Oakland University *College of Arts & Sciences* *Department of Physics*

PHY 4210, Thermodynamics
4 Credit Hours
Fall 2018

Instructor: Eugene Surdutovich **E-mail:** surdutov@oakland.edu
Office: 172 Hannah Hall **Office phone:** 248-370-3409
Class Time: MWF, 2:40 – 3:47 pm **Office hours:** MWF 10:30-11:30am
Auditorium: 220 HH
Textbook: Classical and Statistical Thermodynamics by A.H. Carter, Prentice Hall, Inc., 2001 – ISBN 0-13-779208-5

Additional text: Fundamentals of Statistical and Thermal Physics by F. Reif, Waveland Press, Inc

Homework: Every week, I will assign homework. **Late homework will not be graded. No e-mailed homework is accepted. The homework is worth 20% of the final grade.**

Exams: There will be three exams. The material covered will be discussed on pre-exam reviews.

Make-up Policy: In order to be fair to the majority of students who take the exams on time, the general policy is: *NO make-up exams* will be given. A score of zero will be entered for missed tests. If you cannot be present for an exam due to an unavoidable emergency, contact me before the exam if possible or as quickly as possible after the exam to see if an exception can be made.

Grading Schedule and Scale:

Exam 1	25%	5%
Exam 2	25%	25%
Final Exam	30%	50%
Homework	20%	20%
Total	100%	100%

A	96-100
A-	90-95
B+	85-89
B	80-84
B-	75-79
C+	70-74
C	65-69
C-	60-64
D+	55-59
D	50-54
F	< 50

Tentative Course Schedule

Week	Day	Date	Lecture Topics	Chapters
1	W	9/5	Introduction to thermodynamics	1
	F	9/7	Equations of State	2
2	M	9/10	Equations of State, continued	2
	W	9/12	First law of thermodynamics	3
	F	9/14	First law of thermodynamics, continued	3
3	M	9/17	Applications	4
	W	9/19	Applications, continued	4
	F	9/21	Consequences of the First law	5
4	M	9/24	Consequences of the First law, continued	5
	W	9/26	Second law of thermodynamics	6
	F	9/28	Second law of thermodynamics, continued	6
5	M	10/1	Applications	7
	W	10/3	Applications, continued	7
	F	10/5	Thermodynamic potentials	8
6	M	10/8	Thermodynamic potentials, continued	8
	W	10/10	Chemical potential	9
	F	10/12	Chemical potential, continued	9
7	M	10/15	Chemical potential, continued	9
	W	10/17	Third law of thermodynamics	10
	F	10/19	Third law of thermodynamics, continued	10
8	M	10/22	**Exam 1**	
	W	10/24	Kinetic theory of gases	11
	F	10/26	Kinetic theory of gases, continued	11
9	M	10/29	Statistical thermodynamics	12
	W	10/31	Statistical thermodynamics, continued	12
	F	11/2	Classical and quantum statistics	13
10	M	11/5	Classical and quantum statistics, continued	13
	W	11/7	Ideal gas	14
	F	11/9	Ideal gas, continued	14
11	M	11/12	Heat capacity of diatomic gas	15
	W	11/14	Heat capacity of diatomic gas, continued	15
	F	11/16	Heat capacity of a solid	16
12	M	11/19	**Exam 2**	
	W	11/21	Heat capacity of a solid, continued	16
	F	11/23	Thanksgiving recess	
13	M	11/26	Thermodynamics of magnetism	17
	W	11/28	Thermodynamics of magnetism, continued	17
	F	11/30	Bose-Einstein gas	18
14	M	12/3	Bose-Einstein gas, continued, Fermi-Dirac gas	18
	W	12/5	Fermi-Dirac gas, continued	19
	F	12/7	Information theory	20
15	T	12/11	3:30 – 6:30 p.m. Final Exam, cumulative	