



HUNTER COLLEGE OF THE CITY UNIVERSITY OF NEW YORK  
Department of Chemistry & Biochemistry  
ESSENTIALS OF GENERAL CHEMISTRY

Chemistry 100 Syllabus Spring 2019

**Professor:** Dr. Kirsten J. Grant  
**Office:** 1321A Hunter North Bldg.  
**Phone:** (212) 772-5335  
**E-mail:** [grantchm100@gmail.com](mailto:grantchm100@gmail.com)  
**Office Hours:** Th 4:00 pm – 6:00 pm in Rm 1319B-HN or by appointment (but you must email me in advance).

**Course #, Time, Location:** CHM100 Section1: T/TH 7:00pm-8:15pm, Rm 118HN

### A. COURSE DESCRIPTION

This course will present essential facts, laws, and theories of general chemistry using active learning techniques and web-enhanced learning opportunities. This course is designed to develop students' problem-solving skills in introductory chemistry; to teach the definitions, concepts, and ideas to predict how a chemical process will occur; and to test the understanding of the basic chemical concepts.

### B. OBJECTIVES

Upon successful completion of this course, the student will be able to develop problem-solving skills in introductory chemistry, use definition, concepts, and ideas to predict how a chemical process will occur, and test the understanding of the basic chemical concepts.

### C. COURSE LEARNING OUTCOMES

Upon successful completion of this course, students should be able to:

1. Discuss the steps of a scientific method and apply the steps to how experiments are used to shape scientific knowledge
2. Use dimensional analysis with proper attention to units and significant figures, and do simple algebraic manipulations applying them to the following types of calculations: metric system and temperature conversions, density, heat transfer, the mole concept, stoichiometric relationships in reactions, the gas laws, solution concentrations and dosages, half-life of radioactive substances, and acid-base pH calculations.
3. Describe the chemical and physical properties of matter including solutions, based on trends in the periodic table, the models of atomic and electronic structure, and intermolecular forces.
4. Describe and identify phase changes and the energy changes associated with them.
5. Recognize and draw the basic model of the atom and electron configurations, discuss changes in Dalton's Atomic Theory, identify and write atomic, ionic and nuclear symbols, describe nuclear decay, and identify isotopes used in nuclear medicine.
6. Describe bonding patterns and determine names and formulas of binary molecular compounds, ionic compounds and acids.
7. Draw and interpret Lewis structures for molecular compounds including resonance, molecular geometry and shape, and polarity.

8. Balance chemical equations, identify basic types of chemical reactions and predict the outcome of these reactions.
9. Describe the gas laws and apply them to calculate changes in gas temperature, volume, pressure and number of moles.
10. Apply knowledge of reaction energies, reaction rate, equilibrium, and Le Chatelier's principle to chemical reactions.
11. Explain the basic principles of Arrhenius Acids/Bases, and Bronsted Acids/ Bases and apply these concepts to titrations, indicators, and the calculations of pH, and buffers

### Methods of Assessing Outcomes

The expected learning outcomes will be assessed through the use of online homework, in-class questions, quizzes, exams, and the final exam.

### D. GRADING:

3 Exams	(15% x 3)
Comprehensive final	(25%)
Pre-class assignments/Homework	(15%)
In-class Participation/Quizzes	(10%)
Recitation Workshops	(5%)
	<hr/>
	100%

### E. EXAMINATION POLICY

1. Cheating on an exam will result in an automatic disciplinary F for the course.
2. Students who arrive after the first exam has been turned in will not be allowed to take the exam even if the lateness was not their fault.
3. Extra time will not be given to students who arrive late.
4. NO MAKE-UP EXAMS – average of all remaining exams will be used for missed exam grade. Only one missed exam will be allowed.
5. NO EXCUSE will be accepted for missing more than one exam. Missing more than one exam will result in an "F" for the course.
6. Any students who disrupt the class will be asked to leave.

