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Lecture Class: MW 12:00, EH 103

Course website: [noblereaction.org/gc/202.htm](http://noblereaction.org/gc/202.htm)

Hint: Search for noblegenchem.

Note: The website is used; Blackboard is not used.

Welcome to Chem 202. This is the second semester of the mainstream, General Chemistry course for many students interested in science, engineering, preprofessional and other majors. This course also fulfills a General Education credit in Natural Sciences. Chem 202 covers topics such as the interactions within matter, phases, solutions, thermodynamics, kinetics, equilibrium processes, electrochemistry and nuclear chemistry.

The prerequisite for this course is successful completion of Chem 201. Students who do not meet the prerequisite need to withdraw. If a student is later found to be enrolled and did not meet the prerequisite, then they can be disenrolled. This can result in full or partial loss of tuition paid. Chem 202 builds on Chem 201; deficiencies in Chem 201 material should be remedied promptly. Chem 202 is a harder degree of difficulty than Chem 201.

The text for the course is *General Chemistry: It's Part of Your World, Part 2*, by Dr. Noble. The text is available for free viewing online on the course website. Students who prefer a paper copy of a text may purchase one; see the course website for pricing and availability. (There is no buy-back for the printed text since you're supposed to write in it. The printing and sales of the text do not profit any faculty member.) This text contains the vast majority of course content (although a Chapter 69 is absent and remains incomplete). Other content may be added in lecture for which students are also responsible.

This course consists of both the main lectures and the recitation sections. The main lectures are large group lectures given by the Senior Instructor, Dr. Noble. The regular course exams are given during the main lecture times. The recitation sections are small group classes and are intended to be more interactive; these are conducted by a Teaching Assistant (TA). This course does not include laboratory; the laboratory courses are totally separate.

The course grade is based on three regular exams (1/5 each) and a Final Exam (2/5), along with added points accrued from recitation. The Final Exam is comprehensive. Dates for all exams are announced in advance and must be taken during the scheduled times for this class. A missed exam (regular or Final) will count as zero and will be calculated into the course grade as such. There are some cases where a student will miss an exam for justifiable cause; for the regular exams, these will be handled depending on the nature of the miss as follows.

Students who miss a regular exam for justifiable cause, but not a cause which is sanctioned by the University, will receive an excused miss for the exam. These cases include illness, surgery, etc. Students should report the cause to Dr. Noble before the exam if possible; if not possible, then this must be reported promptly afterwards. A miss of a regular exam for justifiable cause will be excused, and the miss will simply drop from the course grade calculation. The contributions of the other components to the course grade are then scaled up proportionally.

Students who miss a regular exam and who invoke the University Excused Absence Policy (UEAP) can receive the excused miss as above or they can take a make-up exam. For the latter, the student must complete a registration assignment by registering their intentions with Dr. Noble between 7-10 days before the exam date. The student must provide their weekly course schedule, with times and course numbers indicated. This assignment is necessary for scheduling purposes; failure to complete this may default to the excused miss. The make-up exam can be held before the regular class exam or after. The make-up exam can be different from the regular class exam in any aspect of format. The make-up exam can be one given by another Chem 202 professor.

The above two provisions are for a miss of a regular exam for justifiable cause. Arrangements for a miss of the Final Exam for justifiable cause will be determined at the end of the semester. In all cases of missing a regular or Final Exam for justifiable cause, written evidence is required of the cause, such as a doctor's back-to-work/school statement which specifically states that a medical issue was involved. Written documentation

must be presented to Dr. Noble and the student must sign off on an excused miss agreement. Some excuses are not considered justifiable; examples include traffic, dead car battery, defective snooze alarm, etc. A routine appointment for a routine reason, medical or otherwise, is not considered justifiable cause if it can be conveniently scheduled at another time.

