

Physics 6311: Statistical Mechanics – Fall Semester 2023

- Instructor:** Thomas Vojta, office: 103 Physics, phone: 341-4793, email: vojtat@mst.edu
- Home page:** http://thomasvojta.com/class_6311/class_6311.html
- Class time:** 9:30 to 10:45am Tuesday and Thursday, Room: Physics 127
- Office hours:** Monday 2:00 to 3:00pm
- Prerequisites:** Thermal Physics (Physics 4311) and Physics 6201 (Quantum Mechanics I)
- Texts:** David Chandler, *Introduction to Modern Statistical Mechanics* (Oxford, 1987)
Mehran Kardar, *Statistical Physics of Particles* (Cambridge, 2007)
The course will not always follow these books. Class attendance is crucial.
- Further reading:** K. Huang, *Statistical Mechanics*
L. D. Landau and E. M. Lifshitz, *Statistical Physics I*
M. Plischke and B. Bergersen, *Equilibrium Statistical Physics*
L. E. Reichl, *A Modern Course in Statistical Physics*
R. K. Pathria, *Statistical Mechanics*
- Homework:** Homework assignments will be given in class on Tuesday and also posted on the WWW. Assignments are due the following Tuesday as pdf uploads in Canvas. Each assignment will be worth 40 points, and your 10 highest scores will count towards the grade. Thus, a total of 400 points may be earned from the homework.
Discussions among colleagues is allowed and encouraged. However, the solutions you hand in should represent your effort and thinking and not that of a group. You should document the intermediate steps of your solution (partial credit will be given) and list any reference material which you directly use.
- Project:** In addition to the homework you will work on one larger project in the second half of the semester. You will be able to choose from several topics (computer simulations, in-class talks). The project will be worth 100 points.
- Tests:** There will be a midsemester test counting 200 points and a comprehensive final exam counting 300 points. The midsemester test will be given on Thursday, October 12 during class, and the final exam will be on Tuesday, December 12 (time tba).
- Grade:** Course grade will be based on the total number of points earned on the homework, test and exam, expressed as a percentage of the total number of points available (1000). The relation between performance and grade will be the standard one: $A \geq 90\% > B \geq 80\% > C \geq 70\%$. The boundaries between the grades may be revised downwards (i.e., to the students benefit) depending upon the judgement of the instructor, but will not be revised upwards.
- Complaints:** It is hoped that any problems can be resolved through discussions between student and instructor. If there are any complaints that cannot be resolved you may contact Dr. Klaus Woelk, Associate Dean for Academic Affairs (woelk@mst.edu).

Missouri S&T Campus and UM System Policies

Statement about Copyright, FERPA, and Use of Video

It is vitally important that our classroom environment promote the respectful exchange of ideas. This entails being sensitive to the views and beliefs expressed during discussions, whether in class or online. Please obtain instructor permission before recording any class activity. It is a violation of University of Missouri policy to distribute such recordings without authorization and the permission of all who are recorded. More information is provided online.

Accessibility and Accommodations

It is the university's goal that learning experiences be as accessible as possible. If you anticipate or experience physical or academic barriers based on a disability, please contact Student Accessibility and Testing at (573) 341-6655, email dss@mst.edu, or visit <https://saat.mst.edu/> for information.

Student Honor Code and Academic Integrity

All students are expected to follow the Honor Code. Student Academic Regulations describes the student standard of conduct relative to the University of Missouri System's Collected Rules and Regulations section 200.010, and offers descriptions of academic dishonesty including cheating, plagiarism, sabotage, and unauthorized use of artificially generated content, any of which will be reported to the Vice Provost for Undergraduate Education. Other resources for students regarding academic integrity can be found online.

Student Well-Being (<https://wellbeing.mst.edu/>)

Your well-being is important, and it contributes to your success in this course. At S&T, we provide resources to support your mental, physical, and social well-being. Any of us can experience challenges that make learning difficult. If you are struggling, take advantage of the following resources offered by the university.

Student Well-Being provides counseling services, health promotion initiatives, and prevention programs to empower the S&T community to thrive and enhance personal, academic, and professional success. Department office hours are Monday-Friday, 8 a.m. - 5:00 p.m. On the website, you can find information related to confidential individual and group counseling, wellness consultations and trainings, resources for many health and wellness topics, and help for mental health crisis situations.

For the National Suicide Prevention Lifeline, call or text 988, or visit missouri988.org.

Health and Well-Being Canvas Course (<https://umsystem.instructure.com/enroll/G3LY3G>)

The Health and Well-Being Canvas Course features trainings, presentations, and other health and well-being resources for students. The course is free for all students, is non-credit, and students can enroll at any point in the semester.