This semester we will try out Tophat Test for online submission of exams during class sessions. Please see information below about using Tophat Test in class. The final exam will be the ACS General Chemistry portion of the GOB standardized exam that will be taken with pencil, paper and scantron sheet. There is no practice material for this exam online, *please do not purchase any ACS study materials for the final exam.*

### F. REQUIRED TEXT:

**Tophat.com: Grant Custom Essentials of Chemistry Course**

**Textbook and In-class Response System:**

This course requires the use of Top Hat ([www.tophat.com](http://www.tophat.com)) a classroom engagement tool that is designed to assess your understanding of course material in class. It will be your textbook resource for this class. In addition, you will be able to check-in for attendance, engage in discussions and submit answers for participation grades to in-class questions using iPhone, Android smartphones and tablets, laptops, or through text message.

You can visit the Top Hat Overview (<https://success.tophat.com/s/article/Student-Top-Hat-Overview-and-Getting-Started-Guide>) within the Top Hat Success Center which outlines

how you will register for a Top Hat account, as well as providing a brief overview to get you up and running on the system.

An email invitation will be sent to you by email, but if don't receive this email, you can register by simply visiting our course website: Unique Course

URL: <https://app.tophat.com/e/558448>

Note: our **Course Join Code is 558448**

Your textbook will be applied at checkout for an additional. Don't worry if you don't see any content in the course right away, I will make it available to you as we progress through the semester.

### **Tophat Test:**

In addition to allowing for immediate response to questions in class through your device, we will be using Top Hat with Top Hat Test to allow us to go paperless and run exams online from any personal or mobile device (ie. your phone or laptop) in an online, secure testing environment. If you leave the browser during a test, you will be automatically locked out of the test. It is very important that you purchase your Top Hat subscription with Top Hat Test option as soon as possible at the beginning of this course so that there are no complications when it is time for the first test! See this article for more information on purchasing Top Hat Test (<https://success.tophat.com/s/article/Student-Purchasing-Top-Hat-Test>).

### **Tophat.com Support:**

Should you require assistance with Top Hat at any time, due to the fact that they require specific user information to troubleshoot these issues, please contact their Support Team directly by way of email ([support@tophat.com](mailto:support@tophat.com)), the in app support button, or by calling [1-888-663-5491](tel:1-888-663-5491).

### **Purchase Access to Tophat Materials Here:**

1. Directly through the link below (cheapest option, immediate access). Fill out the requested information and you will be prompted to purchase the required materials for the semester.  
[https://app.tophat.com/register/student/org/2596/join\\_code/558448/info/](https://app.tophat.com/register/student/org/2596/join_code/558448/info/)
1. The Hunter College online bookstore (access code/card)  
<https://hunter.textbookx.com/institutional/?action=browse#books/1981272/>
2. Shakespeare & Co. Books (access code/card)

**Supplemental Textbook:** In addition to the online materials, you may want to borrow the following book from the library and photocopy relevant material or *you can rent a copy since it is required for the next course in this sequence* (Essentials of Organic Chemistry CHEM120)

- **Fundamentals of General, Organic and Biochemistry, 8<sup>th</sup> ed.** is on reserve in the Hunter Library and can be searched using the call number: **GRANT.2.BOOK**

### **G. REQUIRED RECITATION WORKSHOPS:**

In addition to the lecture, you are responsible for submitting a weekly recitation assignment called a workshop. Please see your schedule for the section you are registered for. Only attend your assigned recitation section. If you must attend another section for any reason, you must get approval by the course instructor and your recitation instructor.

- Workshops are to be completed in groups of 3 or 4 students and must be submitted to your recitation instructor. Workshops are available for printing on blackboard platform under each week/topic.
- There are 12 required workshop assignments this semester. Each workshop is worth 10 points. You must attend the recitation section that you registered for every week in order to earn these points. If you miss a workshop you do not earn the points for that workshop. Please see the Workshop Grading Policy for more Information.
- If there is no class on a day that you would regularly have attended a workshop, you may attend any other workshop session for that week to get help with the material. Please see the Recitation Schedule for information about available recitation sections.
- Videos to assist you with completing workshop assignments will also be posted on blackboard for each week. Watch the videos and try some practice problems (links for problems will be posted in the workshop folder and at the end of each Tophat unit as well) for each week prior to attending workshop sessions to maximize your learning each week.