Dates for exams are on the Schedule. Changes can happen; these will be announced in lecture and/or posted on the website. In the event of bad weather or other cause, the University may cancel classes for a full day or for a partial day (Delayed Class Schedule). If all classes are fully closed on an exam date, then the exam will be held on the first lecture date thereafter. Variations are possible; be sure to check the course website (Miscellany Page). If only some classes are cancelled on an exam date, then the exam may yet be held on the original date or it may be postponed; these circumstances are more subject to variations which depend on the cause and length of the delay. Relevant announcements will be posted on the course website (Miscellany Page). Regardless of total or partial cancellation on an exam date, **STUDENTS SHOULD CHECK THE INFORMATION ON THE COURSE WEBSITE (MISCELLANY PAGE).**

The material for which the student is responsible includes **LECTURE MATERIAL (MOST IMPORTANT)** and the **ASSIGNED HOMEWORK**. While the text reflects the vast majority of lecture content, there may be additional material covered or assigned in lecture which can appear on exams.

Keys for exams will be posted on the web after each exam. Every effort is made to grade exams as soon as possible; this process is generally complete within 1 - 2 weekdays. Once exams are released, they are given to the TAs for return to the student. If there is reason to question a grade, then this must be reported to Dr. Noble within two weeks of the day when exams were first available for pickup by students.

Scaling of exam and recitation grades can sometimes occur, although it is not intended. Grades may be scaled up but they cannot be scaled down.

Percent scores correlate with the letter grades below. These are guaranteed minima. Plus/minus grades are not used. These letter grade ranges apply for exams and the overall course grade.

A  $\geq 87.5$       B 75.0 - 87.4      C 62.5 - 74.9      D 50.0 - 62.4      F  $\leq 49.9$

Routine lecture attendance has no direct contribution to grading. The absolute requirement for lecture attendance is for exams. Obviously, since lecture is the most important material, regular attendance and note-taking is important to success. Furthermore, be prepared for lecture by reading the text material and working through the fill-ins in advance. Although routine lecture attendance is not specifically required except for exam days, **STUDENTS ARE RESPONSIBLE** for content and announcements in lecture.

All end-of-chapter Problems in the text are assigned as homework, unless specifically excluded by lecture or website announcement. These Problems are assigned to improve learning and skills. Although they are assigned homework, they are not collected nor graded. Nevertheless, it remains the student's responsibility to do them and to master them. Mastering means that each student should be able to start each problem, work through each problem, and get the right answer to each problem in a reasonable period of time without looking anything up. Needless to say, this will not happen when doing many problems for the first time. This is normal. Problems which cannot be readily completed should be flagged, and the student should redo those problems at a later time. This process should be repeated until the problem is mastered. Although not collected nor graded, material from the assigned problems or from any other assigned homework will be included on the exams. Problems may appear on the exams directly or with a slight modification (e.g., a different mass or compound). **FAILURE TO MASTER HOMEWORK PROBLEMS ARE A SIGNIFICANT CONTRIBUTOR TO LOW EXAM SCORES.**

Bring a calculator to every exam and to every recitation meeting, and be certain it has a charge on it. Dead batteries can be fatal. Be certain you know how to use your calculator. A calculator capable of standard math functions and scientific notation (including common and natural logs and exponentials) is required for this course. There is one important restriction on additional features: any calculator which is capable of alphabetic memory is banned from use for any exam. "Alphabetic memory" is meant to be memory which can store all 26 alphabet letters. Note that the ban is on calculators which are capable of this feature. Therefore, all such calculators are banned from use during the exams, even though the memories have been erased. If a student is believed to be using a banned calculator during an exam, then 5-10 points will be deducted from their exam afterwards.

Phones and other communication devices must have audible signals turned off during lecture and exams. ("Audible" includes loud vibrator modes.) This is an obvious courtesy to surrounding students. Furthermore during exams, a NO-HEAR, NO-SEE policy will be in place for ALL electronic communication devices and memory devices (except allowed calculators as above). Thus, all such devices must be silenced and must be out of view. This includes headsets, earplugs, etc. (but not hearing aids), and extends to Apple Watches, etc. (Laptops may be in view on the floor but must be closed.) Infractions during an exam can lead to a loss of 5-10 points. Students with justifiable cause (e.g., job-related, etc.) who need to have any such device active must report this to Dr. Noble before the start of the exam. A specific seating location may be required.

