

Syllabus

Thermal Physics – Phys 320 - Winter 2007

"If a man empties his purse into his head, no man can take it away from him. An investment in knowledge always pays the best interest."

-----Benjamin Franklin

Instructor

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Office Hours: M, W 3-4 pm or by appointment

Website

http://www.lawrence.edu/fast/marlerj/phys320_06.html

Class Schedule

Meetings	M W F	8:30-9:40 AM	Youngchild 041
Final Exam	Wednesday, March. 15 th	1:30 PM	Youngchild 041

Course Description

The aim of this course is to acquaint the student with the principle elements of statistical mechanics, thermodynamics, kinetic theory and the applications of these theories.

Text

Kittel and Kroemer, *Thermal Physics*, Second Edition, W. H. Freeman & Co.

Honor Code

The Lawrence University Honor Code applies to all your work and should be reaffirmed on each quiz, laboratory report, and exam you turn in.

Grading

Your final grade will be calculated as follows.

- 5 % Class Summary Presentation
- 20 % Homework
- 20 % Exam 1
- 20 % Exam 2
- 35 % Final

Class Summary Presentation

We will begin each class with a 5-7 minute summary of the class before. Everyone will be assigned a day. If you know you will be absent on your day, it is your responsibility to find someone to switch with you.

Homework

Problems are assigned roughly once per chapter. Unless you are instructed otherwise, problems are due at the beginning of the class period of the assigned due date. Problems should be neatly written with complete explanations of your work. Students are encouraged to work together on the assignments. Each student is expected to write up his or her own assignments, but working together to solve the problems can be a valuable learning aid.

Keep in mind:

1. Working together is most effective if all individuals contribute more or less equally to the group effort. You should be very wary if you are always on the receiving end in such effort, for ultimately you will be expected to perform on your own. At the very least, once you have finished solving an exercise in a group, make sure that you could solve a similar exercise yourself.
2. Where substantial help has been received through conversation with another, I ask that you follow common scientific courtesy and acknowledge that help briefly in your submitted work.

Exams

A missed exam will correspond to a grade of F unless I am notified at least 24 hours **prior** to the exam and your excuse is approved by me.

Phys 330 - Thermodynamics

Week	Day	Date	Reading	Topics	Summary	
1	Mon					
	Wed	Jan 3	Chap 1	Review of Intro Thermo		
	Fri	Jan 5	Chap 2	Laws of Thermodynamics		
2	Mon	Jan 8	Chap 3	Boltzmann Factor		
	Wed	Jan 10		Helmholtz Free energy & Partition	Weiss	
	Fri	Jan 12		Ideal Gas	Weber	
				Bjorklunden Weekend		
3	Mon	Jan 15		MLK Day - No class		
	Wed	Jan 17	Chap 4	Planck Distribution Function	Schwert	
	Fri	Jan 19		Phonons in Solids	Schneck	
4	Mon	Jan 22		Review	Ruben	
	Wed	Jan 24		Hour Exam		
	Fri	Jan 26	Chap 5	Chemical Potential		
5	Mon	Jan 29		Gibbs Factor	Pierquet	
	Wed	Jan 31		Problem Session	Maas	
	Fri	Feb 2	Chap 6	Quantum Statistics		
6	Mon	Feb 5		Ideal Gas Properties	Kane	
	Wed	Feb 7	Chap 7	Quantum Gases	Hawley	
	Fri	Feb 9		No Class: Reading Period		
7	Mon	Feb 12		Fermi Gas at Low Temperature	Halverson	
	Wed	Feb 14		Einstein Condensation	Ha	
	Fri	Feb 16	Chap 8	Heat and Work; Carnot Cycle	Gerrity	
8	Mon	Feb 19		Hour Exam		
	Wed	Feb 21		Engines & Refrigerators		
	Fri	Feb 23	Chap 9	Gibbs Free Energy	Geisthardt	
9	Mon	Feb 26		Chemical Equilibrium	Garbacik	
	Wed	Feb 28	Chap 10	Phase Changes	Exarhos	
	Fri	Mar 2		Equations of State	Dowd	
10	Mon	Mar 5		Critical Phenomena	Bajracharya	
	Wed	Mar 7		TBA		
	Fri	Mar 9		TBA		
11	Mon					
	Wed	Mar 14	1:30 pm: Final Exam			
	Fri					