

Northern Illinois University

Course Syllabus for Physics 374 --- Junior Physics Lab

Spring Semester, 2022

Instructor: Dennis Eugene Brown Faraday West 208W and/or 213W
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Office Hours: TTh 10-12:30pm **tel: 630-910-5512**

Course Textbook: Experiments in Modern Physics **Author:** Melissinos&Napolitano

Suggested Textbook: *Data Reduction and Error Analysis for the Physical Sciences* by Philip R. Bevington & D. Keith Robinson.

The Labs are posted on the web at www.niu.edu/brown

- Faraday Effect
- SQUID
- STM
- Hall Effect
- Muon Lifetime
- NMR
- Mossbauer Effect
- X-Ray Diffraction
- Ferroelectric Crystals (optional)
- *Any other optional experiment*

Each student will be required to do 4 labs (2 ½ weeks each). At the end of the 3rd week each team will do a 1 ½ hour oral defense of their work. Two weeks before the semester ends, each student will also do a two-part oral presentation of one of the lab projects before the whole class. The first part (a 20 min introductory discussion of the physics only) will be done at the end of the 1st week, and the second part (on the last week of classes) will be a 20 min discussion of the lab results. Each student will also hand in a written report (as if one were to publish it in a scientific journal).

Grades:

Each oral Defense	15%	of the total grade
Oral Presentation	20%	of the total grade
Written Report	10%	of the total grade
Miscellaneous	10%	of the total grade

Miscellaneous consists of various observations I make of you over the course of the semester. Examples include: how well you are prepared to do the lab, how well you answer questions posed to you during the labs, if I make a mistake describing or explaining something—how quick you are to correct me, questions you pose during the oral presentations to the student presenting it, etc.

Bonus points will be given to students attending and asking questions at the Friday Colloquium or other scientific talks on campus. (I must attend talk as well for credit, so let me know if you intend to attend the Friday Colloquium).

There will be no Final Exam