

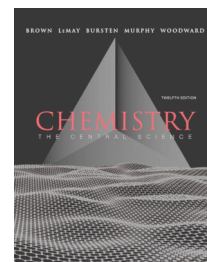
# GENERAL CHEMISTRY B (102)

**Instructor:** Willetta Greene-Johnson, Ph. D., Room 307 Cudahy Science 773-508-3537

**Who am I:** A chemical physicist trained in statistical mechanics. I'm interested in (1) thermodynamics (2) Swarming (3) Motor molecules (4) producer, pianist, composer, orchestrator, sequencer, and conductor. My vocal ensemble also has recorded three compact discs—hopefully can do an EP later this year. One of my songs was doubly tracked on a Grammy award winning vocal CD in 2004. The same song was recorded on DVD (released April 2008). Actually that song's been recorded by 5 different artists. I'm also getting more orchestral arrangement contracts—just conducted a psalm with the Chicago Sinfonietta and chorus (Jan/2012). Orchestras rock!

Physical Office Hours: **Wednesday 10:25 A – 11:25 A**

Email Office Hours (ONLY): **Thursday 10:00 A – 11:00 A** [wgreene@luc.edu](mailto:wgreene@luc.edu)



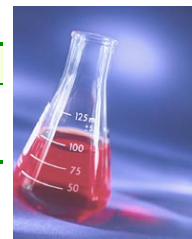
Required:

1. Chemistry, the Central Science. 12<sup>th</sup> ed. Theodore L. Brown, *et. al.* Boston: Pearson Prentice Hall: 2011 ISBN: 978-0-321-69672-4. The *Mastering Chemistry* asset is NOT required in my section
2. **Chemistry 102 Course Packet**, authored by the instructor. This essential lecture packet is available online [www.universityreaders.com](http://www.universityreaders.com). The course packet will be mailed to you within a few days of ordering, but you'll have immediate online access to the 30% or so once order is completed.

Meetings: **Lectures are scheduled MWF in FH-133, at 12:35 P –1:25 P. You must also be registered in discussion section 011 or 012.**

Discussions: **meet on Thursdays according to the following schedule:**

Section	Instructor	Location	Time
011	Dr. Greene-Johnson	DH-118	Th: 11:30 A –12:20 P
012	Dr. Greene-Johnson	FH-105	Th: 2:30 P – 3:20 P



**Due to the large number of students / focus sections that are matriculated through this course yearly,**

*there can be absolutely no alteration of this schedule.*

**Course Description:** A study of chemical principles with emphasis on the development of a scientific attitude and an understanding of the fundamental concepts of chemistry. Robust pre-calculus concepts will be particularly emphasized the first third of the semester.




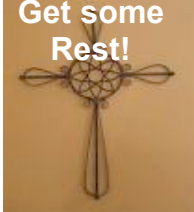
**Calculators:** Any scientific calculator is sufficient, however calculators cannot be shared while exams are in progress and their cases/covers must be removed. Be sure that you are familiar with **your calculator** and that its batteries are **in good condition**, especially on exam days. The student is responsible for remembering to bring his calculator on an exam day.

**Blackboard Connection:** The syllabus, homework assignments for the semester, discussions, and solutions to discussions will be posted for the semester at the following website: [blackboard@luc.edu](mailto:blackboard@luc.edu), **under coursework**. Solutions to assigned textbook problems have been placed on 2-hour reserve at the Cudahy Library.

## Chemistry 102 Tentative Schedule of Topics

Date	Day	Topic	Chapter	Pages
1/18	W	Rate of Reactions	14	556-568
1/20	F	Integrated Rate Law	14	569-575
1/23	M	Arrhenius Equation	14	575-580
1/25	W	Rxn mechanisms; Rate limiting step	14	581-588 Th = 1 <sup>st</sup> discussion
1/27	F	catalysis	14	589-595
1/30	M	Gas phase Equil'm	15	610-618
2/1 FEB.	W	Const. K; Equil. Table	15	619-631
2/3	F	van't Hoff equation Le Chateliér's Principle	15	631-641
2/6	M	Acid/Base (= A/B)	16	650-665
2/8	W	Extent of Reaction, $K_a$	16	666-673
2/10	F	Categories/Conjugate	16	674-680
2/13	M	Salt solutions $\leftrightarrow$ A/B	16	681-694
2/15	W	Review Ch. 14-16		OPTIONAL-no handout, attend!
2/17	F	Exam 1: Ch.14-16	IN CLASS	Seating: SKIP Every 3 <sup>rd</sup> row!
2/20	M	Buffers	17	702-710
2/22	W	Titrations SA/SB;SA/WB;SB/WA	17	711-722
2/24	F	$K_{sp}$ and ppt equil'm	17	722-725
2/27	M	Common Ion Effect	17	726-733
2/29	W	Complex Ions (Lewis Acid/Base)	23 17	968-982 689-691
3/ 2 MAR	F	Crystal Field Theory	23	987-992
3/5-3/9	M-F	SPRING BREAK	SPRING	BREAK
3/12	M	Spont. And Temp.	19	786-793, 797-803
3/14	W	Review 16, 17,23		Optional no handout
3/16	F	EXAM 2: Ch.16, 17, some 23 and beginning of 20	IN CLASS	Seating: SKIP Every 3 <sup>rd</sup> row!
3/19	M	Gibb's Energy and 2 <sup>nd</sup> Law: $\Delta G$ vs. temp	19	803-810

