

Physics 216: The Electromagnetic Universe Laboratory
Gustavus Adolphus College
Fall 2016

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Textbook: *The Electromagnetic Universe Laboratory Manual*, by Henry, Miller, Niederriter, Saulnier, and Petricka.

Required Materials: Two 80-sheet quadrille ruled lab notebooks.

1. **General:** Twelve laboratory sessions will be held during the semester. There will be no lab the weeks of Nobel Conference and Thanksgiving.
2. **Attendance:** Attendance at all labs is required. Students will be held responsible for informing themselves of all announcements and assignments made in the laboratory classroom as well as in the Physics 215 class meetings. Any last minute communications will be by electronic mail.
3. **Makeup:** Any student who misses a lab during the semester with a valid (certifiable) excuse, must arrange with the instructor to make up the lab outside of regular class time.
4. **Laboratory Work:** All lab work for each experiment will be detailed in the lab manual. The introduction in the manual covers important information on lab course objectives, **notebook format**, grading, content, and late report penalties. **Refer to it often.**
5. **Pre-lab Preparation:** The entire lab handout should be read in preparation for the lab period. The pre-lab assignment consists of writing the *purpose* and *theory* sections in the lab notebook **before** attending your lab section. A student who has not completed the pre-lab will not be admitted to the laboratory to perform the experiment until it is completed and will receive a zero for that prelab assignment.
6. **Lab Notebooks:** A lab notebook is required for each of the experiments. The report is due at the beginning of the following lab session. Thus two such notebooks will be needed for the course. Lab notebooks will be graded on a 10 point basis, and *there will be a penalty for late notebooks*. Each student should write his/her own lab notebook, even though the experiments were performed with a partner or partners. *Lab notebooks submitted which are found to be identical (or nearly identical) will have the total grade points divided among the identical notebooks.*
7. **Scientific writing:** Scientific writing assignments will be given throughout the semester, as shown in the schedule. The format and due date for the assignments will be announced in lab. Assignments 1-4 will be graded on a 10 point basis, assignments 5 and 6 will be 20 points each. Writing assignments should be word processed, on 8.5" x 11" paper. *There will be a penalty for late writing assignments.*
8. **Incompletes:** A grade of incomplete will be given only for work not completed due to circumstances beyond the control of the student.

9. **Evaluation:** Pre-labs and preparation (10%), Lab notebooks (50%), Writing assignments (20%), Lab final (20%).

Final course grades will be assigned using the following scale as a guide:

94-100 A	82-86 B	70-74 C	58-62 D
90-94 A-	78-82 B-	66-70 C-	0-58 F
86-90 B+	74-78 C+	62-66 D+	

Assignment of the final letter grades will also take into account other factors including the instructor's subjective evaluation of the student's attendance, initiative, evidence of improvement, and the quality of independent work.

Laboratory Schedule

<u>Date:</u>	<u>Experiment:</u>	
September 7 & 8	SigmaPlot Exercise	
September 14 & 15	Electrostatics	** Writing Assignment 1 **
September 21 & 22	Electric Field Lines	** Writing Assignment 2 **
September 28 & 29	Nobel Conference – No Lab	
September 5 & 6	Capacitors	** Writing Assignment 3 **
October 12 & 13	Digital Multimeters and DC Circuits	
October 19 & 20	The Oscilloscope	
October 26 & 27	Wheatstone Bridge	** Writing Assignment 4 **
November 1 & 2	Determination of the Earth's Magnetic Field & Magnetic Force	
November 9 & 10	The Current Balance	** Writing Assignment 5 **
November 16 & 17	Faraday's Law	
November 23 & 24	Thanksgiving – No Lab	
Nov. 31 & Dec. 1	RLC Transient Circuits / AC Circuits	** Writing Assignment 6 **
December 7 & 8	Lab Final	