

# Syllabus for Classical Thermodynamics, PHYS 351 Spring 2017

**CRN: 34477, F01**

**MW 10:30-11:30 AM, REIC 204 (Lecture)**

**Instructor:** Ataur R. Chowdhury

**Office:** REIC 118

**Office Hours:** MWF 9:00-10:00 AM  
TR 3:30-4:30 PM

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**Prerequisites:** PHYS 212X, PHYS 220, PHYS 301, PHYS 341; or permission of instructor.

**Text:** **Required:** *Equilibrium Thermodynamics*, C.J. Adkins, 3rd Edition, Cambridge.

**Reference Texts:** 1. *An Introduction to Thermal Physics* by D. Schroeder, Addison Wesley.  
2. *Classical and Statistical Thermodynamics* by A. Carter, Prentice Hall.

**Course Objectives:** To acquire a basic understanding of the principles of classical thermodynamics.

**Student Learning Outcomes:**

1. Students should be able to understand the fundamentals of thermodynamics from a classical viewpoint.
2. Students should be able to gain clear understanding of founding laws of thermodynamics and should be able to explain thermodynamic processes based on these laws.
3. Students should have clear understanding of equation of states for simple thermodynamics systems.
4. Students should understand the fundamentals of thermodynamic functions that explain physics of different thermodynamic systems.

**Course Outline:** Classical macroscopic thermodynamics; systems and states, equations of state, the first law and second law of thermodynamics and their consequences, entropy, enthalpy, Helmholtz and Gibbs functions, equilibrium, and Maxwell's equations.

**Credits:** 2 credits: 2 hr. of lecture.

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## Course Requirements/ Policies:

### Class Attendance/Participation:

For a better understanding of the course material attendance and participation in classroom activities are very important. This particular course is generally regarded as one of the founding courses that deal with the fundamentals of classical thermodynamics, and it is highly expected that the students will commit themselves to attend the class regularly. There will be supplemental materials for this course and the students will be held responsible for all the materials that will be brought in from outside the text. The students will be expected to participate in class activities, and take part in meaningful discussion and ask questions to better comprehend the subject material. 10% of your total grade is designated for the participation.

### Homework:

On the average, 6-8 problems will be assigned each week on Wednesdays. The homework will be due back at the beginning of class the following Wednesday. **NO LATE HOMEWORK WILL BE ACCEPTED. NO EXCEPTIONS** (barring emergencies and extreme situations). Group work is highly encouraged for solving problems, and for additional help with the homework the students are most welcome to consult the instructor during the office hour or any other time by prior appointment. Any homework you submit should reflect you own best effort. Copying of homework is absolutely not acceptable and will result in a grade of zero for the assignment.

### Examinations:

There will be two midterm examinations (March 8, Wednesday, 10:30-11:30 and April 12, Wednesday 10:30-11:30) and a final comprehensive examination (May 3, Wednesday, 10:15-12:15 PM) for this course. Examinations will consist of, in most part, problems similar to those in the homework and those worked out in class. Midterms will cover the material covered in class and homework prior to the date of test, and the final will be comprehensive and will include material covered during the entire semester.

## Grading Policy:

Homework	30%
Participation	10%
Midterm I	15%
Midterm II	15%
<u>Final</u>	<u>30%</u>
Total	100%

The final grading for this course will be based on a curve, the average of which is usually taken to be the break-point of letter grade B and C, and the standard deviation of the grade point distribution will

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separate subsequent letter grades. For a given score, your letter grade will not likely be lower than what it would be expected based on standard grading scale (9-100 = A, etc.). No plus-minus letter grades will be given for this course.

### **Academic Honesty**

UAF expects and requires academic honesty from all members of the University community, and takes any act of plagiarism and cheating seriously. It is expected that all assignments, including homework and reports, that are turned in for this course must be the original work of the individual student. Failure to comply with this policy will result in penalty as stipulated under UAF regulations.

### **Disabilities Services**

The UAF Office of Disability Services implements the Americans with Disabilities Act (ADA), and insures that UAF students have equal access to the campus and course materials. Any student who may need assistance with disabilities, should feel free to contact the instructor or directly to the Office of Disabilities Services (208 WHIT) by calling 907- 474-5655, or through email: [uaf-disability-service@alaska.edu](mailto:uaf-disability-service@alaska.edu).