Date	Day	Topic	Chapter	Pages
3/21	W	$\Delta G$ and Equilibrium	19	811-813
3/23	F	Additivity of entropy in Rxns; Redox Review	19 20	814-815 828-829

3/26	M	Electrochemistry Galvanic Cell $E^\circ$ ,	20	827-865
<b>MAR. 26 LAST DAY TO WITHDRAW WITH A GRADE OF W</b>				
3/28	W	$E_{red}^\circ$ , $E_{ox}^\circ$ , Spontaneity	20	835-845
3/30	F	Work and $\Delta G$	20	845-847
4/ 2 <b>APRIL</b>	M	Graphical Technique	20	In class only
4/ 4	W	Nernst equation	20	849-854
<b>4/5-4/9</b> 	Th-M 	<b>EASTER BREAK</b> 		
4/11	W	$E^\circ$ and equil'm const. Batteries, Fuel cells Electrolysis; Corrosion	20	847-848 854-860 860-863
4/13	F	<b>REVIEW 19-20</b>		Optional no handout
<b>4/16</b>	<b>M</b>	<b>Exam 3: Ch. 19-20</b>	<b>IN CLASS</b>	<b>Seating: SKIP Every 3<sup>rd</sup> row</b>
4/18	W	Technology Trends More examples	20	See Tech. section in lecture notes
4/20	F	Nuclear Reactions Nuclear Stability	21	875-883
4/23	W	Transmutation Kinetics, Geol. Dating	21	884-446 887-892
4/25	W	Einstein: mass/energy Fission/fusion	21	894-896 896-900
4/27	F	Tech Trends or TBA	21	901-906
<b>5/2 MAY</b>	<b>W</b>	<b>REVIEW for FINAL</b> Check emails regularly	<b>10:15-11:30 A</b>	<b>FH-133</b> Probably
<b>5/4</b>	<b>F</b>	<b>FINAL EXAM:</b> <b>Ch. 14-17,19-21</b>	<b>9:00-11:00 A</b>	<b>TBA</b> <b>(FH-133 prob)</b>

### Representative Problems, End of Chapter Problems & Discussions:

**Students who are making good progress in the course should be able to solve, independently, most or all of the end-of-chapter problems in the text.** You should attempt to work out as many example problems and end-of-chapter problems as possible before taking exams. A group of representative problems is listed below as assigned problems. The solution manual with the worked out problems will be kept on reserve in

Cudahy Library. A comprehensive review containing additional problems will be posted approximately one week before the midterm exams, which also serves for the final exam.

Discussions count 10% of grade, and should be attended. Discussion problems will be given to be attempted by groups of 3-4 students within the 50-minute discussion. Students must stay the entire period (unless otherwise instructed) and work on assigned discussion problem(s) to earn up to 10% of grade. The solutions will be posted on blackboard, discussions will be returned by the following discussion, or during the same week if a Friday exam occurs in that week.. The student is strongly encouraged to attempt all suggested problems (text-book and discussion) and contribute significantly to the group discussion activity. Student's extent of participation will be noted.

