



**FLORIDA  
ATLANTIC  
UNIVERSITY**

**COURSE CHANGE REQUEST  
Undergraduate Programs**

Department Physics  
College Science

UUPC Approval 3/27/23  
UFS Approval \_\_\_\_\_  
SCNS Submittal \_\_\_\_\_  
Confirmed \_\_\_\_\_  
Banner Posted \_\_\_\_\_  
Catalog \_\_\_\_\_

**Current Course  
Prefix and Number** PHY 4523

**Current Course Title**  
Statistical Physics

*Syllabus must be attached for ANY changes to current course details. See [Template](#). Please consult and list departments that may be affected by the changes; attach documentation.*

**Change title to:**

**Change description to:**

**Change prefix**

**From:** \_\_\_\_\_ **To:** \_\_\_\_\_

**Change course number**

**From:** \_\_\_\_\_ **To:** \_\_\_\_\_

**Change credits\***

**From:** 4 **To:** 3

**Change grading**

**From:** \_\_\_\_\_ **To:** \_\_\_\_\_

**Change WAC/Gordon Rule status\*\***

Add  Remove

**Change General Education Requirements\*\*\***

Add  Remove

\*See [Definition of a Credit Hour](#).

\*\*WAC/Gordon Rule criteria must be indicated in syllabus and approval attached to this form. See [WAC Guidelines](#).

\*\*\*GE criteria must be indicated in syllabus and approval attached to this form. See [Intellectual Foundations Guidelines](#).

**Change prerequisites/minimum grades to:**

**Change corequisites to:**

**Change registration controls to:**

Please list existing and new pre/corequisites, specify AND or OR and include minimum passing grade (default is D-).

**Effective Term/Year  
for Changes:** Fall 2023

**Terminate course? Effective Term/Year  
for Termination:**

**Faculty Contact/Email/Phone** Korey Sorge / ksorge@fau.edu / 7-3380

**Approved by**

**Date**

Department Chair \_\_\_\_\_

3/16/23

College Curriculum Chair \_\_\_\_\_

3-16-23

College Dean \_\_\_\_\_

UUPC Chair Ethlyn Williams

3/27/23

Undergraduate Studies Dean Dan Meeroff

3/27/23

UFS President \_\_\_\_\_

Provost \_\_\_\_\_

Email this form and syllabus to [mjenning@fau.edu](mailto:mjenning@fau.edu) seven business days before the UUPC meeting.

**PHY 4523-001**  
**Statistical Physics**

TR 11:00 – 12:20  
3 credits

Semester, Year  
Prof. XXXXX YYYYY  
Office: XXXXX  
Office hours: MWF 11-12  
Classroom: XXXX  
Telephone: 561-297-XXXX  
Email: [zzzzz@fau.edu](mailto:zzzzz@fau.edu)



TA name	xxxxxx xxxxxxxxx
Office	xxxxxx
Office hours	MWF xx:xx – xx:xx
Telephone	561-297-xxxx
Email	xxxxxx@fau.edu

### **Course Description**

An introduction to the statistical mechanics and thermodynamics of macroscopic systems in equilibrium. This course develops various ensemble theories and uses them to study the physical properties of classical and quantum ideal gases, crystals, magnetic materials and other systems.

### **Instructional Method**

In-Person: Traditional concept of in person. Mandatory attendance is at the discretion of the instructor.

### **Prerequisites / Corequisites**

Prerequisite: PHY 3101C

### **Course Objectives/Student Learning Outcomes**

After completion of the course, a student should have a broad exposure to the conceptual, as well as the mathematical, formulation of statistical mechanics and its applications. The course is also designed to train students to solve physics problems (creatively), and to build in the student a sense of mathematical competence.