Academic integrity is mandatory. Misconduct during exams can take a range of forms, even as simple as looking at another student's answers or work, progressing through cheat sheets (paper or electronic), all the way up to planned teamwork, just to name a few examples. All are subject to penalty, including loss of points or more serious academic penalties such as failure in the course or expulsion. Further description is given in Section 5 of the Code of Student Rights and Responsibilities in the Undergraduate Catalog.

Students may use laptops/tablets during lecture for purposes of this course. Extraneous use, however, is not welcome. Unfortunately, some students do not respect the rights of others. If the use of laptops/tablets in the classroom becomes too distracting for others in the class, then a ban can be imposed during lecture.

This course can be challenging; for many it will also be very difficult. The most important guidelines for success in the course are the following.

- Regular lecture attendance
- Reading the text and doing the fill-ins in advance of the lecture  
    READ the text, don't just skim it.
- Good lecture notes as needed to supplement the text
- Active participation in recitation
- Mastering all of the assigned homework in a timely fashion
- Utilizing the available assistance
- Committing the necessary amount of time

The last point is difficult to assess and many students underestimate the workload for all courses they are taking. The "necessary amount of time" is highly variable for different students and different courses. Non-academic activities can easily interfere with academic commitments. Non-academic commitments of 15-20 or more hours a week are likely to reduce academic performance and can lower a student's GPA. It is fully understood that many students need jobs, but try to schedule around exam-heavy periods if able.

There are multiple avenues of assistance available for this course. The first place for assistance is the recitation section and the TA: don't be afraid to ask questions. All TAs will post office hours for additional help; students may consult any of Dr. Noble's TAs during their scheduled office hours. TA office hours will be posted on the Setup page on the course website. Assistance is also provided by Supplemental Instruction (SI), offered through the REACH Program; the meeting times and locations for SI will be announced when available. Tutoring and other services may also be available through REACH; see [reach.louisville.edu](http://reach.louisville.edu) for more information.

Copies of old exams are posted on the course website. NOTE! The old exams are meant for evaluation and practice. They are not intended to be a major study tool. ALSO NOTE! The old exams do not necessarily reflect the full content of any given semester. There's not always time to include all content on an exam. Besides, content can change between different semesters.

**\* \* \* THESE MEANS OF ASSISTANCE ARE AVAILABLE! \* \* \***  
**USE THEM! YOU'RE PAYING FOR THEM!**

Another valuable help source is other students. Collaborate with others in the class. Share notes. Go over problems together. Remember that lecture material is number one and assigned homework is number two; collaborating helps both. Dr. Noble is also available for questions either in person or by email. Office hours are open: stop by some time or request a particular time. Additional information will be posted periodically on the Miscellany Page on the course website. Input from students may also be posted there if it is of general interest to the class.

\* \* \* ALL OF THESE ARE IMPORTANT SOURCES OF HELP! \* \* \*  
TRY THEM! FIND OUT WHAT WORKS BEST FOR YOU!

It is very easy to fall behind in this class, but it is also very dangerous. It is the student's responsibility to maintain pace, and to seek help when necessary.

Note: Email communication is not completely reliable. The UL system often fails. Also, spam filters are in place. Here are some suggestions. Put something obvious in the subject line, such as Chem 202 or GenChem. Do not put the word 'test' in the subject line and do not leave the subject line blank. If you do not get a response, send again or check with Dr. Noble personally. These measures are necessary but unfortunate. Also regarding email: do NOT include your ID number in your email unless specifically asked.

Changes to this Syllabus (which includes the attached Schedule) can be made as appropriate.

I am pleased to have you enrolled in this course. I hope you find it interesting, stimulating and useful.

---Dr. Noble

### Required Background Knowledge

Whether you took Chem 201 last Fall or at some other time, or if you took the first semester course at some other school, the material background for Chem 201 still applies. The following is some specific, required knowledge for the present Chem 202 course: you must know this information whether previously given or not. (This list is not comprehensive.)

