

Physical Sciences

CHEM 3080 – 1 Credit
Physical Chemistry Laboratory (0,0,4)
Winter 2019

Instructor: Dr. Nelaine Mora-Diez
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Office Hours: Mon, Wed, Fri 2:30 – 3:30 pm
Additional office hours are available by appointment.

Description

This course consists of a selection of computational laboratories illustrating a variety of physical chemical principles most of which are discussed in the third-year physical chemistry courses CHEM 3060 and CHEM 3070.

Laboratory Classes

4 hours/week Tue 1:30 - 5:30 pm S 266

Moodle

Any electronic course-related materials will be available through Moodle. You have to enroll in the Moodle course “CHEM 3080 - Physical Chemistry Laboratory” by using the enrolment key: 3080-2019. To access Moodle on the Internet, use the Moodle quick link from the TRU homepage (www.tru.ca).

Reference Texts

Chemistry 3080 Laboratory Manual (available on Moodle)

The computational labs will make use of the software Spartan (Spartan Student for Windows, version 6.1.8). A link to the website of this program can be found in Moodle.

Assessment

Lab 1: Introductory work	10%
Pre-lab quizzes (Labs 2, 3, 4)	20%
Lab Interviews (Labs 2, 3, 4) or Report (Lab 5) ^a	70%

When doing a Lab Interview (Labs 2, 3, 4):

Data and calculations provided on time*	5%
Results obtained and organization	20%
Quality of interview answers	45%

When doing a Lab Report (Labs 5):

Provided on time*	5%
Results obtained and organization	20%
Writing quality	5%
Discussion of the results obtained	15%
Pre-Lab Work	25%

* Including Excel files prepared to be e-mailed to your instructor (all to be submitted at least 24 hours before the Lab Interview)

A letter grade will be awarded using the TRU Grading System (Policy ED-3-5) on page 24 of the TRU Calendar. This one-semester course is worth 1 credit.

Lab sequence

1. Introduction to Spartan
2. Study of the reactivity of substituted benzenes
3. Thermodynamic and kinetic calculations
4. Working with inorganic compounds (this lab occurs over two lab sessions)
Part A: Molecular orbital calculations
Part B: Lewis acid-base exercise
5. Statistical thermodynamic calculations (working with a triatomic molecule)