

ECH 6272
Molecular Basis of Chemical Engineering
Fall 2021

Instructor: Jason F. Weaver (weaver@che.ufl.edu)
Room 331 Chemical Engineering Building, Phone No. 392-0869

Class hours: T: 1:55-2:45 (period 7)
Th: 1:55-3:50 (periods 7-8)

Location: NEB 201

Office hours: M, 10:30am

ST: Liang Yu (liang.yu@ufl.edu)

Office hours: W, F 2-3pm

Review Session: T, 3-4pm

Grader: TBD

Grading: Exam I: 30%, Exam II: 30%, Exam III: 30%, HW: 10%

Recommended Textbook: "An Introduction to Statistical Thermodynamics", T.L. Hill, Dover, 1986 (ISBN: 0-486-65242-4).

Website: <http://elearning.ufl.edu/>

Topics

- Concepts from mechanics
- Review of thermodynamics and probability
- Molecular potential energy
- Statistical mechanical ensembles and thermodynamics
- Other ensembles and fluctuations
- Systems of independent molecules
- Ideal monatomic gas
- Ideal diatomic and polyatomic gases
- Chemical equilibrium
- Classical statistical mechanics
- ~~Imperfect gases~~
- Monatomic crystals
- Lattice gas models

- Transition state theory

Supplemental textbooks

“Statistical Mechanics”, D.A. McQuarrie, HarperCollins, 1976 (ISBN: 06-044366-9).

“Intermolecular and Surface Forces”, J. Israelachvili, Elsevier, 3rd ed, 2011 (ISBN: 978-0-12-391927-4)

COVID-19

- You are expected to wear approved face coverings at all times during class and within buildings even if you are vaccinated.
- If you are sick, stay home and self-quarantine. Please visit the UF Health Screen, Test & Protect website about next steps, retake the questionnaire and schedule your test for no sooner than 24 hours after your symptoms began. Please call your primary care provider if you are ill and need immediate care or the UF Student Health Care Center at 352-392-1161 (or email covid@shcc.ufl.edu) to be evaluated for testing and to receive further instructions about returning to campus.
- If you are withheld from campus by the Department of Health through Screen, Test & Protect, you are not permitted to use any on campus facilities. Students attempting to attend campus activities when withheld from campus will be referred to the Dean of Students Office.
- UF Health Screen, Test & Protect offers guidance when you are sick, have been exposed to someone who has tested positive or have tested positive yourself. Visit the [UF Health Screen, Test & Protect website](#) for more information.
- Please continue to follow healthy habits, including best practices like frequent hand washing. Following these practices is our responsibility as Gators.

Online Course Recording

Our class sessions may be audio visually recorded for students in the class to refer back and for enrolled students who are unable to attend live. Students who participate with their camera engaged or utilize a profile image are agreeing to have their video or image recorded. If you are unwilling to consent to have your profile or video image recorded, be sure to keep your camera off and do not use a profile image. Likewise, students who un-mute during class and participate orally are agreeing to have their voices recorded. If you are not willing to consent to have your voice recorded during class, you will need to keep your mute button activated and communicate exclusively using the "chat" feature, which allows students to type questions and comments live. The chat will not be recorded or shared. As in all courses, unauthorized recording and unauthorized sharing of recorded materials is prohibited.