

## PS334 – Thermodynamics

Washburn University  
Spring 2008

Instructor: Dr. Brian Thomas  
Office: Stoffer 210B  
Office Hours: M/W 2:00-4:00. Other times by appointment (call or email), or just drop by.  
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Course website: MyWashburn:MyCourses  
Instructor's website: <http://www.washburn.edu/faculty/bthomas/>

### REQUIRED TEXT:

*Classical and Statistical Thermodynamics*, by Ashley H. Carter

Access to a copy of Maple software may be useful.

Alternatively, plotting may be done using other software, including “gnuplot,” a free, open-source program available from <http://www.gnuplot.info/>.

### DESCRIPTION:

The purpose of this course is to give you an introduction to the study thermodynamics as used in physics. Topics covered include:

- Classical thermodynamics
- Equations of state
- Thermodynamic potentials
- Kinetic theory of gasses
- Statistical thermodynamics
- Classical and quantum statistics
- Classical treatment of an ideal gas

Thermodynamics concepts are important in virtually every area of science, from cosmology to biology. I will therefore try to bring in as many different applications as possible, and you are encouraged to look for and suggest related topics of interest.

Since this is an upper-level course with small enrollment, we will be a bit less structured than some courses. We'll go with the flow! We may try a variety of approaches... normal lecture format, “seminar” format, collaborative problem solving in class, etc.

### REQUIREMENTS:

#### Attendance

Class attendance is strongly recommended; if you're not here you're bound to miss out on something.

If you need to miss class, try to let me know ahead of time so we can make sure you stay caught up.

#### Reading

You should read ahead in the text. I will let you know where we are going next and what topics we will cover.

#### Homework

Homework will be assigned regularly and is due at the beginning of class on the day it is due. You may collaborate on homework. The use of computers is encouraged for visualization, etc., but you should be conscious of learning the solution methods.

### Exams

I will make every attempt to provide graded homework assignments from those chapters in time for you to use in studying. No materials (text, homework, notes, etc.) may be used during exams unless otherwise announced in advance. Most (likely all) exams will be take-home. There will be a comprehensive final exam.

### GRADING:

Grades will be based on the following:

Final exam	20%
Midterm exams	50%
Homework	30%

### GRADING SCALE:

A	= 100%-90%
B	= 89%-80%
C	= 79%-70%
D	= 69%-60%
F	= below 60%

### SCHEDULE: (tentative – subject to change)

We will try to cover about a chapter each week. We may not cover all of the chapters listed here.

Chapters 1 – 4

Exam

Chapters 5 – 8

Exam

Chapters 9 – 12

Exam

Chapters 13-15

Exam

Final Exam

### CELL PHONES

Cell phones *may not* be used in class. Period. Turn your phone off before coming to class if you think this will be a problem for you.

### **Select Mission of the University:**

Washburn University shall prepare qualified individuals for careers, further study and life long learning through excellence in teaching and scholarly work. Washburn University shall make a special effort to help individuals reach their full academic potential. *Washburn University Board of Regents, 1999*

### **Academic Misconduct Policy:**

All students are expected to conduct themselves appropriately and ethically in their academic work. Inappropriate and unethical behavior includes (but is not limited to) giving or receiving unauthorized aid on examinations or in the preparation of papers or other assignments, or knowingly misrepresenting the source of academic work. Washburn University's Academic Impropriety Policy describes academically unethical behavior in greater detail and explains the actions that may be taken when such behavior occurs. For guidelines regarding protection of copyright, consult

[www.washburn.edu/copyright/students](http://www.washburn.edu/copyright/students). For a complete copy of the Academic Impropriety Policy, contact the office of the Vice President for Academic Affairs, Morgan 262, or go on-line to:

[www.washburn.edu/admin/vpaa/fachdbk/FHsec7.html#VIII](http://www.washburn.edu/admin/vpaa/fachdbk/FHsec7.html#VIII)

**Disability Services:**

The Student Services Office is responsible for assisting in arranging accommodations and for identifying resources on campus for persons with disabilities. Qualified students with disabilities must register with the office to be eligible for services. The office **MUST** have appropriate documentation on file in order to provide services. Accommodations may include in-class note takers, test readers and/or scribes, adaptive computer technology, brailled materials. Requests for accommodations should be submitted at least two months before services should begin; however, if you need an accommodation this semester, please contact the Student Services Office immediately.

Location: Student Services, Morgan Hall Room 150

Phone: 785-670-1629 or TDD 785-670-1025

E-Mail: [student-services@washburn.edu](mailto:student-services@washburn.edu)

Students may voluntarily identify themselves to the instructor for a referral to the Student Services Office.

**Center for Undergraduate Studies and Programs (CUSP):**

As a Washburn student, you may experience difficulty with issues such as studying, personal problems, time management, or choice of major, classes, or employment. The Center for Undergraduate Studies and Programs (Office of Academic Advising, Educational Opportunity Program, and Office of Career Counseling, Testing and Assessment) is available to help students either directly through academic advising, mentoring, career counseling, testing and developing learning strategies or by identifying the appropriate University resource. If you feel you need someone with whom to discuss an issue confidentially and free of charge, contact CUSP in Morgan 122, 785-670-1299, [advising@washburn.edu](mailto:advising@washburn.edu).

**Withdrawal Policy:**

During fall and spring semesters, students may withdraw from full semester courses through the second week of class with no recorded grade. From the third through the eleventh week a “W” is recorded for any dropped course. Beginning with the start of the twelfth week, there are **NO** withdrawals, and a grade will be assigned for the course. For short-term or summer course deadlines, please check the appropriate Semester/Session Course Bulletin Web Site ([www.washburn.edu/schedule](http://www.washburn.edu/schedule))

**Official E-Mail Address:**

Your Washburn University e-mail address will be the official address used by the University for relaying important messages regarding academic and financial information and the University will consider this your official notification for important information. **It may also be used by your instructors to provide specific course information.** If you prefer to use an alternate e-mail address to receive official University notices, you can access your MyWashburn e-mail account, choose the "Options" tab, and select "Settings", scroll to the bottom of the screen and enter the e-mail address you would like your Washburn emails forwarded to in the “mail forwarding” area. Click on save changes. This will complete the process of forwarding your Washburn e-mail. It is your responsibility to ensure that your official e-mail box does not exceed your message quota resulting in the inability of e-mail messages to be accepted into your mailbox