

# Chemistry 100

## Introduction to General Chemistry

### Fall 2018

**Instructor:** Dr Manal Swairjo

**Lab Coordinator:** Kathy McNamara-Schroeder  
CSL 313  
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**Course time and location:** 9:00 to 9:50 a.m., MWF, ENS 280

**Lab rooms:** CSL 522, 524, 525, 528

**Dr Swairjo's Office hours (CSL340):** M 11 am -2 pm, W, 11 am-12 pm, also by appt.

**Textbook (required):**

Immediate Access-. Two of the required course materials for this class, Blei and Odian: Intro to General Chemistry 2<sup>nd</sup> edition, ISBN 9780738080710 and Denniston: Connect Access Code for General Organic and Biochemistry ISBN 9781259147500 are provided in a 365 day subscription digital format by the first day of classes and are free through Sept. 10th at 11:59PM. After Sept 10th, your SDSU student account will be charged a special reduced price of \$78.00 for access to the content (**see BB instructions for access**) for the remainder of the fall semester unless you opt-out of the content by 11:59 PM on Sept 10th. To opt out visit: [www.shopaztecs.com/optout](http://www.shopaztecs.com/optout) . If you opt-out and wish to opt back in, you may log in to this website and change your status. Students can change their status as many times as desired until the deadline of 11:59pm on Sept 10<sup>th</sup> . For more information visit: [www.shopaztecs.com/immediateaccess](http://www.shopaztecs.com/immediateaccess) for additional information about Immediate Access pricing, digital subscription duration, print add-ons, opting out and other frequently asked questions. If you still have questions, please send an email to [optout@aztecmail.com](mailto:optout@aztecmail.com).

If you are retaking this course from last semester please contact McGraw-Hill customer service at 1-800-331-5094 to check if your account is still active. If you still have an active account, you will want to opt-out. (if you took the class before last semester you will need to repurchase, do not opt out)

Additionally, after the opt-out period ends and if you remain in the program, a reduced price print add-on will be available for \$25.50 at the SDSU Bookstore if you prefer print. For those opting out, you will need to procure digital and/or print materials at regular pricing through the bookstore or elsewhere.

Can be substituted with used copies of ISBN 978-0716770732 or ISBN 978-0716743750 (first ten chapters only).

**Lab manual (required):** Chem 100 Lab Manual, Chemistry Dept. Printed by Hayden MacNeil, Fall 2018

**Study aides (optional):** Study Guide for General, Organic, and Biochemistry, Second Edition (2006) M.L. Gillette & W. Gloffke

**Blackboard web site:** <http://blackboard.sdsu.edu>  
1) Combined sections: This syllabus and other handouts  
2) Lab sections: Grades, announcements from your TA

**Crashers' web site:** <http://www.chemistry.sdsu.edu/courses/CHEM100/>

**Additional required items:** Non-programmable calculator (e.g., TI-30Xa or Casio fx-300ms plus)  
Matches or butane lighter for some lab exercises  
Safety Glasses and apron (available at the Bookstore)  
Gloves for some labs- molar volume of gas and titration experiments- strong acid or base will be used (available at drugstores such as CVS and Walgreens)

**The course:**

*Prerequisites*-A working ability with high school level algebra.

*Attendance*-Students are expected to attend all lectures only during your registered time.

*Course enrollment*-You must be enrolled in one laboratory section as well as lecture. If you do not attend the lab section in which you are enrolled, your spot will be given to another student and you will be dropped from the course.

*Expected learning outcomes*-Chemistry 100 is an introduction to general chemistry. By the end of this course a successful student will be able to:

- i) execute basic chemistry calculations such as unit conversions and stoichiometry;
- ii) explain the basic principles of atomic theory and chemical bonding;
- iii) quantitatively and qualitatively describe physical and chemical properties of matter;
- iv) illustrate the concept of dynamic equilibrium with acid-base chemistry;
- v) safely and confidently conduct protocols in a laboratory environment.

**In order to be successful in this course, you will need to spend a considerable amount of time (estimated at approximately 12 hours per week) outside of class on reading, studying, and homework. Each chapter should be read prior to initial discussion in lecture. Rereading the text after lecture will help in understanding the material and reinforcing lecture topics. Homework problems are best completed as they are being presented and discussed in lecture. Do not put off study and homework assignments until the night before the exam or you will fail. Attendance at labs is a must, unless you are seriously ill.**

**Help Room**-I highly recommend that you take advantage of the Chem 100 Help Room to ask questions that arise during your studies to your instructor or the teaching assistants. Any student may attend any of the Help Room hours of any teaching assistant (TA) and you may attend as many as you like. The weekly schedule for TA and instructor hours is posted on the door outside the Help Room (GMCS 203). It is also available for download on the Combined sections Blackboard site. Again, I urge you to take advantage of these free tutorials, discussions of lecture/lab material, and homework help.

