

Chemistry 341 Syllabus

Fall 2011

Dr. Mark Iannone

318 STB Office hours: tba

Text [D.W.Ball, *Physical Chemistry*](#)

Errata: <http://academic.csuohio.edu/ball/errata.htm>

Semester 1 topics

Gases Ch. 1

Thermodynamics Ch. 2-3

Chemical potential and equilibrium Ch. 4-5

Electrochemistry Ch. 8

Physical equilibrium Ch. 6-7

Surfaces Ch. 22

Quantum chemistry Ch. 9-10

Assignments and grading

There will be quizzes on Fridays. Quizzes will cover material through Wednesday's class.

There will be two hour exams and a final exam. Dates of hour exams will be announced 1 week in advance.

The final exam will be cumulative, with emphasis on material covered after the 2nd hour exam.

All exams are closed-book.

Recommended practice problems will be assigned in every class.

Homework assignments will be collected about once a week. Homework answers must be neat, legible and in order—they will not be graded otherwise—and they will not be accepted late.

In order to pass Chem. 341, you must perform all assigned lab experiments, turn in all reports and earn a lab grade of 60% or more.

All work must be turned in to me in class or taken to my office.

Grades are not curved. There is no extra credit.

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| Laboratory | 30% |
| Quizzes | 20% |
| Final exam | 25% |
| Homework | 10% |
| Hour exams | 15% |

Letter grade cutoffs: A 93%, A- 90%, B+ 87%, B 83%, B- 80%, C+ 77%, C 73%, C- 70%, D+ 67%, D 63% D- 60%

Anyone requiring special academic accommodations should discuss this with me the first week.

Laboratory

Laboratory experiments in this course are not provided as detailed recipes. You will generally have to plan the chemical system to be studied, prepare reagents and research details of the experimental procedure before the lab period. If necessary, pre-lab reports will be required to ensure this preparation.

Since this is a W course, lab reports are turned in for proofreading, then in final form for a grade. They are graded on quality of experimental results, scientific discussion, clarity, spelling and grammar.

Lab work is generally done with a partner, but reports must be written independently.

Final versions of reports are due 8 days after the date you are scheduled to complete the lab; they must also be submitted to Turnitin at that time. 5 point per day penalty.



The greatest stumbling block that can be erected in the path of learning physical chemistry is the notion that memorizing equations is a sensible way to proceed. Equations are meant to be **understood**, not to be memorized.

By all means try to keep a good grasp on the fundamental principles which are being applied; memorize **them** and above all understand them.

G.W.Castellan



Absence policy

Absences are excused for a) personal illness, b) death or critical illness in the family, c) participation in a university-sponsored activity, d) jury duty, e) military duties, or f) religious holidays, if acceptable written documentation of the reason is provided. The instructor should be notified in advance of the absence, if possible.

When returning from an absence, please give me a typed or printed note on 8 1/2 x 11 paper stating the reason for the absence, dates absent and your signature. Signature of an official (doctor, coach, etc.) may be requested as well. In-class work can be made up only if the absence is excused.

Course Objectives

After completing this course, students will

- understand thermodynamic systems, state functions and laws, be able to solve numerical problems, and be able to manipulate the differential equations of thermodynamics;
- understand the thermodynamic basis of chemical equilibrium and electrochemistry, and be able to solve numerical problems in this area;
- understand phase equilibria and phase diagrams and use these to understand multiphase systems;
- understand gas laws, including the kinetic theory of gases, be able to solve numerical problems in this area;
- have some knowledge of the chemistry and physics of surfaces;
- understand the basics of quantum mechanics as applied to chemistry;
- have improved ability to work independently in lab and to carry out common procedures without detailed instructions;
- have the ability to describe, assess and discuss scientific results in writing using clear, grammatically correct English.