Physics 133 Fall 2019 Final Exam Notes

Final: Saturday, December 14, 2019, 12–3 p.m.

Section 01	(Hawley)	Hugel 103
Section 02	(Dougherty)	Hugel 100
Section 03	(Hawley)	Hugel 103

Topics: The final exam will be cumulative, incorporating topics covered throughout the semester.

The final will be designed to be completed in a 2-hour time period, but you may take the full 3-hour period if you wish. The final exam will be very similar to individual hour exams in style and format. It will contain a mix of problems of varying degrees of difficulty. Some problems might include qualitative as well as quantitative questions. Some problems may focus on a single topic or chapter, while others may include topics from several different chapters. Consult the syllabus for the specific list of topics.

The following general areas may be covered:

Ch. 15 & 16	Waves
Ch. 21	Electric Forces and Fields
Ch. 22	Gauss's Law
Ch. 23	Electric Potential and Potential Energy
Ch. 24	Capacitance
Ch. 25 & 26	DC Circuits
Ch. 27	Magnetic Forces and Fields
Ch. 28	Sources of Magnetic Field
Ch. 29 & 30	Electromagnetic Induction
Ch. 32	Electromagnetic Waves
Ch. 33	Light
Ch. 35	Interference
Ch. 36	Diffraction

Omissions: The following topics originally on the syllabus will not be on the final:

Sections 16:8–9	Doppler Effect & Shock Waves
Section 25:6	Metallic Conduction
Section 27:8	The Direct-Current Motor
Section 29:7	Displacement Current
Section 30:6	L-R-C Circuits
Section 36:6	X-ray Diffraction

Problems will typically focus on the underlying fundamental physics rather than obscure applications or complex mathematical manipulations.

You will be provided with an equation sheet similar to those from previous hour tests. A copy is available on the course website.

Lab-Inspired Questions:

There may be lab-inspired questions on the final. For example, there may be questions which

are similar to physical situations you encountered in lab.

You will not be responsible for calculating or propagating uncertainties, though we do hope you find those topics useful in your future endeavors.

Hints

Some questions may apply concepts from several chapters to a single problem.

Review the equation sheet carefully so that you know what the symbols mean and when each equation applies. It is important to understand what the individual symbols mean, but it is also important to understand the broader context for the equations so you know when they do or do not apply, and how to combine them in a particular situation.

Do not attempt to memorize specific examples. Instead, be sure you understand the basic physical principles and the reasoning behind their use.

Do not memorize specialized equations. Start each problem with a general principle or an equation from the equation sheet. *If you start your solution with a specialized equation that is not on the equation sheet, you may lose substantial credit.* Then, if numerical values are needed, substitute them for the appropriate symbols. This shows that you know what the relevant physics is and what the symbols mean.

If you are unable to obtain a result for some part of a problem and a subsequent part uses that result, use a symbol for the unknown result. For example, write "where v (in m/s) is the speed from part b."

Present your work clearly and carefully so that it can be read and understood.

Avoid round-off errors. Your final answer should normally be within 1% of the correct answer. Keep additional digits in your intermediate calculations.

Don't panic. You should have plenty of time.

Get a good night's sleep!