

PHYSICS 306

SITEMAP

## PHYSICS 306

### THERMODYNAMIC AND STATISTICAL MECHANICS

Spring 2017

Tuesday, Thursday 10:00 -- 11:20 AM,  
Room 102, Light Engineering Building

**Instructor:** Dmitri Averin,  
dmitri.averin@stonybrook.edu  
office hour: Thursday, 11:30 -- 12:30, B-  
140

**Teaching assistant:** TBD

**Textbook:**  
Charles Kittel and Herbert Kroemer,  
"Thermal Physics".

**Supplementary reading:** Frederick Reif,  
"Fundamentals of Statistical and  
Thermal Physics";

Keith Stowe, "Introduction to  
Thermodynamics and Statistical  
Mechanics".

This is an introductory course in undergraduate thermodynamics and statistical mechanics. The course will cover the material discussed in Chapters 1 - 8 of the Kittel/Kroemer textbook and, time permitting, CH. 9,10 and some selection of additional topics. The lectures will follow the textbook:

Ch. 1 Introduction to statistical physics.  
Ch. 2 Thermal equilibrium, temperature, entropy.  
Ch. 3 Boltzman distribution. Partition function and free energy.  
Ch. 4 Equilibrium thermal radiation; photons and phonons.  
Ch. 5 Chemical potential.  
Ch. 6 Classical ideal gas  
Ch. 7 Quantum ideal gases, bosons and fermions.  
Ch. 8 Thermodynamics. Heat engines.

### **Grading:**

Homework 35% ; Midterm 30% ;  
Final 35% .

### **Homework assignments**

Homework will be assigned approximately each week.

### **Exams**

Exam policy: NO printed or photocopied materials, but personal handwritten notes are allowed without limitations.