

MEC 521 – Thermodynamics

Spring 2018

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Meets: Monday and Wednesday, 10:00–11:20pm, 0113 Staller Center

Office hours: 3:00pm – 4:30pm Monday
3:00pm – 4:30pm Wednesday

Summary: This course begins with a review of the fundamental concepts and laws of classical thermodynamics. Then the thermodynamic theory of equilibrium states and phase transitions is treated, followed by the thermodynamic theory of processes of simple systems and composite systems. Special topics may include kinetic theory, an overview of statistical thermodynamics, radiation and photovoltaic energy conversion, and other topics of current interest.

LECTURE SCHEDULE¹

Week	Description
1	Introduction/ Basic Concepts/First Law
2	First Law / 2nd Law
3	The Second Law
4	Entropy
5	Exergy – Part 1
6	Exergy – Part 2
7	Simple Systems and The Fundamental Relation
8	Thermodynamic Potentials
9	Property Relationships / Maxwell Relationships
10	Gas mixtures – the chemical potential
11	Air-water vapor mixtures - Psychometrics
12	Kinetic theory of gases
13	Special Topic – Statistical Thermodynamics – Part I
14	Special Topic – Statistical Thermodynamics – Part I
—	Final Exam Period (Exam time to be announced)

¹–These topics and their timing are tentative.

Texts:

1. *Advanced Engineering Thermodynamics 4th ed.*
by Adrian Bejan, Wiley (2016) [**required**]
2. *Thermodynamics and an Introduction to Thermostatistics, 2nd ed.*
by Herbert Callen (1985), Wiley [suggested]

Grading:

Midterm	35%
Final	40%
Homework	<u>25%</u>
	100%

Americans with Disabilities Act: 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. <http://studentaffairs.stonybrook.edu/dss/index.shtml>.

Academic Integrity: 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 is 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/commcms/academic_integrity/index.html

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