

Physics III

Phys-UA 95

Fall 2021

Tuesday, Thursday 9:30 – 10:45

Silver Center 208

Professor: Frank A. Moscatelli, Rm 838, 726 Broadway

Office Hours: Tu, Th, 2 – 3 PM or by appointment.

Text: ***Waves (Manuscript)*** by David Morin (pdf on NYU Classes site for this course); also, **The Physics of waves**, Howard Georgi. Both available free.

Recitation: Monday 12:30 – 1:45 and Wednesday 4:55 - 6:10 Rm 1067 in 726 Broadway

Recitation instructor: TBA

Tentative Syllabus with Calendar

Thursday		Tuesday	
Sep. 2: Harmonic oscillations	Ch.1	Sept. 7: Complex exponentials	Ch.1
Sep. 9: Damped harmonic motion	Ch. 1	Sep. 14: Damped harmonic motion	Ch. 1
Sep. 16: Coupled oscillators	Ch. 2	Sep. 21: Some linear algebra	Ch. 2
Sept. 23: Normal modes	Ch. 2	Sept. 28: N oscillators, waves	Ch. 2
Sep. 30: Fourier series	Ch. 3	Oct. 5: Fourier transform	Ch. 3
Oct. 7: Test 1		Oct.12: Power, energy, velocities	Ch. 4
Oct. 14: Dispersion	Ch. 6	Oct. 19: Dispersion	Ch. 6
Oct. 21: Electromagnetic waves	Ch. 8	Oct. 26: Electromagnetic waves	Ch.8
Oct. 28 Wave superposition	Ch. 9	Nov. 2: Interference	Ch. 9
Nov. 4: Reflection, refraction	Ch. 9	Nov. 9: Test 2	
Nov. 11: Diffraction	Ch. 9	Nov. 16: Optics, lenses	G 11
Nov. 18: Optics, applications	G 11	Nov 23: Schrodinger Equation	Notes
Nov. 26: No class		Nov. 30: Schrodinger Equation	Notes
Dec. 2: Buffer		Dec. 7: Buffer	

Dec. 9: Review.

Final: TBA

CLASS ORGANIZATION

The lectures serve as an introduction, but the real work of learning starts in recitation and when you do the homework. Lecture is most useful to you if you ask questions when there is something you do not understand. Do not imagine that you are the only person in the room who does not understand something. We are small enough to be quite informal.

A very important part of your physics education is the homework you do. Physics is a collaborative science; I encourage you to work together with one or more friends on the homework assignments. You learn by explaining things to each other. Of course, merely copying solutions is not only disallowed, but a violation of academic honesty codes. And we can easily detect it.

The weekly homework assignments will be given out on Wednesday and will be collected the following Wednesday. The recitation instructor will review the homework problems handed in the previous week and may help you with difficulties you encounter in the assignment that is due.

Late homework assignments will not be accepted. However, your lowest grade on the homework — which may be an assignment that you do not hand in — will be dropped when calculating your grade.

There will be 2 tests in class, as you see on the tentative calendar above. They will be designed to easily fit in the one-hour time slot – maybe just one, or two, short problems. The questions on the tests will be similar to the problems you have done on the homework. The questions on the final exam will be similar to the tests. The system is designed to keep you up-to-date and prepared for the final exam.

Your overall grade will be calculated as follows: 15% homework, 40% tests, 45% final. Of course, other *qualitative aspects* will be considered as well. For example, if a student gets 100 on the final, then a poor performance on a test, say, may to some extent be deemphasized. Another *qualitative aspect* might be a monotonically increasing grade throughout the term.