### Assigned Exercises:

chapter	page	Problems (*means more involved; ** means unassigned reading may be required)
14	597:	3, 5, 6, 9, 11, 15, 21 a and c, 23, 27, 29, 33, 37, 38*, 41, 43, 47, 57a., 61, 63, 73, 75, 85, 99
15	642:	2, 7, 11, 15, 17, 19, 23, 25, 27, 33, 35, 37, 39, 45, 51, 55, 57, 63, 65 & 67. For your information % ionization = $\frac{x}{x_0} \times 100\%$ where $x_0$ = starting amount, unit usually is M]
16	694:	1, 3, 5, 15, 19, 25, 27, 31, 39 (has two separate questions in it, answer both), 53, 55, 59, 61, 67, 73, 75, 79, 83, 101, 107, 7*, 9* (FYI: $[H_3O^+] \equiv [H^+]$ , Appendix D = pg. 1062)
17	740:	4, 6, 10, 19, 21, 23, 27, 29, 35, 37, 41, 43 abdf, 51 (missing unit "gram"), 55, 59a, 67b, 71, 83, 92, <b>extra:</b> 11** note: $K_a$ , $K_b$ and $K_{sp}$ involved in some problems concurrently.
19	784:	4, 5, 6, 9, 11, 13, 23, 25, 41, 49 a,c,d, 53, 57, 59, 63 (alternatively: can you predict sign of $\Delta S_{rxn}$ ( $\pm$ ) without recourse to entropy tables?), 66, 69, 71, 98, 104; <b>extra:</b> 94, 106**
20	867:	2, 4, 7, 12, 13, 15, 17, 27, 33, 35 a-c, 37, 39, 43, 51, 53 ( should be $E_{rxn}^\ominus$ , not $E_{red}^\ominus$ ) 65, 77a-c, 89, 91, 102, 110, 118 <b>extra:</b> 69** (no extra reading, but extra thought)
21	909	1, 7, 9, 11, 15, 19, 21, 25, 27, 33, 35, 39, 41, 43, 45 (1 <sup>st</sup> question), 59 <b>extra:</b> 82, 83
23	997:	25, 29, 33, 37, 38, 43, 45, 47, 53, 55, 73 <b>extra nerdy:</b> 10, 79, 80

### Academic Honesty:

All students are expected to exercise the highest level of academic honesty while taking exams. Each is expected to take time to read the University policy on academic honesty located at

[http://www.luc.edu/academics/catalog/undergrad/reg\\_academicintegrity.shtml](http://www.luc.edu/academics/catalog/undergrad/reg_academicintegrity.shtml).

### Grading Scheme:

There are two grading schemes, and whichever one yields the higher grade will be employed after the final has been taken:

If all midterms went fairly well: 20 % midterm, 10% discussion, 30% final

If one midterm not so good: 20% the other two, 10% discussion, 50% final

**Grading Scale:** As recommended by the Dean's Office

<b>Grade Scale:</b>	<b>A</b>	<b>≥ 90</b>	<b>A-</b>	<b>87-89</b>	
<b>B+</b>	<b>84-86</b>	<b>B</b>	<b>80-83</b>	<b>B-</b>	<b>77-79</b>
<b>C+</b>	<b>74-76</b>	<b>C</b>	<b>70-73</b>	<b>C-</b>	<b>67-69</b>
<b>D+</b>	<b>64-66</b>	<b>D</b>	<b>60-63</b>	<b>D-</b>	<b>57-59</b>
<b>F</b>	<b>&lt; 60</b>				

Please note that **the final examination must be taken**. Failure to take the final exam will result in the grade "F". If a student has missed the final for some valid reason, she/he must present her/his appropriate Dean's office with reasonable proof of illness or accident, verified by a doctor's note, police report, etc., in order to take the make-up final on a single date designated by the Dean's office. There is also a fee. ***There is no guarantee that any coverage indicated for the regular final will apply to the content of the makeup final.*** Failure to follow through on this situation will result in the student automatically receiving an "F" in the course.

**Examinations**

Three hour exams and the final exam will be given on **Feb.17, Mar.16, April 16, and May 4**, respectively, also noted in the schedule, 90% of your course grade will be determined from these as explained further below. The other 10% will be determined from your discussion grades. The exams are cumulative, *i. e.*, may include material that has been queried on previous exams. The final exam is cumulative.

**Laboratory**

Chemistry 112, the general chemistry laboratory course, should be taken concurrently with the lecture course in general chemistry. The lecture and the laboratory courses are graded independently. Students should first consult the Chemistry Department Bulletin opposite the wall facing the chemistry office for information. Then, if they still have unresolved issues, they should contact Dr. Angela Boerger, the administrator of the laboratories.

## Flanner Hall-133 Room Instructions on Exam Days

- 1) When you enter the auditorium, **go to the front** and **place** your **book bag** there. **Remove** your **calculator slipcover** and placed it in book bag.
- 2) Starting from the first row nearest the lectern, **sit quickly** in every other seat and **skip every third row**. This vacant third row provides an aisle for the proctor to walk through and address any appropriate questions that student may have during exam. Do not try to sit with friends or near one's usual area. The exam is only **50 minutes**, so excessive delays will cut into exam-taking times.
- 3) **Place your student ID conspicuously** on your desk so that attendance may be noted (during exam).
- 4) Have **several pencils/pens, eraser, etc.** and a **calculator** in good **working** order.
- 5) Proctors have been instructed to **confiscate the exams** of any **student** using a calculator with its slipcover in place or **whose actions are suspect**.
- 6) **Read over the entire exam**. You may find a problem in the middle, or at the end, that suits you better to start. The three or so minutes spent glancing over the entire exam will be more than compensated for by the strategy and priorities that you formulate. The recommended **order to do problems** is:
  - (1) what you **know well** **FIRST**
  - (2) what you're sure you **can at least start** **NEXT**
  - (3) what you **haven't have a clue** **LAST**

I have tried to arrange problems in a reasonable order, but my perception and the student's will certainly differ in some aspects. So, take a few minutes to read over the exam and **devise your own strategy**.
- 7) When you have **concluded**, **turn in your exam** to a proctor. Then **leave** as **quietly** and as expeditiously as possible as to not disturb other exam takers.
- 8) Normally exams administered on Friday will be returned no later than the following Wednesday.

