

PHYSICS 306 THERMODYNAMIC AND STATISTICAL MECHANICS

Spring 2016

Tuesday, Thursday 10:00 -- 11:20 AM, Room W4550, Melville Library

Instructor: Dmitri Averin, dmitri.averin@stonybrook.edu

office hour: Wednesday, 11:00 -- 12:00, B-140

Teaching assistant: Connor Behan, connor.behan@stonybrook.edu

office hour: Thursday, 2:00-3:00 pm, C-121

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.

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DSS STATEMENT:

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If you have a physical, psychological, medical, or learning disability that may impact your course work, please contact Disability Support Services (631) 632-6748 or

<http://studentaffairs.stonybrook.edu/dss/>

They will determine with you what accommodations are necessary and appropriate. All information and documentation is confidential.

Students who require assistance during emergency evacuation are encouraged to discuss their needs with their professors and Disability Support Services. For procedures and information go to the following website:

<http://www.stonybrook.edu/ehs/fire/disabilities.shtml>

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ACADEMIC INTEGRITY STATEMENT:

Each student must pursue his or her academic goals honestly and be personally accountable for all submitted work. Representing another person's work as your own is always wrong. Faculty members are required to report any suspected instance of academic dishonesty to the Academic Judiciary. For more comprehensive information on academic integrity, including categories of academic dishonesty, please refer to the academic judiciary website at:

<http://www.stonybrook.edu/uaa/academicjudiciary/>

CRITICAL INCIDENT MANAGEMENT:

Stony Brook University expects students to respect the rights, privileges, and property of other people. Faculty are required to report to the Office of Judicial Affairs any disruptive behavior that interrupts their ability to teach, compromises the safety of the learning environment, and/or inhibits students' ability to learn.

<http://www.stonybrook.edu/uaa/academicjudiciary/>