

Syllabus      CHEM 1000      Mathematics for Chemistry      Fall 2019

**Lecture:** MoWeFr 3:00-3:50 in 154 Chevron

**Recitation:** We 4:00-4:50 in 150 Chevron

**Instructor:** David Ewing, Ph.D. [dwewing@pitt.edu](mailto:dwewing@pitt.edu)      Office: 1206 Chevron  
Office hours: Tu 1:00-3:00; We 10:00-noon; and by appointment

**Teaching Assistant:** Stephen Slimak [srs215@pitt.edu](mailto:srs215@pitt.edu)      Office hours: By appointment

**Course description:** This course is intended to prepare you for the Physical Chemistry sequence CHEM 1410, 1420, 1430, and 1440. Specifically, mathematical topics will be reviewed and introduced which will be used in Physical Chemistry. These topics include functions, coordinate systems, complex numbers and functions, logarithms, calculus of many dimensions, differential equations, vectors and vector algebra, extremizing functions, series, probability and statistics, matrices and matrix algebra, determinants, and eigenvalues and eigenvectors.

**Prerequisite:** MATH 0230

**Required Text:** Straub, J.E. *Mathematical Methods for Chemists*; © John E. Straub, 2019.

This is an eBook for which there is no charge. A copy of the eBook and its license agreement are in CourseWeb. A print version can be available for about \$40; let the instructor know if you are interested.

We will attempt to go through Chapters 1-14. Some supplemental topics, or enhancements of topics in the textbook, will occasionally be presented. Not every topic in every chapter will be covered. A class schedule will be maintained as we go along, indicating exactly what will be covered, and posted in the Syllabus section of CourseWeb.

**Reference texts:**

Mortimer, R.G. *Mathematics for Physical Chemistry*, 4th ed.; Elsevier, 2013. Available as an eBook in the Pitt Library. Search on the title in PITTcat+ at <https://pitt.edu/libraries>.

D. A. McQuarrie. *Mathematics for Physical Chemistry*; University Science Books, 2008. Available on reserve in the Chemistry Library.

Barrante, J.R. *Applied Mathematics for Physical Chemistry*, 3<sup>rd</sup> ed.; Pearson/Prentice Hall, 2004. Available on reserve in the Chemistry Library.

**CourseWeb:** Course information will be posted at <https://courseweb.pitt.edu>. This will include announcements, class schedule, lecture notes, homework assignments, homework solutions, your scores, and the syllabus.

**How the class will be conducted:** The course will be lecture based, but a considerable amount of time will be devoted to problem solving. Recitation periods generally will be used for problem solving sessions. Some lecture periods, or portions thereof, will also be used for problem solving sessions. You are required to attend all lecture and recitation periods.

**Class Schedule:** Check this frequently. It's in the Syllabus section of CourseWeb.

**Exams & Examlets:** There will be several "examlets", i.e. extensive quizzes. The first examlet will on Wednesday, September 18, and will cover Chapters 1, 2, and 3. The final exam, Friday, December 13 2:00-3:50 pm, will not be cumulative. There will also be a take-home exam, details TBA. Exams and examlets will focus on problem solving.

There are no make-up exams or examlets, and they can be taken early only for valid reasons. At the discretion of the instructor the score for a missed examlet will be the average of your other examlet scores. If you have a conflict with an upcoming examlet or exam, please see the instructor. If you had an emergency situation which caused you to miss an examlet or exam, please see the instructor ASAP.

**Homework:** Problems will be assigned for each chapter. These will not be collected or graded. Complete solutions will be made available after you've had time to work on a given assignment. The homework will serve as a basis for examlets and exams.

**Excel and Mathematica problems:** During the semester approximately 10 of these problems will be assigned. These will be graded.

**Grades:**

Examlets	50%
Take-home Exam	20%
Graded Exercises	10%
Final Exam	20%

It is anticipated that A/B/C = 90%/80%/70%, with pluses and minuses, will be used for the course grade, but this could be more munificent at the discretion of the instructor.

**Changes to course structure:** The Instructor reserves the right to change this syllabus as needed, and will inform the class verbally and on CourseWeb of any changes.

**Academic Integrity Statement:** Cheating/plagiarism will not be tolerated. Students suspected of violating the University of Pittsburgh Policy on Academic Integrity will be required to participate in the outlined procedure. A minimum sanction of a zero score for the quiz or exam will be imposed. See [www.cfo.pitt.edu/policies/policy/02/02-03-02.html](http://www.cfo.pitt.edu/policies/policy/02/02-03-02.html).

**Disability Resources:** If you have a disability for which you are or may be requesting an accommodation, you are encouraged to contact both the instructor and the Office of Disability Resources and Services as early in the semester as possible, 140 William Pitt Union at 412-648-7890 or <http://www.studentaffairs.pitt.edu/drs/>

To ensure the free and open discussion of ideas, students may not record classroom lectures, discussion and/or activities without the advance written permission of the instructor. Any such recording, properly approved in advance, is limited to the student's own private use.

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