## Course Evaluation Method

- **Homework (20%)**
- **Midterm Exams (20% each)**
- **Final Exam (20%)**

## Course Grading Scale

>94%	A
90-94%	A-
87-90%	B+
84-87%	B
80-84%	B-
77-80%	C+
74-77%	C
70-74%	C-
67-70%	D+
64-67%	D
60-64%	D-
<60%	F

## Policy on Makeup Tests, Late Work, and Incompletes (if applicable)

If a student cannot attend an exam or hand in homework on time because of a legitimate problem, for example, because of a significant health, he or she can make up the respective assignment.

## Classroom Etiquette Policy

University policy on the use of electronic devices states: “In order to enhance and maintain a productive atmosphere for education, personal communication devices, such as cellular telephones and pagers, are to be disabled in class sessions.”

## Attendance Policy

*Students are expected to attend all of their scheduled University classes and to satisfy all academic objectives as outlined by the instructor. The effect of absences upon grades is determined by the instructor, and the University reserves the right to deal at any time with individual cases of non-attendance. Students are responsible for arranging to make up work missed because of legitimate class absence, such as illness, family emergencies, military obligation, court-imposed legal obligations or participation in University-approved activities. Examples of University-approved reasons for absences include participating on an athletic or scholastic team, musical and theatrical performances and debate activities. It is the student's responsibility to give the instructor notice prior to any anticipated absences and within a reasonable amount of time after an unanticipated absence, ordinarily by the next scheduled class meeting. Instructors must allow each student who is absent for a University-approved reason the opportunity to make up work missed without any reduction in the student's final course grade as a direct result of such absence.*

## **Counseling and Psychological Services (CAPS) Center**

*Life as a university student can be challenging physically, mentally and emotionally. Students who find stress negatively affecting their ability to achieve academic or personal goals may wish to consider utilizing FAU's Counseling and Psychological Services (CAPS) Center. CAPS provides FAU students a range of services – individual counseling, support meetings, and psychiatric services, to name a few – offered to help improve and maintain emotional well-being. For more information, go to <http://www.fau.edu/counseling/>*

## **Disability Policy**

*In compliance with the Americans with Disabilities Act Amendments Act (ADAAA), students who require reasonable accommodations due to a disability to properly execute coursework must register with Student Accessibility Services (SAS) and follow all SAS procedures. SAS has offices across three of FAU's campuses – Boca Raton, Davie and Jupiter – however disability services are available for students on all campuses. For more information, please visit the SAS website at [www.fau.edu/sas/](http://www.fau.edu/sas/).*

## **Code of Academic Integrity**

*Students at Florida Atlantic University are expected to maintain the highest ethical standards. Academic dishonesty is considered a serious breach of these ethical standards, because it interferes with the university mission to provide a high quality education in which no student enjoys an unfair advantage over any other. Academic dishonesty is also destructive of the university community, which is grounded in a system of mutual trust and places high value on personal integrity and individual responsibility. Harsh penalties are associated with academic dishonesty. For more information, see [University Regulation 4.001](#).*

## **Required Texts/Readings**

- F Mandl, “Statistical Physics” (Second Edition)

## **Supplementary Texts**

- Landau and Lifshitz, “Statistical Physics” (Third Edition)
- Y Oono, “Perspectives Statistical Thermodynamics”

## Course Topical Outline

<b>Dates</b>	<b>Topic</b>	<b>Assignments</b>
Week 1	Intro to Stat Physics	HW 1
Week 2	Probability Theory Law of Large Numbers Central Limit Theorem	HW 2
Week 3	Ideal Gas Law Maxwell-Boltzmann	
Week 4	Transport Theory	HW 3
Week 5	Brownian Motion Einstein Relation	HW 4
Week 6	Thermodynamics	
Week 7	Foundations of Stat Mech Micro-canonical Ensemble	HW 5
Week 8	Review and Exam	HW 6; Midterm
Week 9	Micro-canonical Ensemble Canonical Ensemble	
Week 10	Application of Canonical Ensemble	HW 7
Week 11	Grand Canonical Ensemble	HW 8
Week 12	Ideal Quantum Gas	
Week 13	Interacting Gas Liquid Gas Transition Ising Model	HW 9
Week 14	Class Presentation	
<b>Final Exam</b>		