## H. IMPORTANT COURSE INFORMATION:

### 1. **Blackboard 9.1:**

You have to use your hunter email to log in on Blackboard.

Instructions on how to access the course website on blackboard can be found at: <http://bb.hunter.cuny.edu>. **You should check the site regularly.** It can also be used to communicate with your classmates.

**All announcements, course PowerPoints, the syllabus, additional resources, videos, problem sets, and helpful hints will be posted on Blackboard.** The lecture presented during the class will be available for you to download from blackboard under **Course Materials Section**. *Each lecture will be posted online PRIOR to the class period it will be presented.* You should read the material before coming to class to maximize learning.

- Bring a copy of the Powerpoint Lectures to class (hardcopy or electronic).

### 2. **Email:**

You can find information about Hunter email through a link at: <http://www.hunter.cuny.edu/icit/help-docs/e-mail-faq>

Your username and password should have been mailed to you. Please make sure that if you are not using this email account, you set your mail to forward to an account that you do use. Instructions on how to forward mail can be found through the link above. I will be sending you important emails through blackboard. The information you may miss is likely to impact your grade if I don't have email contact with you.

To ensure that you get a prompt response from me, please send all email correspondence to: [grantchm100@gmail.com](mailto:grantchm100@gmail.com)

Emails sent to my Hunter email account may not get a response after the first day of classes. **DO NOT** respond to any emails sent via Blackboard, only emails sent to my gmail account will be checked daily for student emails.

### 3. **Required Homework:**

on Tophat.com (please see information above for the textbook)

**Pre-class assignments: Reading units and completing discussion and practice problems**

- Lots of your learning of the content will take place outside of class sessions. Doing pre-class lessons will prepare you for completing practice problems in class reinforcing concepts you learned during your pre-class sessions.
- They are due prior to covering the content in class and you are responsible for completing the assignments on time to keep up with studying for the course.
- **Assignments count towards your homework grade**
- **5% late penalty for any late pre-class assignment**

**Homework assignments:**

- These assignments are to gauge your learning of the content in preparation for exams. Do not use these assignments for practice, they are graded.
- **Assignments count towards your homework grade --each assignment is worth 100%**
- **5% late penalty for any late homework assignment**

**4. Required Student Response and Test Taking System:**

**Tophat online student response system and Tophat Test** are included in the Tophat.com textbook choices listed above and access is **required**. You will be able to use any web-enabled device (laptop, tablet, or smartphone) to answer in-class questions. Please see Tophat information above. Attendance/Participation points will be earned by answering questions in class. *Make-ups for missed in-class questions will only be accepted from students that inform me prior to missing class for a religious holiday.*

**Instructions on submitting answers to questions in-class when there are connectivity issues can be found here:**

**Offline mode:**

<https://support.tophat.com/s/article/Student-Offline-Mode-Submissions?ui-force-components-controllers-recordGlobalValueProvider.RecordGvp.getRecord=1&r=12>

**Text submissions:**

<https://support.tophat.com/s/article/Student-SMS-Text-Message-Submissions?ui-force-components-controllers-recordGlobalValueProvider.RecordGvp.getRecord=1&r=12>

**5. Optional Extra Credit Online Program:**

Chem101.co is an online tool (\$15) will have selected problems for you to practice the skills you learn for each unit in the course. There are a total of 10 extra credit assignments, each worth 10pts (total 100pts). The total points will be used to replace your lowest Homework or PC assignment grade.