**Statement on Cheating and Plagiarism:** Academic honesty – **DO NOT cheat!** If you cheat you will receive an F for the course and possibly be expelled from SDSU. Cheating is the actual or attempted practice of fraudulent or deceptive acts for the purpose of improving one's grade or obtaining course credit; such acts also include assisting another student to do so. Typically, such acts occur in relation to examinations. However, it is the intent of this definition that the term 'cheating' not be limited to examination situations only, but that it include any and all actions by a student that are intended to gain an unearned academic advantage by fraudulent or deceptive means. Plagiarism is a specific form of cheating which consists of the misuse of the published and/or unpublished works of others by misrepresenting the material (i.e., their intellectual property) so used as one's own work. The penalty for cheating and plagiarism is an F for the course and possible expulsion from the University. For more information on the University's policy regarding cheating and plagiarism, refer to the Schedule of Courses ('Legal Notices on Cheating and Plagiarism') or the University Catalog ('Policies and Regulations'). You will need to learn the material in this course and, more importantly, develop the problem solving skills required of this course to be prepared for upper division coursework and eventually a career.

### **Supplemental Instruction**

Supplemental Instruction (SI) study sessions are offered for this course. SI Sessions occur every day, 13 times each week, throughout the entire semester. Supplemental Instruction Sessions are peer-led, voluntary, and faculty do not know who attends and who does not participate. SI is for everyone, and open to all students enrolled in this class; not just those students who are struggling. The sessions provide group study opportunities to assist students in traditionally difficult courses. To get the most out of SI, attend early and often during the semester. Sessions are facilitated by an SI Leader who has already received an A or B+ in the class, and has been trained to lead group sessions where students can improve their understanding of course material, review and discuss important concepts, develop study strategies and prepare for exams. Students who begin

attending SI sessions early in the semester typically earn higher final course and exam grades than students who do not participate in SI. Please bring your lecture notes, books, and questions with you to the SI sessions.

An announcement will be made on how to find SI sessions.

**Exams and grading**-There will be three mid-term exams and one final exam given in class. The final is comprehensive and will be given on **Monday Dec 17, 2018 from 8:00 to 10:00 am.** in ENS 280. Six quizzes will be given in lab. It is your responsibility to take exams and quizzes during their scheduled times. Please look carefully at the schedule and arrange your other activities now so as not to conflict with exams/quizzes. Share this schedule with friends and family members. Take good care of your health so that you are not sick on exam days.

Exam 1	150 points	Chapter 1,2,3
Exam 2	150 points	Chapter 4,5,6
Exam 3	150 points	Chapter 7,8,9
Final	200 points	Chapter 1-10
Quizzes	50 points	10 points/quiz (lowest dropped)
Lab	180 points	15 points/lab (lowest dropped)
Participation points (lab)	10 points	Assigned by TA
Homework	<u>50 points</u>	
	<b>940 points total</b>	

The following grades are guaranteed for the percentages shown. It is possible that the percentages may be lowered, but they will not be raised for a given letter grade. The low end of each range is a minus, the upper end is a plus.

A	90%
B	80%
C	70%
D	60%
F	below 60%

**Dropping the course**-It is your responsibility to follow university policies regarding Cr/NC, drops, withdrawals, and incompletes. Your last opportunity to withdraw from the course without a grade appearing on your report card is Sept 10th at 11:59 p.m.

*Students with disabilities*-At San Diego State we have an excellent Student Disability Services office ([http://go.sdsu.edu/student\\_affairs/sds](http://go.sdsu.edu/student_affairs/sds)). If you are a student with a disability and believe you need special accommodations for this class, it is your responsibility to contact Student Disability Services at (619) 594-6473 for an appointment. Do this as soon as possible to avoid any delay in the receipt of your accommodations. Please note that testing accommodations on the basis of disability are not retroactive and cannot be provided by the instructor without the student first obtaining an accommodation letter from Student Disability Services. Please make an appointment with Kathy to have SDS forms signed. Please also be aware that SDS has deadlines for submitting forms, if you do not meet their deadlines, no further accommodation will be offered.

**Religious observances**-Please notify me within the first two weeks of class of any planned absences from exams, quizzes, or labs due to religious observances so that we can arrange some reasonable accommodation.

**Changes to the syllabus**-This syllabus and schedule are subject to change in the event of extenuating circumstances. I will do my best to make these clear with announcements in class and on the Blackboard website. Please pay attention to announcements made in class and lab. It is your responsibility to check on announcements made in your absence.

