

Physics 426/526 Thermodynamics and Statistical Mechanics – *Spring 2009*

<http://web.pdx.edu/~arice/thermo/426526.htm>

Credits: 4

Instructor: Andrew Rice, 472 Science Building 2, arice@pdx.edu, 503-725-3095

Office Hours: Monday 2-3PM, Wednesday 2-3PM, Thursday 3-4, and by appointment.

Lectures: Monday, Wednesday, Friday 10:15-11:20

Location: 104 Science Building 2 (**note room change**)

Required Textbook: *An Introduction to Thermal Physics* Daniel V. Schroeder
Addison Wesley Longman Publisher (ISBN 0-201-38027-7)

Text on reserve: *Thermal Physics* Charles Kittel & Herbert Kroemer (Freeman)

Homework: There will be 7 homework assignments. Assignments are passed out during class time and are due one to two weeks after they are assigned at the beginning of class. Most problems will be directly out of the book. Assignments and solutions will also be posted on the website. Lowest homework set will be dropped from the final grade. Late homework will be marked off 25% per day.

Exams: Exams are closed book. Students are encouraged to bring a calculator. No make-up exams given.

Midterm: Friday, April 24, 10:15-11:25

Final: Wednesday, June 10 10:15-12:05

Grading

Homework 40% (lowest homework will be dropped)

Midterm 25%

Final 35%

Pre-requisites:

Physics 201–203/211–213: General physics

Physics 311: Introduction to modern physics

Mathematics 251–253: Calculus I-III

Mathematics 254: Differential equations and multivariate calculus

Course Description - Concepts of temperature, work, and heat; first and second laws of thermodynamics and applications; thermodynamic potentials; heat engines, Carnot cycle, and ideal gases; entropy and its statistical interpretation; kinetic theory of gases; classical and quantum statistics; introduction to statistical mechanical ensembles.

Academic Honesty: ‘Academic honesty is a cornerstone of any meaningful education and a reflection of each student’s maturity and integrity. The Student Conduct Code, which applies to all students, prohibits all forms of academic cheating, fraud, and dishonesty. These acts include, but are not limited to, plagiarism, buying and selling of course assignments for other persons, unauthorized disclosure and receipt of academic information, and other practices commonly understood to be academically dishonest’ – Portland State University Bulletin, General Catalog Issue, Vol. 40, No. 4, 2006-2007.

“A theory is the more impressive the greater the simplicity of its premises, the more different kinds of things it relates, and the more extended its area of applicability. Therefore the deep impression that classical thermodynamics made upon me. It is the only physical theory of universal content which I am convinced will never be overthrown, within the framework of applicability of its basic concepts.”– *A. Einstein*