Exam syllabus
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The following exam syllabus is “anchored” in the Pearson New International Edition of the 4th edition of Griffiths. I have commented explicitly on those topics/approaches that are not covered in Griffiths, or are not covered in sufficient detail there. If anything is unclear, please do not hesitate to contact me.

Chapter 1: Vector analysis

This is mathematical “background” material. In general, you should know this material at the level that it has been used in the course, both in lectures and tutorials. You should also know the following material that is not covered in Griffiths:

- The Levi-Civita tensor and how to use it in calculations (see lecture notes, Ch. 1)

Chapter 2: Electrostatics

Everything is relevant, except:

- Sec. 4: Work and energy in electrostatics
- Sec. 5.4: Capacitors

Also, in Sec. 5.3 you are only expected to know the first paragraph (Eqs. (48) and (49)).

Chapter 3: Potentials

Everything is relevant, except:

- Sec. 1.2-1.4 (this can be “nice to know” as general background, but you would not get any direct questions about it)
- Sec. 1.6: Conductors and the second uniqueness theorem
- Sec. 2.3: Force and energy

In addition, in the lectures we covered the following two topics that are not covered in Griffiths and are NOT exam-relevant:

- Laplace’s equation in spherical coordinates for problems WITHOUT azimuthal symmetry
- Laplace’s equation in cylindrical coordinates

Chapter 4: Electric fields in matter

Everything is relevant, except:

- Sec. 1.3: Alignment of polar molecules
- Sec. 4.3: Energy in dielectric systems
- Sec. 4.4: Forces on dielectrics

Chapter 5: Magnetostatics

Everything is relevant.

Chapter 6: Magnetic fields in matter

Everything is relevant, except:

- Sec. 1.2: Torques and forces on magnetic dipoles
- Sec. 1.3: Effect of a magnetic field on atomic orbits

Concerning Sec. 4.2 on ferromagnetism, you will not get any questions about domains or hysteresis loops.

Chapter 7: Electrodynamics

Everything is relevant, except:

- Sec. 2.4: Energy in magnetic fields
- Sec. 3.4: Magnetic charge

Chapter 8: Conservation laws

Everything is relevant, except:

- Sec. 2.4: Angular momentum
- Sec. 3: Magnetic forces do no work

Conservation of angular momentum was also discussed in lectures with a different emphasis from Griffiths, but this material is also NOT exam-relevant.

The example “Maxwell stress tensor for two charged cylinders” (available as a pdf file in the lecture log, see the “Other” column for Tuesday October 6) is exam-relevant.

In the lectures we discussed tensors at a more advanced level than Griffiths. This material is covered in the lecture notes (Ch. 8, pp. 7-15) and is exam-relevant.

Chapter 9: Electromagnetic waves

Everything is relevant, except the following sections:

- Sec. 1.4: Boundary conditions: reflections and transmission
- Sec. 4.2: Reflection at a conducting surface
- Sec. 5.3: The coaxial transmission line

In addition, in the following sections some parts are not exam-relevant:

- Sec. 1.1: The material about waves on a stretched string (starting on the middle of p. 388 and ending with eq. (3)) is not exam-relevant.
- Sec. 4.3: The material about a classical model for the frequency dependence of the permittivity in dielectrics (pp. 424-429) is not exam-relevant

Chapters 10-12: Please note that in the Pearson New International Edition of the 4th edition, “Radiation” appears as Chapter 10, “Electrodynamics and relativity” as Chapter 11, and “Potentials and fields” as Chapter 12. From a pedagogical point of view, this order makes no sense at all, considering that both the “Radiation” and “Electrodynamics and relativity” chapters make use of results derived in the “Potentials and fields” chapter. The logical order is therefore Potentials and fields - Radiation - Electrodynamics and relativity, so below I list the chapters in that order. Also note that in the lecture log on the course website, I have used the chapter numbering of the 3rd edition, which follows the logical order, i.e. 10. Potentials and fields, 11. Radiation, 12. Electrodynamics and relativity.

(The decision to change the order was made by the publishing company Pearson. The reasons seem to be financial/legal, having to do with Pearson’s profits; see https://www.reddit.com/r/Physics/comments/33x4hy/the_only_1_star_rating_of_david_griffiths/ I find it hard to consider Pearson a serious publishing company after this.)

Chapter 12: Potentials and fields
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Everything is relevant, except:

- Sec. 1.4: Lorentz force law in potential form

In the lectures, we used the Green function method to find the retarded potentials. This method is not covered in Griffiths, but it is covered in the lecture notes (Ch. 10 and the two notes about Green functions) and is exam-relevant.

Chapter 10: Radiation
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Everything is relevant, except:

- Sec. 2.2: Radiation reaction
- Sec. 2.3: The mechanism responsible for the radiation reaction

Note that the mathematical approach used by Griffiths in

- Sec. 1.4: Radiation from an arbitrary source

is not directly relevant, because for this material we used a different approach, covered in the lecture notes (Ch. 11, Sec. 11.3), which is exam-relevant.

Chapter 11: Electrodynamics and relativity
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This material is NOT exam-relevant.

Tutorials (1-12):
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All tutorial problems and their solutions are exam-relevant.