**Lab**-Chemistry is an experimental science. As such, its principles are best illustrated in the laboratory setting. As a student in this course, you will have the opportunity to learn many basic principles of chemistry in a modern, well-equipped laboratory environment. Learn the name of your laboratory teaching assistant (TA) and your lab section number. You will need to include this information on your lab assignments and exams.

**All persons present in a chemistry laboratory must wear approved eye protection, flame resistant (blue) lab coat or apron, pants or skirts that end below mid-calf, and closed-toe shoes. Long hair must be confined securely. The eye protection must be worn by everybody whenever anyone in the room is working with chemicals. Anyone not in compliance will be asked to leave and will not be allowed to return until properly attired.**

Lab work for Chem 100 must be performed in CSL 522/524/525/528 during the lab hours for which the student is registered. Because of logistical constraints, you will not be allowed to make up missed lab experiments; however, your lowest lab report and quiz scores *will be dropped* when determining your course grade. Use these free passes wisely.

Remember, **whenever any chemicals are in use anywhere in the room, everyone must wear appropriate clothing, safety glasses, flame resistant blue lab coat or apron, and closed toed shoes.** If you have forgotten your safety glasses then you must either borrow a pair from a friend, buy new ones at the bookstore, or go home and take a zero on that lab. Any week that contains the word "Experiment" on the lab schedule indicates safety glasses, apron/lab coat and shoes will be required that day. Store a pair of shoes in your locker if you think you will forget to wear proper shoes. Lab reports are due at the end of the lab period. **Late reports will receive no credit.** No credit will be given for a lab report if the work was not actually done by that student.

The lab report consists of the data pages and questions in the lab manual. Where computations are involved, numerical set-ups must be shown. The final answer must include units and the correct number of significant figures. Reports must be legible.

You and a partner will be checking into a locker and you will be responsible for the equipment in it. At the end of the semester or if you drop the class you need to check out of your locker. If you fail to check out by the scheduled date, there will be a fee of \$20.

There are 10 participation points available. These will be assigned at the discretion of the lab TA at the end of the semester. Arriving on time and prepared for laboratory will insure that you receive these points.

**Online homework**-The purpose of online homework is to allow students the opportunity to work at their own rates on problems that illustrate principles on which they will be tested during exams. Immediate help in the form of guided solutions, practice, and question help is available to students when doing problems. Multiple attempts are allowed for each problem, but if you cannot solve the problem after more than a couple of tries then please bring it to the help room in GMCS 203 for TA help.

The homework grade will be determined by the number of problems completed correctly online through the McGraw-Hill Connect Chemistry module. The ten online assignments correspond to the ten chapters covered in the textbook. Due dates for each of the assignments will be announced on the Blackboard combined section as each is assigned. Approximately 600 total problems will be assigned during the semester, and these ~600 points will be scaled down to a total of 50 possible points that will be used in determining each student's final homework grade.

Each student must purchase their own Connect Chemistry access code from the SDSU bookstore. A video tutorial on how to enroll for and use the online homework platform is posted to the Blackboard Combined sections website.

**Additional practice problems**-One of the most common requests by students is more practice problems. The following problems from the "Exercises" section at the back of each chapter in your textbook are recommended to help with your mastery of the material prior to exams. It is recommended that you work on these in groups, identify concepts that are giving you trouble, and then bring your questions with you to office hours. Answer keys for practice problems from each chapter will be posted to the Combined sections Blackboard site periodically.

**Ch. Additional practice problems**

1. 1-14, 18-24, 26, 29, 31,33, 36, 38, 47-48, 54-56, 58, 60, 68
2. 1-4, 9-10, 12-15, 17, 19-28, 33-42, 52-58
3. 5-12, 15, 18, 19, 23-36, 42, 44, 46, 55, 57
4. 1, 4-19, 22, 25, 27, 31-35, 40-42, 47
5. 2, 8, 12-18, 21, 22, 25-30, 34, 36-38, 48, 49
6. 1-2, 6-7, 11-12, 15-17, 20-24, 33, 35, 37, 39-43, 45-46, 48, 52-54, 59
7. 2-4, 6, 10, 14-27, 29, 31, 34-36, 38, 49, 51-52, 55, 59-61
8. 1-5, 9-11, 14-20, 23, 26-28, 31, 33

9. 1-6, 8, 11-13, 15-21, 27, 28, 35, 36, 45, 51-54, 68, 72
10. 1-8, 15, 17, 18, 43, 44, 49, 50

