Classical Electrodynamics II
PHY 614

Instructor: Diptarka Das

2026-2027 Odd Semester

Course Information

- **Instructor:** Diptarka Das
- **Office:** Old SAC 206
- **Time Table:** DOAA
- **Course Syllabus:** Refer to DOAA Website Courses page. The syllabus is a tentative list of topics. Choice of topics and extent of coverage is left for the Instructor.
- **Pre-requisite:** A basic course on electrodynamics at the level of PHY552. A prior knowledge of basic concepts in special theory of relativity (at the level of PHY226M) will be useful.

Tentative Evaluation

The distribution of evaluation is as follows:

- **(Surprise) Quizzes:** 25%
- **Mid Sem:** 25%
- **End Sem:** 35%
- **Attendance:** 15%
- **Makeup Policy:** Make-up for End-semester exams will be granted only for valid medical or institutional reasons, strictly in accordance with the Institute's policy. No make-up for Mid-semester and Quizzes.

Note: This evaluation scheme is tentative and subject to modification once the course begins.

Texts and References

- Goldstein (*Special Relativity Chapter*)
- Landau & Lifshitz (*Classical Theory of Fields*)
- J.D. Jackson (*Classical Electrodynamics*)
- A. K. Raychaudhuri (*Classical Theory of Electricity and Magnetism: A Course of Lectures*)

General Guidelines

- **Attendance:** Attendance will be strictly enforced. Extended absentees without a valid reason will be deregistered as per Senate guidelines.
- **Academic Integrity:** Use of unfair means (plagiarism, cheating, unauthorized collaboration) in any evaluation component will lead to severe penalties, ranging from mark deduction to referral to the Senate Student Affairs Committee (SSAC).
- **Consultation:** Please make an appointment via email for discussions.

Lecture Plan (Total 40 Lectures)

Note: No Tutorials for this course. **3-0-0-0 (9)**

1. **STR, 4-vectors and tensors:** 3 L
2. **Relativistic Kinematics and Dynamics, Lagrangian:** 6 L
3. **Charged Particle in EM Fields:** 3 L
4. **Maxwell Equations and Covariant ED:** 6 L
5. **Classical Field Theory:** 6 L
6. **LW Potentials:** 3 L
7. **Radiation Theory:** 9 L
8. **Dispersion and Scattering:** 4 L