Use the following link to purchase access:

<http://www.chem101.co> and click on “New Account.” When prompted, use the course code: **RQUS4A**

**Please contact me if you are having difficulty purchasing this item.**

- 6. Academic Dishonesty:** Hunter College regards acts of academic dishonesty (e.g., plagiarism, cheating on examinations, obtaining unfair advantage, and falsification of records and official documents) as serious offenses against the values of intellectual honesty. The college is committed to enforcing the CUNY Policy on Academic Integrity and will pursue cases of academic dishonesty according to the Hunter College Academic Integrity Procedures.
- 7. ADA Statement:** In compliance with the ADA and with Section 504 of the Rehabilitation Act, Hunter College is committed to ensuring educational access and

accommodations for all its registered students. Hunter College's students with disabilities and medical conditions are encouraged to register with the Office of AccessABILITY for assistance and accommodation. For information and appointment contact the Office of AccessABILITY located in Room E1214 or call (212) 772-4857 /or VRS (646) 755-3129.

- 8. Hunter College Policy on Sexual Misconduct:** In compliance with the CUNY Policy on Sexual Misconduct, Hunter College reaffirms the prohibition of any sexual misconduct, which includes sexual violence, sexual harassment, and gender-based harassment retaliation against students, employees, or visitors, as well as certain intimate relationships. Students who have experienced any form of sexual violence on or off campus (including CUNY-sponsored trips and events) are entitled to the rights outlined in the Bill of Rights for Hunter College.
- Sexual Violence:** Students are strongly encouraged to immediately report the incident by calling 911, contacting NYPD Special Victims Division Hotline (646-610-7272) or their local police precinct, or contacting the College's Public Safety Office (212-772-4444).
  - All Other Forms of Sexual Misconduct:** Students are also encouraged to contact the College's Title IX Campus Coordinator, Dean John Rose (jtrose@hunter.cuny.edu or 212-650-3262) or Colleen Barry (colleen.barry@hunter.cuny.edu or 212-772-4534) and seek complimentary services through the Counseling and Wellness Services Office, Hunter East 1123.

CUNY Policy on Sexual Misconduct Link:

<http://www.cuny.edu/about/administration/offices/la/Policy-on-Sexual-Misconduct-12-1-14-with-links.pdf>

### Tentative Class Schedule

**(Any changes may be without prior notice, and are at the discretion of the instructor.  
Changes will be announced in class and posted on Blackboard)**

DATE	TOPICS	ASSIGNMENTS
		<p><b>(all assignments due 11:59pm on due date)</b></p> <p><b>PC</b> = TopHat pre-class assignment</p> <p><b>Hwk</b> = TopHat homework assignment</p> <p><b>BB</b> = assignment on Blackboard under assignment section. See individual assignments on Blackboard for complete instructions</p> <p><b>WK</b> = workshop to be completed in scheduled recitation section</p>
<p><b>Week 1</b> Tu 1/29 Th 1/31</p>	<p>Unit 1—Chemistry and Measurements</p>	<p>Math Review Module—<b>BB due Fri 2/1 (no late penalty)</b></p> <p>TopHat Unit 1—<b>PC due Fri 2/1 (no late penalty)</b></p> <p>• <b>WK #1</b>—Chemistry Math Review and Introduction</p>
<p><b>Week 2</b> Tu 2/5 Th 2/7</p>	<p>Unit 2—Matter and Energy</p>	<p>TopHat Unit 2—<b>PC due Tu 2/5</b></p>