### **10 steps to Chem 100 success**

1. Read the relevant chapter in the book **BEFORE** coming to the lecture that covers that chapter. The material may not be clear at that time, but you will have an idea of where the material is headed and that will help you understand concepts.
2. Attend every lecture, take notes, and try to solve problems as they are presented. This means you must bring a calculator to every class. Do not write down the material and think "I will do it at home", there is no substitute for trying it at that moment, figuring out what you have problems with, and **ASKING A QUESTION!** (All questions are excellent, the only dumb questions are the ones that stay in your mouth.)
3. Read the book again.
4. As soon as lecture is over, try relevant HW problems. Get help as needed. Well before exam, try all HW, even ones not assigned for credit like the ones suggested at the end of each chapter, - the answers to all are posted so you can check.
5. Do all the worksheets. Not a "few", do not just "try" them, DO them, and get help as needed.
6. Read the book again (and again).
7. Do the practice exams- pretend they are real, as you have a short amount of time to finish (just 50 minutes). No notes, no help. Do the practice exams as soon as you can- this allows you to ask about where you are having trouble.
8. Do **NOT** allow yourself to fall behind. If you think "I will catch up later" you are lying to yourself.
9. Review everything that you have done - HW, worksheets, problems during lecture, lab worksheets, and the textbook. We draw exam questions from multiple sources.
10. After each exam or quiz, look at the answer key (available from TA's) and figure out why you missed each problem. This will help you learn what to focus on for next exam.

(schedule on next pages)

Please note- you should attend your own lecture time, and MUST attend only your own exam time.

Date	Lecture Schedule	Weekly Lab Schedule
Aug. Mon. 27 Wed. 29 Fri. 31	Introduction, Chapter 1 Chapter 1 Chapter 1	Introduction, Lab tour, Sig. Fig. and Scientific Notation worksheet (M-F)
Sept. Mon. 3 Wed. 5 Fri. 7	Holiday (campus closed) Chapter 1 Chapter 2	Check-in (Tue.-Fri.), Experiment-Mass and density (Tue.-Fri.)
Sept. Mon. 10 Wed. 12 Fri. 14	Chapter 2 Chapter 2 Chapter 2	Quiz 1, Periodic table worksheet
Sept. Mon. 17 Wed. 19 Fri. 21	Chapter 3 Chapter 3 Chapter 3	Quiz 2, Chemical nomenclature worksheet (Mon.-Fri.)
Sept. Mon. 24 Wed. 26 Fri. 28	Chapter 3 Chapter 3 Chapter 4	VSEPR worksheet (Mon.-Fri.)
Oct. Mon. 1 Wed. 3 Fri. 5	Chapter 4 Review for exam 1 <b>Exam 1 (Chapters 1-3)</b>	Experiment-Separation of an unknown mixture (Mon.-Fri.)
Oct. Mon. 8 Wed. 10 Fri. 12	Chapter 4 Chapter 4 Chapter 5	Quiz 3, Experiment-Heat capacity of a metal (Mon.- Fri.)
Oct. Mon. 15 Wed. 17 Fri. 19	Chapter 5 Chapter 5 Chapter 6	Quiz 4, Experiment- Determination of molar volume of gas and gas constant (Mon.-Fri.)
Oct. Mon. 22 Wed. 24 Fri. 26	Chapter 6 Chapter 6 Chapter 6	Experiment-Metal carbonate (Mon.-Fri.)
Oct. Mon. 29 Wed. 31 Nov. Fri. 2	Chapter 7 Chapter 7 <b>Exam 2 (Chap 4-6)</b>	Experiment-Empirical formula of magnesium oxide (Mon.- Fri.)



Date	Lecture Schedule	Weekly Lab Schedule
Nov. Mon. 5 Wed. 7 Fri. 9	Chapter 7 Chapter 7 Chapter 8	Experiment-Acid/base titrations-Part 1 (Mon.-Fri.)
Nov. Mon. 12 Wed. 14 Fri. 16	Holiday (campus closed) Chapter 8 Chapter 8	Quiz 5 (Tu-Fri), Chemical reactions worksheet-Due at lab next week (Mon. labs may attend any other time)
Nov. Mon. 19 Wed. 21 Fri. 23	Chapter 9 No class Thanksgiving (no class)	Quiz 5 and Mass and Density (Mon. ONLY)
Nov. Mon. 26 Wed. 28 Fri. 30	Chapter 9 Chapter 9 Chapter 9	Quiz 6, Experiment-Acid/base titrations-Part 2 (Mon.-Fri.)
Dec. Mon. 3 Wed. 5 Fri. 7	Chapter 9 Chapter 9 <b>Exam 3 (chap. 7,8,9)</b>	Check out of lab
Dec. Mon 10 Wed 12	Chapter 10 Chapter 10	
<b>Final Exam:</b> Mon December 17 <sup>th</sup> , 2018 8:00 - 10:00 am	<b>Final Exam</b> is held in ENS 280	The Final Exam is cumulative (Chapters 1-10)