GENERAL CHEMISTRY
CHEM 1020
Winter, 2023

Instructor: Dr. Todd A. Wells
Office: Physics 319
Phone: 303-871-3429
Email: Todd.Wells@du.edu


Lectures: 10-10:50 pm, MWF
Discussion: 10-10:50 pm, T
Office Hours: 9-9:50 am, T (SEC)
10-11 am, R (Physics 319)
or by appointment

REQUIRED COURSE ITEMS


Online Textbook and Connect, 2-year access, ISBN: 9781260477375
Loose Pages with Connect, ISBN: 9781264094202

Online Homework: A Connect OLA license is required for the course. When you purchase your textbook at the DU Bookstore, this license is included. If you already have a text, you can purchase a license directly online from McGraw-Hill. This option will be made available when you attempt the first online assignment.

If purchased separately:
Connect OLA (2 Years), ISBN: 9781264400454
Connect OLA (1 Quarter or 90 days), ISBN: 9781264400270
Connect OLA (210 Days), ISBN: 9781264400348

Calculator: A calculator with the following capabilities is required: square roots, logarithms, and exponential (scientific) notation operations.

READINGS – You have been provided a tentative lecture schedule. You should read the material and do any associated online components prior to class.

CLASS MEETINGS – For the most part we will follow the same format every week. Monday I will introduce the major concepts; these discussions will continue on Wednesday and there may be online materials used to supplement these discussions. On Tuesday, we will work on sample problems and cover questions you have from the homework. Each Friday we will wrap-up the week. Finishing any topics we need to and reviewing the material from that week. Every 3 weeks an exam will be given on Friday.

Components – There will be three areas of this course where your learning will be facilitated using online technology.

• In-person classes (Monday, Wednesday and Friday), the majority of the course material will be presented in these sessions.
• Supplementary material posted on Canvas which may include asynchronous lectures, videos, simulations or additional reading material.
• Weekly online homework will be assigned using the Connect OLA that is linked to this course. These assignments will be graded. With the exception of the 1st and 10th week, these assignments will be due every Thursday at 11:59PM (Mountain time).

EXAMS - There will be three (3) exams given during the quarter and a cumulative final exam. I do not drop the lowest exam grade. However, the final exam grade can be used to replace the lowest exam grade.

GRADES - Final grades will be determined according to your performance on the exams, online homework, and any other assignments. Cooperative learning is encouraged. As such, I will not grade on a curve. If most students do well, there will be a significant number of higher grades. The opposite, however, can also be true! Your final grade will be determined on a maximum of 1100 points with the following components:

<table>
<thead>
<tr>
<th>Component</th>
<th>Points</th>
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<tbody>
<tr>
<td>Hour Exams (200 points each)</td>
<td>600</td>
</tr>
<tr>
<td>Final Exam</td>
<td>200</td>
</tr>
<tr>
<td>Online Homework</td>
<td>100</td>
</tr>
<tr>
<td>Quizzes/other activities</td>
<td>100</td>
</tr>
<tr>
<td>Total Points</td>
<td>1000</td>
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Projected Grade Ranges

<table>
<thead>
<tr>
<th>Grade</th>
<th>Percentage</th>
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</thead>
<tbody>
<tr>
<td>A</td>
<td>≥ 94%</td>
</tr>
<tr>
<td>A-</td>
<td>≥ 90%</td>
</tr>
<tr>
<td>A+</td>
<td>≥ 94%</td>
</tr>
<tr>
<td>B</td>
<td>≥ 86%</td>
</tr>
<tr>
<td>B+</td>
<td>≥ 82%</td>
</tr>
<tr>
<td>C</td>
<td>≥ 78%</td>
</tr>
<tr>
<td>B-</td>
<td>≥ 82%</td>
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<tr>
<td>C+</td>
<td>≥ 75%</td>
</tr>
<tr>
<td>B</td>
<td>≥ 82%</td>
</tr>
<tr>
<td>C-</td>
<td>≥ 72%</td>
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<tr>
<td>D+</td>
<td>≥ 64%</td>
</tr>
<tr>
<td>D</td>
<td>≥ 58%</td>
</tr>
<tr>
<td>D-</td>
<td>≥ 55%</td>
</tr>
<tr>
<td>F</td>
<td>≥ 50%</td>
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LECTURE AND TESTING ACCOMODATIONS - If you have a disability/medical issue protected under the Americans with Disabilities Act (ADA) and Section 504 of the Rehabilitation Act and need to request accommodations, please make an appointment with the Disability Services Program (DSP); 303.871.2372/2278/7432; located on the 4th floor of Ruffatto Hall; 1999 E. Evans Ave. Information is also available online at [http://www.du.edu/disability/dsp](http://www.du.edu/disability/dsp). See the Handbook for Students with Disabilities.

Any student who feels they may need an accommodation based on the impact of a disability should contact me privately to discuss your specific needs. Please contact the Disability Services Program.

If you qualify for academic accommodations because of a disability or medical issue please submit a Faculty Letter to me from Disability Services Program (DSP) in a timely manner so that your needs may be addressed. Disability Services determines accommodations based on documented disabilities/medical issues.

RELIGIOUS ACCOMODATIONS. It is University policy to grant students excused absences from class or other organized activities for the observance of religious holy days, unless the accommodation would create an undue hardship. I will do my best to accommodate your requests if you make arrangement with me in advance of your absence. Please examine the course syllabus, including the tentative schedule, for any potential conflicts with holy days and notify me prior to the end of the second week of classes of conflicts that may require your absence from class and/or prevent you from completing an assignment.
have included the link to the Religious Accommodations Policy for your reference. More information can be found at http://www.du.edu/studentlife/religiouslife/DU_religious_accommodations_policy.html.

WEEK 1 – REVIEW & INTRO TO SPONTANEOUS CHANGE
Course Introduction, Enthalpy Review Ch. 6
Spontaneous Change/Entropy 20.1–20.2

WEEK 2 – ENTROPY & GIBB’S FREE ENERGY
Entropy & Free Energy 20.2–20.3
Free Energy & Equilibria Intro 20.4 & 17.1

WEEK 3 – INTRO TO EQUILIBRIA
Equilibrium Constants/Rxn Quotient 17.2-17.4
ICE tables & Le’Chatlier’s Principle 17.5-17.6

WEEK 4 – ACID-BASE EQUILIBRIA
Acid-Base Equilibria, Intro to Ka 18.1-18.4
Weak Acid Equilibria 18.2-18.4

WEEK 5 – ACID-BASE EQUILIBRIA CONTINUED
Weak Base Equilibria, properties of A&B 18.5-18.8
Buffer Solutions, HH Equation 19.1

WEEK 6 – BUFFERS AND TITRATION CURVES
HH Equation, Principle Species 19.1 & Supplementary
Titrations, continued 19.2

WEEK 7 – SOLUBILITY & pH
Solubility Equilibria, Ksp 19.3
Complex Ion Equilibria, Kf 19.4

WEEK 8 – KINETICS
Intro to Kinetics & Reaction Rates 16.1–16.2
Rate Laws 16.3–16.4
Theories of Chemical Kinetics 16.5
Reaction Mechanisms 16.6

**WEEK 10 – KINETICS**
Catalysis 16.7
Final Review