semester report detailing the progress and the difficulties (if any) and directions for their resolution must be submitted on or before 22nd September 2024. The maximum word count is 500 words.

C) An end-semester report should be submitted in the form of a complete paper on or before 10th November 2024 — maximum length: 6 pages (including figures). Anything written beyond the sixth page will not be evaluated. The format must strictly be that of Physical Review A, B, C, D or E. It will be expected that the report is written in correct English, and the report should conform to the style of the journal as closely as possible with respect to writing : (a) Title, authors and affiliation (b) properly plotted figures if any with labels and figure captions, (c) mathematical equations written in the display style, and numbered with punctuation at the end of the equation, (d) a list of references, following the journal style and containing authors, volume no., page number, and year. If references and equations are used in the text, they should be properly cited.

D) Hard copies of all the reports/write-ups mentioned above should be dropped into the course coordinator's mailbox in front of the physics office, and a soft copy (that need not bear the supervisor's signature) should also be emailed to the course instructor with cc to the supervisor(s). Any hard copy of the reports without the corresponding supervisor's signature will not be considered. In case of multiple supervisors, it must be ensured that at least one supervisor is from the Department of Physics, IIT Kanpur: Only that supervisor will be formally responsible for the supervisors' component of the marks to be given to her/his project students.

E) An end-semester presentation (PPT or equivalent) in the offline mode is mandatory. The slides of the presentations should be nicely and professionally prepared. The duration of each talk will be of 12+3 minutes (it includes the time required for questions and answers). The date of the end-semester presentation will be tentatively around November 15th, 2024 (will be confirmed later).

F) Marks Distribution:
Supervisor: 65 Marks
  (i)   Regularity and interactions (till mid-sem): 10 marks
  (ii)   Workwise progress (till mid-sem): 15 marks
  (iii) Regularity and interactions (mid-sem to end-sem): 10 marks
  (iv)   Workwise progress (mid-sem to end-sem): 15 marks
  (v)   Scientific writing skill (project reports): 15 marks

Committee: 35 Marks
  (i)   Project reports: 15 marks
  (ii)   Seminar: 20 marks

3) *Course Policies: Attendance, Honesty Practices, Withdrawal*

A) The students (and not the supervisors or the instructor-in-charge) are responsible for seeking and maintaining regular discussion sessions with their supervisors.

B) Submitting the end-semester report and delivering the end-semester presentation are mandatory. Missing any one of these will straightaway fetch the student an **F grade**.

C) Any kind of plagiarism or any other form of unfair means at any stage of the project will be strictly dealt with.

D) Missing any of the deadlines will strictly mean **zero marks** in the corresponding component of the evaluation unless supported by adequate documents.

E) If required, the students should not hesitate to contact the instructor-in-charge, Nilay Kundu (email: nilayhep@iitk.ac.in).