## Advanced Studies Recommendation Protocol

Later in your student career, you may require recommendations for graduate school, medical school, or the like. In my case, the following policy is invoked:

1. Student must generally possess GPA of 3.4 or above. However, if my time allows, a student might be considered if she or he presents a **written explanation** that reveals an exceptional circumstance accounting for a lower grade point average.
2. Student must provide a Microsoft Word-formatted document listing his/her official transcript GPA, contact information, deadline(s), and also all chemistry, biology and physics courses and labs that the student has take—in the following format:
  - a. GPA
  - b. reliable, current email and telephone # that student checks *regularly*
  - c. **DEADLINE**
  - d. Table with header: course taken, instructor, grade

### Example:

Course	Semester / year	Instructor	Grade
Chemistry 102	Spring/12	Dr. WGJ	B+
Biology 151	Fall/11	Dr. Barbara Haas	A

- e. If applying “outside the Committee”—see items 4, 5 below, a list of all schools of the applicant and **ALL of their DEADLINES**.
  - f. All cover forms, application packages, envelopes in one binder, folder, or otherwise secure containment, with like items paper-clipped together.
3. If I can do a recommendation for you, I’d love to read your personal statements, even in rough draft form. It tells me something about you and helps me to shape a recommendation. This article is not required, but I recommend it.
4. **It is STRONGLY recommended that the student applies through the Loyola Pre-Health Advisory Committee.** The Committee is well regarded by the medical/dental/pharmaceutical community, and its voice of endorsement will be a plus in student’s application process. Also, eventually the student’s personal statement, etc. must be strong, and well written. If the student applies via Committee, s(he) should provide a cover sheet obtained from the Office of Pre-health on the 2<sup>nd</sup> floor of Damen Hall.
5. If the student who I can recommend elects to apply outside of committee (apart from the Pre-Health Advisory committee), then she/he must email me at [wgreene@luc.edu](mailto:wgreene@luc.edu) (and at least one other e-address). I will send student a doc file attachment. The student must open this file and type in each school or college address, **creating as many documents as the number of schools to which he/she intends to apply.** The student then must attach those documents and email all the attachments, in one email, to me.

## LOYOLA UNIVERSITY CHICAGO SPRING CALENDAR 2012

January 15 (midnight)	Monday	Open registration ends
January 16	Monday	<b>Martin Luther King, Jr., Holiday: No classes</b>
January 17	Tuesday	Spring Semester 2012 begins Late and Change Registration begins Late registration fees apply
January 23	Monday	Late and change registration ends Last day to withdraw without a "W" grade
January 29	Sunday	Last day to drop class(es) with a Bursar credit of 100%
January 30	Monday	Last day to convert from credit to audit or vice versa
February 12	Sunday	Last day to drop class(es) with a Bursar credit of 50%
February 13	Monday	Summer 2011 Registration begins
February 15	Wednesday	Ash Wednesday: Classes meet; Special services
February 19	Sunday	Last day to drop class(es) with a Bursar credit of 20% (zero credit thereafter)
February 27	Monday	Last day for students to submit assignments to change an "I" grade to a letter grade for Fall Semester 2008; Faculty may set earlier deadlines with students
February 29	Wednesday	Early Alert process begins (middle of 7 <sup>th</sup> week)
March 4	Sunday	Last day to file applications for degrees awarded in December 2011 (Deans' offices)
March 5 - 10	Monday-Saturday	Spring Break: No classes
March 12	Monday	Classes resume after Spring Break
March 26 (midnight)	Monday	Last day to withdraw with a grade of "W" After this date, the penalty grade of "WF" will be assigned
April 5 - 9	Th(4:15) - M(4:15)	Easter Holiday
April 16	Monday	Fall Semester 2011 Registration begins
April 27	Friday	Spring Semester classes end
May 2	Wednesday	Study Day: No classes
April 30 – May 10	Monday-Saturday Mon., Tues.	<b>102 Chemistry Final convenes May 4 2012 (Friday) from 9:00 A to 11:00 A</b>

**University Bookstore** (Lake Shore) Phone: 773-508-7350 6435 N. Sheridan Road

**Manager:** Dionne Damico **Email Address:** [luc-lsc@bkstr.com](mailto:luc-lsc@bkstr.com)