

2013

355-01 Advanced Physics Lab

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Recommended Citation

Schmitzer, Heidrun, "355-01 Advanced Physics Lab" (2013). *Physics Syllabi Fall 2013*. 26.
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Advanced Physics Lab
Physics 355 - Fall 2013

I. General Information

Instructor: Dr. Heidrun Schmitzer Office: 105 Lindner Hall Phone: 745-4963	e-mail: schmitzer@xavier.edu Office Hours: Wed. 10:30- 11:30 and by appointment
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II. **Goals of the Course:** Learn to study and work independently and process new scientific information, learn to manage time and to write a scientific paper.

III. The course requirements are as follows:

Lab reports 80%
Formal Paper 20%

Please be aware that managing your own time is part of this course. But typically you have three weeks for one lab. In the first week you will meet with me to discuss the lab and introduce the devices. Come prepared. Then you have one week to do the lab. **Lab reports are due in the third week.** Not turning in lab reports in time and not being able to schedule the required lab experience in time will result in a lower grade. The departmental grade policy can be found in the Programs section of the Xavier Physics Department website (http://www.xu.edu/physics_dept)

You will write a formal paper about one of the labs. It will be given a grade for the first version that is turned in. After suggested improvements are made a second grade will be given. The final grade for this paper is then the arithmetic mean of these two grades.

IV. Attendance

Attendance at the meeting sessions is mandatory. All labs must be completed within by the end of November. The grade *incomplete* is not an option in this course.

V. Scale

A	A-	B+	B	B-	C+	C	C-	D+	D	D-	F
96-100%	91-95%	88-90%	84-87%	81-83%	78-80%	74-77%	71-73%	68-70%	64-67%	60-63%	<60%

Advanced Lab Topics

- 1. Viscosity of fluids: Reynold's number and Stokes' Law**
- 2. Magnetic torque and magnetic dipole moment**
- 3. Polarisation of Light: Raleigh scattering and Birefringence**
- 4. Electric Potential of various conductor configurations**
- 5. Open ended lab: Polarisation measurement**
- 6. October 8th: Talk by Dr. W. Murphy from NIOSH**

The lab reports should have the following structure:

Title

Purpose/goal of the lab (What do you want to do or show or prove?)

Procedure

Description of Equipment/set up (can be drawing)

Data: use graphic representation of data and theory where ever possible

Conclusions (Why is this lab important? What did you learn?) and error analysis

Points to consider for a paper or a talk:

Is the talk/paper prepared to the appropriate audience?

Are scientific conventions used correctly?

Does the article/talk flow logically?

Does the article/talk give a concise abstract or introduction?

Does the article/talk give a concise summary of results?

Do the graphs make scientific sense and are they labeled correctly?

What parts of the talk/paper need more explanation?