		<p>TopHat Unit 1—<b>Hwk due Fri 2/8</b></p> <p><b>(no late penalty)</b></p> <p>Introduction to Chemistry 100 and SQ3R Active Reading Method (VoiceThread Assignment, quiz grade)—<b>BB due Fri 2/8</b></p> <p><b>WK #2—Unit Conversions</b></p>
<p><b>Week 3</b> Tu 2/12 NO CLASS Th 2/14</p>	<p>Unit 2—Matter and Energy cont.</p>	<p>Syllabus Quiz on Tophat--<b>due Tu 2/12</b></p> <p>TopHat Unit 2--<b>Hwk due Fri 2/15</b></p> <p><b>WK #2—Unit Conversions</b></p> <p><b>(Wed 4:10pm section only)</b></p> <p><b>WK #3—Electron Configuration</b></p> <ul style="list-style-type: none"> <li>• <b>(Wed 5:10pm and Fri sections only)</b></li> </ul>
<p><b>Week 4</b> Tu 2/19 Th 2/21</p>	<p>Unit 4—Ionic and Molecular Compounds</p> <p><b>EXAM #1 TH 2/21</b> <b>(Units 1-3, subject to change)</b></p>	<p><b>Unit 3 Atoms and the Periodic Table (NOT COVERED IN CLASS)— assignments due Wed 2/20</b></p> <ul style="list-style-type: none"> <li>○ Unit 3 Tophat <b>PC and Hwk</b></li> <li>○ Unit 3 ONLINE LEARNING MODULE—<b>BB</b></li> </ul> <p><b>WK #3—Electron Configuration</b></p> <p><b>(Tu and Wed 4:10pm Recitations)</b> <b>Wed 5:10pm and Fri sections NO RECITATION</b></p>
<p><b>Week 5</b> Tu 2/26 Th 2/28</p>	<p>Unit 4—Ionic and Molecular Compounds cont.</p>	<p>TopHat Unit 4—<b>PC due Mon 2/25</b></p> <ul style="list-style-type: none"> <li>• <b>WK #4—Compounds and Lewis Structures</b></li> </ul>
<p><b>Week 6</b> Tu 3/5 Th 3/7</p>	<p>Unit 4—Ionic and Molecular Compounds cont.</p> <p>Unit 5— Solutions</p>	<p>TopHat Unit 4—<b>Hwk due Fri 3/6</b></p> <p><b>WK #5—Solutions and Concentrations</b></p>
<p><b>Week 7</b> Tu 3/12 Th 3/14</p>	<p>Unit 5— Solutions cont.</p>	<p>TopHat Unit 5—<b>PC due Mon 3/11</b></p> <p><b>WK #6—Classifying and Balancing Equations</b></p>
<p><b>Week 8</b> Tu 3/19 Th 3/21</p>	<p>Unit 5— Solutions cont.</p> <p>Unit 6— Classification of Chemical Reactions</p>	<p>TopHat Unit 5—<b>Hwk due Fri 3/22</b></p> <ul style="list-style-type: none"> <li>• <b>WK #7— Moles and Chemical Formulas</b></li> </ul>
<p><b>Week 9</b> Tu 3/26 Th 3/28</p>	<p>Unit 6— Classification of Chemical Reactions</p>	<p>TopHat Unit 6—<b>PC due Mon 3/25</b></p> <ul style="list-style-type: none"> <li>• <b>WK #8— Stoichiometry</b></li> </ul>
<p><b>Week 10</b> Tu 4/2 Th 4/4</p>	<p>Unit 6— Classification of Chemical Reactions cont.</p> <p><b>EXAM #2 TH 4/4</b></p>	<p>TopHat Unit 6—<b>Hwk due Wed 4/3</b></p> <p><b>WK #9—Energy</b></p>



	<b>(Units 4-6, subject to change)</b>	
<b>Week 11</b> Tu 4/9 Th 4/11	Unit 7— Energy and Reactions, Reaction Rates, and Equilibrium Solutions cont.	TopHat Unit 7—PC due Mon 4/8 • <b>WK #10— Equilibrium</b>
<b>Week 12</b> Tu 4/16 Th 4/18	Unit 7— Energy and Reactions, Reaction Rates, and Equilibrium Solutions cont.	TopHat Unit 7—Hwk due Sat 4/20 • <b>WK #11— Gas Laws</b>
<b>SPRING BREAK 4/19-4/28</b>		
<b>Week 13</b> Tu 4/30 Th 5/2	Unit 8—Acids and Bases	TopHat Unit 8—PC due Mon 4/29 • <b>WK #12— Intro to Acids and Bases</b>
<b>Week 14</b> Tu 5/7 Th 5/9	Unit 8—Acids and Bases cont.	TopHat Unit 8—Hwk due Sat 5/11 <b>WK #13—Acid and Base Calculations and Buffers</b> <b>WK #14—Nuclear Chemistry—submit for extra credit (on your own, no group needed)</b>
<b>Week 15</b> Tu 5/14 Last Day of Classes	<b>EXAM #3 Tu 5/14 (Units #7-9, subject to change)</b>	<b><u>Unit 9 Gas Laws (NOT COVERED IN CLASS)—assignments due Sun 5/13</u></b> Unit 9 Tophat—PC and Hwk • Unit 9 ONLINE LEARNING MODULE—BB <b><u>Unit 10 Nuclear Chemistry (EXTRA CREDIT)—assignments due Wed 5/15</u></b> • Unit 10 Tophat—PC and Hwk • Unit 10 ONLINE LEARNING MODULE—BB
Thursday 5/16/19	<b>Comprehensive FINAL EXAM Units #1-10 ACS National Exam 6:20pm-8:20pm 118-HN</b>	

