In accordance with the Americans with Disabilities Act, reasonable accommodation will be provided for all persons with disabilities in order to ensure equal participation in this course.

________________________________________________________________________

Text: Statistical Mechanics for Chemists by Jerry Goodisman.

I will make reading assignments from the text. You are responsible for all material in these assignments even if it is not covered in lecture.
Course content: Approximately the first 2 weeks of Chemistry 7020 will be devoted to ensembles (Chapter 2). The following topics will be covered:

Microcanonical and Canonical Ensembles  
Canonical Ensemble: Derivation  
Thermodynamic Properties  
Grand Canonical Ensemble

The next 3 weeks will be devoted to independent particles (Chapter 3). The following topics will be covered:

Independence and Indistinguishability  
Ideal Gas  
Vibrations in a Crystal  
Angular Momentum  
Spin in magnetic Field  
Thermodynamics: Third Law

The next 3 weeks will be devoted to atoms and molecules (Chapter 4). The following topics will be covered:

Atoms  
Molecules: Internal Motion  
Thermodynamic Properties  
Chemical Equilibrium  
Grand Partition Function

The next 3 weeks will be devoted to quantum statistical mechanics (Chapter 5). The following topics will be covered:

Indistinguishability  
Distributions for Fermions and Bosons  
Fermi Gas: Electrons in Metals  
Density of States and Semiconductors  
Bose Gas at Low Temperature: Photons

The last 3 weeks will be devoted to classical statistical mechanics (Chapter 6). The following topics will be covered:

Phase Space  
Classical Mechanical Partition Function  
Gas of Structureless Particles  
Transport Properties  
Dipoles in a Field
Dielectric Constant

After every chapter there will be a test (50 pts.) including the final exam after the chapter 11 (100 pts).

Final grades will be computed with an A, A- >90%, a B+, B, B- > 80% and a C+, C, C- >70%. These cutoffs may be revised slightly downwards.

COVID-19 Classroom Protocols

In order to continue to provide various forms of face-to-face instruction at USU, and to limit the spread of COVID-19 during the pandemic, students are asked to follow certain classroom protocols during the fall 2020 semester. These protocols are based on CDC, state, and local health department guidelines and requirements are in place not only for your safety but also the safety of the entire campus community.

- Face coverings are required in all classrooms and teaching laboratories. Students will not be permitted to remain in class without a face covering, as per University Policy 20T.3. Students that do not adhere to the face covering policy will be referred to the Office of Vice President for Student Affairs for a possible violation of the Student Code of Conduct. There may be individual medical circumstances that prevent some students from using face coverings. If you require this exemption, contact the Disability Resource Center prior to the start of classes to investigate alternative instruction. These circumstances will be rare, but if they do exist, we ask that everyone be respectful.
- Follow faculty instructions regarding social distancing and entering/exiting classrooms.
- Stay home when you are sick, however mild your symptoms.
- Wash your hands frequently with soap and water.