

Introduction to Accelerator Physics

Day	What	Who	Due
Tue Aug 30	(No class: hurricane)	Irene	
Thu Sep 01	Overview of Accelerators, Special Relativity	Todd	
Tue Sep 06	Weak Focusing, Stability, Hamiltonians	Todd	HW1
Thu Sep 08	Weak Focusing, Hamiltonians	Todd	
Tue Sep 13	Magnet Parameterization/Design	Todd	HW2
Thu Sep 15	Strong Focusing	Todd	
Tue Sep 20	Strong Focusing	Todd	HW3
Thu Sep 22	Lattice Exercises	Todd	
Tue Sep 27	(No class)	-	
Thu Sep 29	(No class)	-	
Tue Oct 04	Special Surprise Guest!	Guest	HW4
Thu Oct 06	Lattice Exercises, Review	Todd	
Tue Oct 11	(No class: break)	-	
Thu Oct 13	In-Class Midterm	Todd	
Tue Oct 18	Synchrotron Motion	Todd	
Thu Oct 20	Synchrotron Motion	Todd	
Tue Oct 25	Synchrotron Radiation	Todd	HW5
Thu Oct 27	Synchrotron Radiation	Todd	
Tue Nov 01	Beam Cooling	Todd	HW6
Thu Nov 03	Nonlinear Dynamics	Todd	
Tue Nov 08	Nonlinear Dynamics	Todd	HW7
Thu Nov 10	Special Surprise Guest!	Guest	
Tue Nov 15	(No class)	-	
Thu Nov 17	(No class)	-	
Tue Nov 22	Space Charge, Beam-Beam Forces	Todd	HW8
Thu Nov 24	(No class: Happy Thanksgiving!)	-	
Tue Nov 29	Survey of Accelerator Instrumentation	Todd	HW9
Thu Dec 01	Survey of Accelerator Instrumentation	Todd	
Tue Dec 06	Student Presentations	-	HW10
Thu Dec 08	Student Presentations	-	

Table 1: Class Schedule/Syllabus for ODU Physics 417, Introduction to Accelerator Physics (Subject to revision depending on how much we have to review!)

Text: “An Introduction to the Physics of Particle Accelerators” (2nd Edition), M. Conte and W.W. MacKay (World Scientific, 2008)

Grading: 50% homework, 20% in-class midterm (Oct 13), 20% presentations, 10% class participation.

Homework: Homework is due at the start of the Tuesday class the week after it’s assigned. Late homework will be penalized at a rate of 10% per 24 hours. Solutions will be distributed/posted at the class following when the homework is due, after which no further late homework can be accepted to contribute to your grade. Collaboration is an important part of being a working scientist; you may collaborate with your classmates on the homework if you are contributing to the solution and understanding of the material. Like any good scientist, you must **cite** the contributions of your teammates and other references that you may have used. Everyone should turn in individual copies of the homework. Use of Mathematica, spreadsheets, and other computer tools is encouraged.

Final Exam/Presentations: During the last week of class, you’ll give a 15(+5) minute talk on a topic relevant to accelerator physics. I’ll provide a suggested list of topics in early October, though you can talk on another relevant topic with instructor approval.

Office Hours: I will be in office hours from 15:00-16:15 on Tuesdays and Thursdays before classes where I’m scheduled to be present according to the above syllabus. I am also quite responsive to email nearly 24/7 and can be available via phone/skype if needed.