

**THE UNIVERSITY OF TEXAS AT EL PASO
COLLEGE OF SCIENCE
DEPARTMENT OF PHYSICS**

Course #:	PHYS 5365 CRN 10987									
Course Title:	Advanced Statistical Mechanics									
Credit Hrs:	3.0									
Term:	Fall 2021									
Course Meetings & Location:	MW 10:30 – 11:50 AM, Hudspeth Hall 213									
Prerequisite Courses:	-									
Course Fee: (if applicable)	-									
Instructor:	Dr. Felicia S. Manciu									
Office Location:	PSCI 221 B									
Contact Info:	Phone # : (915) 747 8472									
	E-mail address: fsmanciu@utep.edu									
	Fax #: (915) 747 5447									
	Emergency Contact: (915) 747 5715									
Office Hrs:	M & W 2:30 PM – 4:00 PM									
Textbook(s), Materials:	Main textbook: Statistical Mechanics , Donald A. McQuarrie, University Science Books, Sausalito, California, 2000.									
Course Objectives (Learning Outcomes):	<p>The objective of the class is to provide students with a rigorous description of equilibrium systems whose particles are either independent or effectively independent, with the final goal of improving students' problem-solving abilities.</p> <p>We will study the following topics: Statistical Ensembles, Boltzmann, Fermi-Dirac, and Bose-Einstein Distributions, Ideal Gases, Classical Statistical Mechanics, and Quantum Statistics.</p>									
Grading Policy:	<p>Grades in this course will be based on your scores on two midterm exams, a final exam (comprehensive; but with emphasis on the last part of the course), and homework assignments.</p> <table border="1" style="margin-left: auto; margin-right: auto;"> <tr> <td>Midterm exams:</td> <td>50%</td> <td>(25% each)</td> </tr> <tr> <td>Final exam:</td> <td>30%</td> <td>(comprehensive)</td> </tr> <tr> <td>Homework:</td> <td>20%</td> <td></td> </tr> </table>	Midterm exams:	50%	(25% each)	Final exam:	30%	(comprehensive)	Homework:	20%	
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Final exam:	30%	(comprehensive)								
Homework:	20%									
Course Activities/Assignments:	<p>Homework</p> <p>It is essential that students become well versed in problem solving methods, which means developing the writing skills to set up a problem, including diagrams and mathematical manipulation to achieve the final answer. A numerical score will be assigned for each homework set based on graded and counted problems.</p>									

<p>Course Activities/Assignments:</p>	<p>Feel free to form study groups with your classmates and seek help from your lecture professor during her office hours as you attempt to solve the problems. Make sure that you understand the solutions and write them up yourself. <u>There is a strong correlation between homework scores and exam scores!</u></p> <p>Exams Exams will consist of problems similar to the worked examples in class and the assigned homework problems. Exams will be open book but closed notes. After in-class exam, some problems might be assign as a take-home exam for extra credit.</p> <p>The best way to prepare for the exams is to study the example problems and work out the assigned homework problems regularly. You should work as many additional problems from the text as you can; in this way you ensure the understanding of the material.</p>
<p>Make-up Policy:</p>	<p>An extension of the due date for the homework as well as the make-up of missing exams will be granted only in extraordinary circumstances.</p>
<p>Attendance Policy:</p>	<p>Attendance is mandatory.</p>
<p>Academic Integrity Policy:</p>	<p>Please see: http://academics.utep.edu/Default.aspx?tabid=23785</p>
<p>Civility Statement:</p>	<ul style="list-style-type: none"> • Cell phones and pagers should be turned off during class time. • When absences occur, it is your responsibility to obtain handouts and notes from your peers. When possible you will complete the activities you have missed. • Academic integrity is to be practiced at all times.
<p>Disability Statement:</p>	<p>If you have a disability and need classroom accommodations, please contact the Center for Accommodations and Support Services (CASS) at 747-5148, or by email to cass@utep.edu, or visit their office located in UTEP Union East Building, Room 106. For additional information, please visit the CASS website at www.sa.utep.edu/cass. The student is responsible for presenting to the instructor any accommodation letters and instructions.</p>
<p>Military Statement:</p>	<p>If you are a military student with the potential of being called to military service and/or training during the course of the semester, you are encouraged to contact the instructor at the beginning of the semester.</p>
<p>Accommodation Policy:</p>	<p>The University is committed to providing reasonable accommodations and auxiliary services to students, staff, faculty, job applicants, applicants for admissions, and other beneficiaries of University programs, services and activities with documented disabilities in order to provide them with equal opportunities to participate in programs, services, and activities in compliance with sections 503 and 504 of the Rehabilitation Act of 1973, as amended, and the Americans with Disabilities Act (ADA) of 1990 and the Americans with Disabilities Act Amendments Act (ADAAA) of 2008. Students requesting an accommodation based on a disability must register with the UTEP Center for Accommodations and Support Services.</p>

<p>Course Schedule:</p>	<p>CHAPTER 1 – <u>INTRODUCTION AND REVIEW</u></p> <p>CHAPTER 2 – <u>THE CANONICAL ENSEMBLE</u></p> <p>CHAPTER 3 – <u>ENSEMBLES & FLUCTUATIONS</u></p> <p>CHAPTER 4 – <u>BOLTZMANN, FERMI-DIRAC AND BOSE-EINSTEIN STATISTICS</u></p> <p>CHAPTER 5 – <u>IDEAL MONOATOMIC GAS</u></p> <p>CHAPTER 6 – <u>IDEAL DIATOMIC GAS</u></p> <p>CHAPTER 7 – <u>CLASSICAL STATISTICAL MECHANICS</u></p> <p>CHAPTER 10 – <u>QUANTUM STATISTICS</u></p>
<p>COVID-19 Precaution Statement</p>	<p>Please stay home if you have been diagnosed with COVID-19 or are experiencing COVID-19 symptoms. If you are feeling unwell, please let me know as soon as possible, so that we can work on appropriate accommodations. If you have tested positive for COVID-19, you are encouraged to report your results to covidaction@utep.edu, so that the Dean of Students Office can provide you with support and help with communication with your professors. The Student Health Center is equipped to provide COVID-19 testing.</p> <p>The Center for Disease Control and Prevention recommends that people in areas of substantial or high COVID-19 transmission wear face masks when indoors in groups of people. The best way that Miners can take care of Miners is to get the vaccine. If you still need the vaccine, it is widely available in the El Paso area, and will be available at no charge on campus during the first week of classes. For more information about the current rates, testing, and vaccinations, please visit epstrong.org.</p>
<p>Course drop date:</p>	<p>October 29th, 2021</p>