**On your own assignments:** online learning modules containing videos for lecture content, PPT lectures, links to tutorial websites and practice problems on BB, and Tophat PC and Hwk to be completed at your leisure prior to the due dates:

**Unit 3 Atoms and the Periodic Table—Due Wed 2/20**

- BB Online learning module
- Tophat PC and Hwk

**Unit 9 Gas Laws—Due Sun 5/13**

- BB Online learning module
- Tophat PC and Hwk

**Extra Credit: Unit 10 Nuclear Chemistry—Due Wed 5/15**



- BB Online learning module
- Tophat PC and Hwk

### **Essentials of General Chemistry (CHEM100) Recitation (Workshop) Grading Policy**

Once a week in Essentials of General Chemistry you will attend a recitation. During recitation you will work in groups of 4 students to solve a set of problems called a workshop. Workshops are intended to help you learn to solve more difficult chemistry problems in a cooperative fashion. Solving problems as a group is a beneficial process for all. If you already know the material then explaining it to others will help to reinforce your knowledge, and if you are having difficulty with the material – being able to discuss it with your peers will help you learn.

Although the workshop material is not what is being covered in class at that time, all of the information needed to answer each assignment is contained within that assignment. Use your Tophat textbook and the internet as additional resources.

Every week you must print the required workshop from Blackboard and attend your recitation section to work on solving the problems with the other members in your group. When your group has completed the workshop assignment you will submit it to your TA for grading.  
Workshops

#### The grading of workshops will adhere strictly to the following guidelines:

- You are required to attend all 14 workshops in CHEM100. Only 12 workshops will be graded.
- Each workshop will be graded out of 10 points.
- Workshops must be solved in groups of 4 students.
- Only one submission per group is required for each workshop. This is a group grade.
  - No credit will be given to students who submit individual work; this portion of the course is conducted exclusively as a group session.
- No credit will be given to groups who fail to bring a copy of the workshop to class.
- First and last names of group members must be included on all workshop submissions. (No credit will be given to a group member whose name is not on the workshop cover sheet).
- Students must be present in recitation to receive credit for the workshop.
- Students who arrive more than 15 minutes late to their recitation section will not be permitted to submit a workshop for grading.
- Students must attend the section for which they are registered to receive recitation credit.
- Students may make up a maximum of one workshop in a section for which they are not registered. Prior approval (via email) is required from both the student's assigned course instructor and the instructor's whose recitation they wish to attend. If there is a holiday on a class during which you regularly have recitation this does not count as your one allowed make-up.

- Workshops will be due each week at the end of the class to be submitted to your recitation instructor ONLY. As an exception your instructor *may* allow digital workshop submission. In the case of digital submission, you must send a **PDF** copy of your workshop to your instructor via email no later than 5:00 PM on Sunday evenings. Further instructions will be provided by each instructor.
- Submissions via email must be in **PDF format no larger than 200MB**. Photographs will not be accepted for submission.
- Instructors may request hardcopies of digital workshop submissions at their discretion.
- Illegible assignments, digital or hardcopy, will receive a grade of zero. Please feel free to contact your recitation instructor if you have any other questions.

~Best of luck in the course!