

ECH 6272
Molecular Basis of Chemical Engineering
Fall 2019

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

Class hours: T, Th 3:00-4:55 (periods 8-9)

Location: CSE E107

Office hours: Thursday, 1:30, CHE 331

ST: Alexander Hoffman (ajhoffman@ufl.edu)

Grader: TBD

Grading: Exam I: 35%, Exam II: 35%, Exam III: 30%

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)