Course description: This course begins with a review of the fundamental concepts and laws of classical thermodynamics. Then the thermostatic theory of equilibrium states and phase transitions is treated, followed by the thermodynamic theory of processes of simple systems and composite systems, including heat engines. Special topics may include statistical mechanics, irreversible thermodynamics, radiation and photovoltaic energy conversion, biological thermodynamic processes, and other topics of current interest.

Learning Objectives: Currently, this course aims for a rigorous treatment of classical thermodynamics by focusing on the core materials of the subject and is designed for students to acquire critical thinking ability of evaluating the validity and utility in the standard treatments of the subject. Specifically, each student is to have a sound understanding of the meaning of heat and a valid definition of energy, thereby, will be equipped to devise creative methods in efficiently using heat and energy.

Required materials: NOTES The Function of Heat (Chapters 1 to 8)
Enrico Fermi, Thermodynamics (1936; Dover 1956)

1/25

2/1, 2/8
Intro./Caloric theory/ The 1st law
NOTES Ch 1/Ch 2/Ch 3

2/15, 22, 29
The 2nd law—The energy princ.
NOTES Ch 4; Fermi Ch. 3

3/7, 3/28
The entropy principle
Fermi Chapter 4; NOTES Ch 5

4/4, 11, 18
Reformulations of the 2nd law/
Subsumption of the energy principle under the entropy principle
NOTES Ch 6 and Ch 7

3/21
1st midterm (40%)
Cover NOTES Ch. 1 to Ch. 4

4/18, 25, 5/2
Applications to special states of equilibrium
Fermi Chapter 6
NOTES Ch 8

5/2 or May 11 (Wed., 8:30PM)
2nd examination (40%)
Cover all material

GRADING WEIGHT:
Homework—0%
First midterm—40%
Second examination—40%
Quizzes—20%
DISABILITY SUPPORT SERVICES (DSS) STATEMENT
If you have a physical, psychological, medical or learning disability that may impact your course work, please contact Disability Support Services, ECC (Educational Communications Center) Building, room 128, (631) 632-6748. They will determine with you what accommodations, if any, are necessary and appropriate. All information and documentation is confidential.

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 are required to report any suspected instances of academic dishonesty to the Academic Judiciary. Faculty in the Health Sciences Center (School of Health Technology & Management, Nursing, Social Welfare, Dental Medicine) and School of Medicine are required to follow their school-specific procedures. 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, or inhibits students’ ability to learn. Faculty in the HSC Schools and the School of Medicine are required to follow their school-specific procedures.

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