

The Electromagnetic Universe Laboratory
Gustavus Adolphus College
Fall 2018

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

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 during the week of Thanksgiving.
2. **Attendance:** Regular 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 daily classroom 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 handout. The introduction in the manual covers important information on lab course objectives, **report 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. You must have read the experimental procedure and complete the title, objective, and theory section of your lab notebook before attending your lab section. Any other pre-lab assignments must be complete in their entirety before attending the lab.
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. These reports will be written entirely in the student's lab notebook, and thus two such notebooks will be needed for the course. Informal reports will be graded on a 10 point basis, and *there will be a penalty for late reports*. Each student should write his/her own lab report, even though the experiments were performed with a partner or partners. *Lab reports 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, and each will be graded on a 20 point basis. Writing assignments should be word processed, double spaced on white 8.5" x 11" paper. Any required graphs should be on graph paper or computer printouts with proper scales and identification. 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.

The Electromagnetic Universe Laboratory

9. Evaluation: Lab notebooks and any pre-labs (60%), writing assignments (20%), and 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.

Accessibility Resources

Gustavus Adolphus College is committed to ensuring the full participation of all students in its programs. If you have a documented disability, or you think you may have a disability of any nature (e.g., mental health, attentional, learning, chronic health, sensory, or physical) and, as a result, need reasonable academic accommodation to participate in class, take tests or benefit from the College's services, then you should speak with the Accessibility Resources staff, for a confidential discussion of your needs and appropriate plans. Course requirements cannot be waived, but reasonable accommodations may be provided based on disability documentation and course outcomes. Accommodations cannot be made retroactively; therefore, to maximize your academic success at Gustavus, please contact Accessibility Resources as early as possible. Accessibility Resources

(<https://gustavus.edu/care/accessibility/>) is located in the Center for Academic Resources and Enhancement. Accessibility Resources Coordinator, Kelly Karstad, (kkarstad@gustavus.edu or x7138), can provide further information.

Laboratory Schedule (Wednesdays, 2:30 p.m. to 4:20 p.m.)

<u>Date:</u>	<u>Experiment:</u>
September 5	Computer Plotting and Fitting Basics
September 12	Electrostatics Writing Assignment #1 (WA1)
September 19	Electric Field Lines and Equipotential Lines (WA2)
September 26	Capacitors (WA3)
October 3	Nobel Conference – No Lab
October 10	Digital Multimeters and DC Circuits
October 17	The Oscilloscope
October 24	Wheatstone Bridge and Max. Power Transfer (WA4)
October 31	Determination of the Earth's Magnetic Field

The Electromagnetic Universe Laboratory

November 7	The Current Balance	(WA5)
November 14	Faraday's Law	
November 21	Thanksgiving – No Lab	
November 28	RLC Transient Circuits	
December 5	AC Circuits	(WA6)
December 12	Lab Final	