Metric prefixes: G, M, k, c, m,  $\mu$ , n, p

Pressure conversions: atm = 760 Torr = 760 mmHg (exact)

Gas law:  $PV = nRT$

Thermodynamic standard conditions:  $P = \text{one atm}^*$

Concentration = one M\* (aqueous)

(\* There are technicalities to these, to be discussed in Chapter 46.)

Assume  $T$  is 25 °C unless otherwise specified.

Strong/weak acids/bases: (These apply until modified during the current semester.)

The following are strong acids: HCl(aq), HBr(aq), HI(aq), H<sub>2</sub>SO<sub>4</sub>, HNO<sub>3</sub>, HClO<sub>4</sub>. Assume any other acid is weak unless otherwise specified.

Soluble, ionic hydroxides and oxides are strong bases. (For practical purposes until later modified, know these as ionic hydroxides and oxides of Group 1 and of Group 2 except Be and Mg.) Ammonia is a weak base.

The following handouts from Chem 201 were used by all classes and still apply. These are available on the Chem 202 course website.

Periodic Table

Element Symbols to Know

Names and Formulas of Compounds

Names and Formulas of Acids

The following is commanded by the administration for inclusion in the syllabus:

#### Title IX/Clery Act Notification

Sexual misconduct (including sexual harassment, sexual assault, and any other nonconsensual behavior of a sexual nature) and sex discrimination violate University policies. Students experiencing such behavior may obtain **confidential** support from the PEACC Program (852-2663), Counseling Center (852-6585), and Campus Health Services (852-6479). To report sexual misconduct or sex discrimination, contact the Dean of Students (852-5787) or University of Louisville Police (852-6111). Disclosure to **University faculty or instructors** of sexual misconduct, domestic violence, dating violence, or sex discrimination occurring on campus, in a University-sponsored program, or involving a campus visitor or University student or employee (whether current or former) is **not confidential** under Title IX. Faculty and instructors must forward such reports, including names and circumstances, to the University's Title IX officer. For more information, see the Sexual Misconduct Resource Guide (<http://louisville.edu/hr/employeerelations/sexual-misconduct-brochure>).

Dr. Noble

Lecture Class: MW 12:00 - 1:15, EH 103

The following is the schedule for the semester, including Exam dates. The schedule of Lecture Content is an estimate and may easily vary. Any of this can change, depending on bad weather or a variety of other factors. If changes become necessary for Exam dates, then this will be announced in class and/or posted on the course web site.

Class	Date	Lecture Content
1	1-8 M	Ch. 34, 35
2	1-10 W	Ch. 35, 36
3	1-17 W	Ch. 37, 38
4	1-22 M	Ch. 38, 39
5	1-24 W	Ch. 39, 40
6	1-29 M	Ch. 40, 41, 42
7	1-31 W	Ch. 42, 43
8	2-5 M	Exam I
9	2-7 W	Ch. 44, 45
10	2-12 M	Ch. 45, 46
11	2-14 W	Ch. 47, 48
12	2-19 M	Ch. 48, 49
13	2-21 W	Ch. 50, 51
14	2-26 M	Ch. 51, 52
15	2-28 W	Exam II
16	3-5 M	Ch. 53, 54

17	3-7	W	Ch. 54, 55
18	3-19	M	Ch. 55, 56
19	3-21	W	Ch. 56, 57
20	3-26	M	Ch. 59, 60
21	3-28	W	Ch. 60, 61
22	4-2	M	Ch. 61, 62
23	4-4	W	Exam III
24	4-9	M	Ch. 62, 63
25	4-11	W	Ch. 64, 65
26	4-16	M	Ch. 65, 66
27	4-18	W	Ch. 66, 67
28	4-23	M	Ch. 67, 68
	4-28	Sat	FINAL EXAM 8:00 - 10:30 am (Combined Sections time slot)

**NOTE!** This is a Combined Sections Final Exam with other Chem 202 lecture groups. The room for the Final Exam will likely be different from the lecture room. This will be announced near the end of the semester.