Physics 323

Electromagnetism III

Spring 2017

| Instructor:       | Subhadeep Gupta (deepg@uw.edu)   |  |  |
|-------------------|--|--|--|
| Lectures:         | Tuesdays and Thursdays 9:00-10:20 am, Rm A118 Phys/Astr Building (A-wing) $$   |  |  |
| Office:           | B428 Phys/Astr Building (616-9649)   |  |  |
| Office Hour:      | Wednesday 2-330 pm in B428 (or by appointment, please email)   |  |  |
| Tutorial Website: | http://depts.washington.edu/uwphyttl/tiap/EM/323/  |  |  |
| TA's:             | Bert Xue (Tutorial Head TA, bertx@uw.edu),<br>Raahul Buch (raahub@uw.edu), Sheh Lit Chang (shehlit@uw.edu),<br>Tun Sheng Tan (tunsheng@uw.edu), Shifeng Zhu (sfzhu@uw.edu)   |  |  |
| Textbook:         | David Griffiths, Introduction to Electrodynamics, fourth edition   |  |  |
| Homework:         | HW problems will be assigned each week, to be worked out completely<br>and handed in during class on (typically) Thursday of the following week.<br>You may also turn in your HW to the instructor's mailbox in the Physics main office<br>A portion of each week's HW assignment will be graded.<br>Late HWs will be given a score of zero.<br>There will be no HW assigned during exam weeks (see schedule).                                   |  |  |
| Exams:            | There will be three midterm exams and no traditional final exam (see<br>course schedule). The exams will be in A118 and will be closed book.<br>You will be be provided an equation-sheet containing all relevant formulae.<br>There will be no make-up exams. You may return an exam for regrading within<br>one week after it was distributed, but you must attach a brief statement<br>explaining the possible error in the original grading. |  |  |
| Course grade:     | 20% of your grade is assigned to each of Homework, Exam 1, Exam 2, Exam 3, and Tutorial ("Quiz Section").  |  |  |
| Course Website:   | http://faculty.washington.edu/deepg/phys323/<br>Homework solutions will be made available the day after the due-date.  |  |  |

If you would like to request academic accommodations due to a disability, please contact Disability Resources for Students, 011 Mary Gates, 543-8924, uwdrs@uw.edu, and inform me (the instructor) so we can discuss the accommodations you might need for class.

| Physics 323 |        | Course Schedule                      | Spring 2017            |
|-------------|--------|--------------------------------------|------------------------|
| Week        | Date   | Topic                                | Text Reading           |
| 1           | Mar 28 | Absorption and Dispersion            | 9.4.1,  9.4.2          |
|             | Mar 30 | Electron theory of materials         | 9.4.3                  |
| 2           | Apr 4  | Guided waves                         | 9.5.1,  9.5.2          |
|             | Apr 6  | Coaxial lines and resonant cavities  | 9.5.3                  |
| 3           | Apr 11 | Optical cavities                     | special topic          |
|             | Apr 13 | Potential formulation and gauges     | 10.1.1, 10.1.2         |
| 4           | Apr 18 | Lorentz gauge. Canonical momentum    | 10.1.3., 10.1.4        |
|             | Apr 20 | First Exam                           |                        |
| 5           | Apr 25 | Retarded and advanced potentials     | 10.2.1, 10.2.2         |
|             | Apr 27 | Leinard-Weichert potentials          | 10.3.1, 10.3.2         |
| 6           | May 2  | Radiation. Electric dipole radiation | 11.1.1, 11.1.2         |
|             | May 4  | Magnetic dipole radiation            | 11.1.3, 11.1.4         |
| 7           | May 9  | Power radiated by a point charge     | 11.2.1                 |
|             | May 11 | Second Exam                          |                        |
| 8           | May 16 | Radiation reaction                   | 11.2.2, 11.2.3         |
|             | May 18 | Special topic (TBD)                  | special topic          |
| 9           | May 23 | Begin special relativity             | 12.1, 12.2             |
|             | May 25 | Transformation of fields             | 12.3.1, 12.3.2         |
| 10          | May 30 | Tensor form of electrodynamics       | 12.3.3, 12.3.4, 12.3.5 |
|             | Jun 1  | Final Exam                           |                        |