

Physics 223: Analytical Physics III

Syllabus, fall 2011

Prof. James McLean

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Summary Course Website: <http://www.geneseo.edu/~mclean/Analyt3/>

(Full Course Website available in mycourses.geneseo.edu)

Learning Outcomes

This class will cover electromagnetic radiation (including its interference, diffraction, and quantum nature), elementary fluids and thermodynamics, and special relativity.

Students completing this course should be able to...

1. ... solve a variety of problems pertaining to the material covered in the course,
2. ... demonstrate an understanding of wave phenomena,
3. ... demonstrate an understanding of special relativity,
4. ... describe different interactions of photons with matter based on an introductory understanding of the experimental basis of quantum theory.

Times and places:

Lectures: Newton 201; Tue and Thu 1:00–2:15pm

Midterm Exams: Newton 204 or 214; 7:00–9:00pm, Thu Oct. 13, and Mon Nov. 21

If you have conflicts with these times, notify me as soon as possible and appropriate arrangements will be made.

Final Exam: Newton 201; Wed Dec. 14, 3:30–6:30pm

Planned office hours: Wed 9:30–11:30am, Thu 2:15–3:45pm; Fri 2:30–4:00pm

I am also available at other times. See the schedule on my web site. Just stop by my office, or if you want to ensure that I'll be there, contact me by phone or email.

Required materials:

Textbook: *Fundamentals of Physics*, by Halliday, Resnick, and Walker; 8th edition preferred.

Textbook: *Modern Physics*, by Thornton and Rex; 3rd edition preferred.

Required coursework and grading (with fraction of final grade):

31% Homework: normally due at 6:00pm each Thursday

5% Quizzes: two, announced

40% Midterm Exams: two

24% Comprehensive Final Exam

Homework:

Homework will be administered through CAPA, the “Computer Assisted Personalized Approach” system. You can access this either from the course’s main web page or directly at <http://capa.geneseo.edu/>. Answers are entered via the World Wide Web. Note that if there are system-wide problem with the network, due dates may be extended. However, individual computer difficulties will not be accepted as excuses for non-completion of assignments.

A few homework problems will require a written submission. You may consult with your colleagues and with me, **but the work that you submit must be your own.** This means that if I call upon you to explain your solution, you should be able to do so in complete detail.

Some General Comments:

Although test scores may be scaled up during test grading, there will be no overall course “curve” for course grades. See my web site for more details on my grading policy.

If you need to return materials to me outside of class, your best option is to bring it to my office. Slide it under my door if I’m not in. Homework will be accepted for full credit if it is in my hands before solutions are posted. After solutions are posted, partial credit may be given.

Help available:

Remember that one important function of homework is for you to monitor your progress. If you are having problems with the homework, it should serve as a warning to take immediate remedial action. If you find yourself getting into difficulties, **do something about it—fast!** The arithmetic of averages shows that you can’t afford to delay if you start to get into grade trouble.

SUNY Geneseo will make reasonable accommodations for persons with documented physical, emotional or learning disabilities. Students should consult with the Director in the Office of Disability Services (Tabitha Buggie-Hunt, 106A Erwin, tbuggieh@geneseo.edu) and their individual faculty regarding any needed accommodations as early as possible in the semester. Further information available at <<http://disability.geneseo.edu/>>.

Schedule

WEEK OF...	LECTURE TOPICS	EXAM
Aug. 29	Fluids	
Sept. 5	Induction, Faraday & Maxwell	
12	E&M Waves	
19	Interference	
26	Diffraction	
Oct. 3	Thermal Physics	
10	NO CLASS OR HW due to exam	Exam 1 (Thu)
17	Thermal Energy Transfer	
24	Thermodynamics	
31	Kinetic Theory of Gases	
Nov. 7	Quantum Light, Photoelectric Effect	
14	Special Relativity	
21	NO CLASS OR HW due to exam	Exam 2 (Mon)
28	Minkowski Diagrams, Doppler Effect	
Dec. 5	Mass-Energy, Momentum, and Compton Effect	
12	NO CLASS, last HW due	
Dec 16 at 3:30 PM		Final Exam