

# Physics 807 - Statistical Mechanics II

## Dr. Ian Balitsky, Fall 2016

### Course information

#### 1. Information:

- Office: OCNPS 323
- Phone: 683-5814, 269-7383 (JLab)
- E-mail address: ibalitsk@odu.edu
- Office hours: TBD

#### 2. Textbook:

- K. Huang *Statistical Mechanics*, 2nd ed., John Wiley & Sons, 1987, ISBN 0-47181518-7
- Manuscript of Felix Bloch, prepared by J.D. Walecka *Fundamentals of Statistical Mechanics*, Imperial College Press and World Scientific, 2000. ISBN 981-02-4420-7

#### 3. Grade (out of 100%):

- Homework: 40% (collaboration is permitted only at the stage of discussion)
- Midterm : 20%
- Final (comprehensive): 40%

### Course Outline

1. Concepts of classical mechanics
2. Statistical ensemble
3. Reminder from thermodynamics
4. Canonical distribution and thermodynamical functions
5. Review of Quantum Mechanics
6. Systems of Noninteracting Particles in Quantum Statistical Mechanics
7. Vibrations in solids
8. Grand Canonical Ensemble
9. Ideal Bose Gas
10. Magnetic phenomena in quantum systems