Student Support and Community Standards is your "Google Maps" for support. During your time at S&T, you or a friend may need help navigating the student experience, facing a barrier, or experiencing a challenge. You are not alone!

Student Support has a dedicated team and numerous resources such as UCARE and the student emergency fund to help you navigate the S&T experience and support your success. This includes support to address barriers related to academic, personal, emotional, medical, financial, or any other needs.

Nondiscrimination, Equity, and Title IX

Missouri S&T is committed to the safety and well-being of our campus community, and to creating an environment free from discrimination and harassment.

The University prohibits discrimination and harassment on the basis of race, color, national origin, ancestry, religion, sex, pregnancy, sexual orientation, gender identity, gender expression, age, disability, protected veteran status, and any other status protected by applicable state or federal law. As used in this policy, the word "sex" is also inclusive of the term "gender."

Additionally, US Federal Law Title IX states that no member of the university community shall, on the basis of sex, be excluded from participation in, or be denied benefits of, or be subjected to discrimination under any education program or activity. Sexual harassment violations of this law include quid pro quo, hostile environment, sexual assault, dating/domestic violence, and stalking. The U.S. Department of Education has stated the prohibition on discrimination on the basis of sex includes sexual orientation and gender identity.

Students who are experiencing pregnancy or pregnancy-related conditions, including the birthing parent and non-birthing parent, have rights protected under Title IX. Students should contact the Office of Equity and Title IX to learn more about their rights and pregnancy-related assistance/accommodations provided by the University to ensure equitable access to University educational programs and activities.

In accordance with the University of Missouri's Collected Rules and Regulations, all faculty and staff are required to report any information concerning discrimination disclosed through communication including, but not limited to, direct conversation, email, social media, classroom papers and homework exercises to the Equity Officer/Title IX Coordinator.

For more information regarding support for those that have been impacted or to report an incident of discrimination or harassment as defined by Chapter 600 of the University's Collected Rules and Regulations, visit the Office of Equity and Title IX or visit their website at equity.mst.edu.

Office of Equity and Title IX
Equity Officer and Title IX Coordinator: Dr. Paul Hirtz
Phone: (573) 341-7734
Location: 900 Innovation Drive, Suite 500
E-mail: equity@mst.edu

Classroom Egress Maps

For all in-person instruction, faculty should explain where the classroom emergency exits are located. Classroom egress maps are posted at <http://designconstruction.mst.edu/floorplan/>.

Learning Assistance through LEAD

The Learning Enhancement Across Disciplines (LEAD) program runs Learning Centers and Tutoring which provide an efficient means to improve your understanding and increase your mastery of the material you are studying. Discipline-based faculty and undergrad peer instructors operate open-environment learning centers in nearly every foundational course as well as many upper-level courses. See the schedule for LEAD learning assistance at <https://lead.mst.edu/schedule/>.

Writing Center

The Writing Center's mission is to assist all students in their efforts to become better writers, communicators, and critical thinkers. The Writing Center's peer consultants and writing coaches provide free individualized one-on-one and small-group conversations to offer meaningful feedback and guidance to students across all disciplines. More information can be found on our website, through email: writing@mst.edu or stop by Curtis Laws Wilson Library 314-315.

Student Success Center

The Student Success Center (SSC) supports student development through peer Academic Mentoring

focusing primarily on STEM courses, Peer-to-peer soft skill coaching which can also act as an accountability buddy, and campus programming - all while providing free coffee and hot beverages! If you are seeking distance-learning opportunities outside of STEM, All undergraduate Miners are encouraged to utilize the SSC's free services to get timely support and to enhance their S&T Miner Experience. Visit the SSC at 198 Toomey Hall, contact us at success@mst.edu OR 573-341-7590. To see the course offerings and times for SSC Tutoring, visit <https://studentsuccess.mst.edu/academicmentoring/>.

Knack Tutoring (<https://mst.joinknack.com/>) With Knack Tutoring, any enrolled undergraduate student at S&T can get FREE help from a fellow miner who already took the class 24/7. You can choose to meet online on the Knack platform or on campus in person. If you've aced a course, sign up as a Knack Tutor to help your peers!

Student Veterans Resource Center The Student Veterans Resource Center (SVRC) is the nexus of resources and support for student veterans at S&T. The SVRC provides student veterans with a "safe space" and a familiar atmosphere. The center's Veteran Consuls provide one-on-one consultations to guide students to various resources on campus, while its advisor provides students with VA health and benefits resources. Visit the SVRC at Harris Hall, Suite G10, and contact us a