

# Chemistry 4300

## Physical Chemistry - Autumn Semester 2017

Lecture: MWF, 1:50 pm - 2:45 pm, CBEC 130

Course web site: [www.grandinetti.org/chem-4300-physical-chemistry](http://www.grandinetti.org/chem-4300-physical-chemistry)

Carmen: [carmen.osu.edu](mailto:carmen.osu.edu)

**Instructor:** Philip Grandinetti

**Office:** 0044A McPherson Lab

**Email:** [grandinetti.1@osu.edu](mailto:grandinetti.1@osu.edu) (Do not send me messages on Carmen).

**Office Hours:** M and W at 3:00-4:00 PM or by appointment

**Suggested Textbook:** "Physical Chemistry, A Molecular Approach" by McQuarrie

Section	Recitation Time	Location	TA	Office	Email
13392	Tu, 1:50 pm- 2:45 pm	025 HA	Kimberly Carter	2133 NW	<a href="mailto:carter.1118@osu.edu">carter.1118@osu.edu</a>
13393	Mo, 4:10 pm- 5:05 pm	2144 SL	Mark Bovee	0048 MP	<a href="mailto:bovee.4@osu.edu">bovee.4@osu.edu</a>
13394	Tu, 4:10 pm- 5:05 pm	1138 SL	Saswata Dasgupta	408 CBEC	<a href="mailto:dasgupta.32@osu.edu">dasgupta.32@osu.edu</a>
13390	Tu, 12:40 pm- 1:35 pm	266 DL	Brendan Wilson	0048 MP	<a href="mailto:wilson.3559@osu.edu">wilson.3559@osu.edu</a>

SL = Smith Lab, DL = Dreese Lab, HA = Hayes Hall, MP = McPherson, CBEC = Chemical and Biomolecular Engineering and Chemistry, NW = Newman and Wolfrom

### Lecture Topics

Read the online notes on the course web site before lecture. There will be 42 lectures. Below is the order of the course topics:

Topics
Forces, Fields, and Energy
Probability Distributions
Kinetic Theory of Gases
Rotational Motion
Vibrational Motion
Equipartition of Energy
Electrostatics
Wave Motion
Electrodynamics
Wave Particle Duality
Wave Mechanics
Free Particle and Tunneling
Quantum Harmonic Oscillator
Radiating Dipoles in Quantum Mechanics
Time Independent Perturbation Theory
Quantum Particle in Three Dimensions
Quantum Rigid Rotor
The Hydrogen Atom
Magnetism, Angular Momentum, and Spin
Identical Particles in Quantum Mechanics
Multi-electron Atoms
Diatomic Molecules
Polyatomic Molecules (time permitting)
Chemical Kinetics

If you miss lecture you are expected to get announcements, etc. from other students in the class.

## Grading

Recitation Quizzes	20%	
First Exam	25%	(Evening Exam - date and time to be announced.)
Second Exam	25%	(Evening Exam - date and time to be announced.)
Final Exam	30%	Wednesday Dec 13, 2:00 pm-3:45 pm

There is NO extra credit. Recitation quizzes will be given at the end of each recitation. Only the 10 highest will be counted. OSU ID cards will be checked when you turn in your exams.

Make-up exams will be given only for documented medical reasons, or pre-approved university conflicts. Students with University conflicts should provide the lecturer with their complete course schedule, including the conflict, at least two weeks before the exam so an alternate exam can be scheduled.

## Homework Assignments

Homework assignments are given in the notes. They will not be graded. Solutions will be posted on Carmen.

## Policies

- Only TI-30XA or TI-30XIIS calculators are allowed when taking quizzes or exams. No exceptions.
- Audio or video recording of class is not allowed without permission.
- Posting any course materials online is not permitted.
- All cell phones must be silenced during class. Students should refrain from texting, listening to headphones, e-mailing, or using the Internet during class unless it is part of the lecture.

## Advice for doing well in this class

The best piece of advice is work (correctly) through every single homework problem, and understand deeply why you got the correct answer. Of course, that's easier said than done, so here are a few other tips to help you succeed:

1. Read through online notes before each lecture. Even better if you can read ahead a few lectures. Note down the things you don't understand in the lecture notes and be prepared to ask about them in class.
2. Come to lecture! Statistics show that students who sit in the front of the room get better grades than those sitting in the back. Those who skip lecture do the worst.
3. Ask questions in lecture when you don't understand. Don't be embarrassed, chances are quite high that others in the class have the same question in their heads.
4. Don't waste a lot of time working on questions when you can't get the right answer. If you're still stuck, come see your TA or me during office hours.
5. Start early, and don't fall behind. Students who do well in this course often spend about **10-20 hours each week** (outside of lecture and recitation) reading and re-reading through the notes and text, and asking questions, while they work on the homework assignments.

## Requirements Fulfilled

Chemistry 4300 is a Physical Science course in the Natural Science category of the GE, which has these goals and objectives:

**Goals:** Students understand the principles, theories, and methods of modern science, the relationship between science and technology, the implications of scientific discoveries and the potential of science and technology to address problems of the contemporary world.

### Learning Objectives:

1. Students understand the basic facts, principles, theories and methods of modern science.
2. Students understand key events in the development of science and recognize that science is an evolving body of knowledge.
3. Students describe the inter-dependence of scientific and technological developments.
4. Students recognize social and philosophical implications of scientific discoveries and understand the potential of science and technology to address problems of the contemporary world.

## Disability Services (ODS)

All students with documented disabilities, who need accommodations, should see the instructor privately to schedule an appointment as early in the quarter as possible. If your disability requires materials in alternative format, please contact the Office for Disability Services at 292-3307, Room 098 Baker Hall, 113 West 12th Avenue.

## STANDARDS OF ACADEMIC CONDUCT IN CHEMISTRY

**Any material submitted in Chemistry must represent your own work. Violations of this standard will be referred to the University Committee of Academic Misconduct (COAM) as required by Faculty Rules.**

It is the responsibility of COAM to investigate all reported cases of student academic misconduct; illustrated by, but not limited to, cases of plagiarism and dishonest practices in connection with examinations, quizzes, and graded assignments. Instructors shall report all instances of alleged academic misconduct to the committee (Faculty Rule 3335-5-487). For additional information see the Code of Student Conduct on the web at:

[http://studentaffairs.osu.edu/pdfs/csc\\_12-31-07.pdf](http://studentaffairs.osu.edu/pdfs/csc_12-31-07.pdf)

Copying, use of “crib” material, or use of stored constants and formulas in calculators on quizzes, examinations or the final exam is regarded as a severe violation of academic standards no matter how small the action. The Department of Chemistry will recommend as the **minimum penalty a grade of E for the course for any such violations.**