

Physics 5D Heat, Thermodynamics, and Kinetic Theory Fall 2013

The **textbook** for this course is Giancoli, *Physics for Scientists and Engineers*, 4th Edition, Volume 1, Chapters 17-20.

Class meets: Mondays 5-6:45 pm in Thimann Lecture 3.

Instructor: Prof. Joel Primack, ISB 318, 459-2580, joel@physics.ucsc.edu
Office Hours: Wednesdays 2-3 pm, or by appointment.

Website for this class: <http://physics.ucsc.edu/~joel/Phys5D>

Homework will be posted at the [Phys5D](#) website. Solutions are due at the beginning of class. Late homework will not be accepted since solutions (password: Entropy) will be posted on the class website just after the homework is due, so that you can see how to do the problems while they are fresh in your mind.

On Reserve in the Science Library: *The Feynman Lectures on Physics*, Volume 1 (Chapters 39-46 cover the topics of this course from a more advanced viewpoint.)

Course Schedule

Date	Topic	Readings
1. Sept 30	Temperature, Thermal Expansion, Ideal Gas Law	17.1-17.10
2. Oct 7	Kinetic Theory of Gases, Changes of Phase	18.1-18.5
3. Oct 14	Mean Free Path, Internal Energy of Gases	18.6-19.3
4. Oct 21	Heat and the 1 st Law of Thermodynamics	19.4-19.9
5. Oct 28	Heat Transfer; Heat Engines, Carnot Cycle	19.10-20.2
6. Nov 4	Midterm Exam (in class, one page of notes allowed)	
7. Nov 18	The 2 nd Law of Thermodynamics, Heat Pumps	20.3-20.5
8. Nov 25	Entropy, Disorder, Statistical Interpretation of 2 nd Law	20.6-20.10
9. Dec 2	Thermodynamics of Earth & Cosmos; Course Overview	
11. Dec 11	Final Exam (4-7 pm, in class, two pages of notes allowed)	