



CHM 151\*\*\*

General Chemistry I

3 credit hours

INSTRUCTOR: Dr. Paul Gilletti

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OFFICE: Building 15 PS-209

PHONE: Office 480.461-7685

Web Page: <http://www.mesacc.edu/~paudy84101/> (Many of my Powerpoint presentations, assignments and old quizzes and exams are available)

**Office Hrs PS-209:** M 11:00-11.50, T 11:00-11:50, W 2:30-3:20, R 9:00-9:50 F 11:00-11:50

**Tutoring Center (PS-100):** Tuesday 1:30-2:30

and by appointment. **..DROP IN I GET LONELY...**

**Drop in Tutoring is available in our tutoring center PS-100.** Please take advantage of it as needed

**REQUIRED TEXT:** CHEMISTRY, 11th ed. Raymond Chang and Kenneth A. Golbsby.

The accompanying Student Solutions Manual is **STRONGLY RECOMMENDED**

**(The new textbook package will give you access to the e-book, Connect on-line Homework, and Learn Smart. It is a good purchase option) This book will also be used in second semester CHM152.**

A Calculator with scientific notation (log, ln, x<sup>y</sup>) is also required.

**HOMEWORK:** (Homework points are *bonus points* which can raise your letter grade in addition to improving test scores.)

**(OPTION 1) Connect Chemistry** : This is an on-line electronic homework system that gives you feedback and assistance when you are working problems. We will be using this system this semester. If you bought the book package at the bookstore, the Connect Plus system came with it. Connect Plus also contains the e-book; whereas Connect is just the electronic homework system. Students will be given 2 (bonus points) extra credit for each chapter on their CUMULATIVE score

**Learn Smart:** is also contained in the Connect System and uses artificial intelligence to assess your knowledge of the material and to guide you learning. Can be very useful.

**(OPTION 2 for those who choose not to use Connect Chemistry) : A SEPARATE, Homework Only Notebook** (Thin spiral or stitched composition type) is required for assigned homework problems. Homework notebooks will be inspected during each exam and students will be given 2 (bonus points) extra credit for each chapter on their CUMULATIVE score. I suggest you work problems in detail with reference notes written to yourself on how you solved the problems, i.e. followed example on page 127, this will enable you to form a study guide and to review more efficiently for exams. There is a very strong correlation between the amount of homework done and exam scores.

**(OPTION 3....**you may do parts of connect and the book homework if you choose and I will adjust your scores accordingly.)

**CELL PHONES: MAY NOT BE USED DURING CLASS, NOT EVEN TEXTING.**

COMPUTERS are available to students in the library. If you have problems running any of the software, be sure to ask the personnel or see me.

**Other Practice tests on the Internet (These are for different books, but each of them contain practice quizzes, tests and other material):**

**Silberberg Book (4<sup>th</sup> edition):** This site provides practice quizzes that are graded online and other learning aides:

[http://highered.mcgraw-hill.com/sites/0072396814/student\\_view0/index.html](http://highered.mcgraw-hill.com/sites/0072396814/student_view0/index.html)

9<sup>th</sup> Ed of Brown and Lemay. This contains practice quizzes and exams that are graded online. It is good practice for quizzes and exams.

[http://wps.prenhall.com/esm\\_brown\\_chemistry\\_9/1,4647,169060,.html](http://wps.prenhall.com/esm_brown_chemistry_9/1,4647,169060,.html)

(General Chemistry Ralph H. Petrucci, William Harwood, F. Geoffrey Herring 8<sup>th</sup> Edition). This site has more practice quizzes. <http://cwx.prenhall.com/petrucci/>

**ATTENDANCE:** Attendance will be taken each class period and a withdrawal (W/Y) **MAY** be initiated after three consecutive absences. Withdrawal from class is the student's responsibility. See the current Mesa Community College catalog and paragraph below for withdrawal procedures. It is my experience that attendance and class performance are very closely related, arrive prepared and on time each day.

**WITHDRAWAL:** See your student schedule in *my.maricopa.edu* for the Last Day to Withdraw without an Instructor Signature for each class in which you are enrolled (This is the first seven weeks from when the class started). After that time your instructor's signature is required. (Refer to the Important Deadlines for Students to determine the Last Day Student Initiated Withdrawal will be accepted.) . Either a withdrawal passing (W) or a withdrawal failing (Y) may be given, based upon student performance\*\*\*.

**STUDY HABITS AND WORK ETHIC:** This is a rigorous class. It requires a great deal of time to master the material covered in this course. Students who attend class regularly and work assigned problems have a much greater success rate. It is strongly suggested that you study a **MINIMUM** of two-three hours for every lecture hour. If your background is weak, you should plan on spending more time. **DO NOT GET BEHIND.** Help is available in the Learning Assistance Center, Departmental review and tutoring sessions, and during my office hours, **please see me if you are having difficulty.**

**ACADEMIC DISHONESTY POLICY:** See the current MCCD student handbook on the academic dishonesty policy. Academic dishonesty may include: representation of the work of other's as one's own, use of unauthorized assistance in academic work, failure to cite sources used, copying the work of another student on any form of a test, helping others cheat, etc. Repercussions can be found in the student handbook and range from a warning to dismissal from the course with a failing grade.

**STUDENTS WITH DISABILITIES:** Contact Disability and Resource Services at 480.461.7447 and see me to discuss your accommodations needs.

**EARS (Early Alert Referral System)**

### **MCC Early Alert Program (EARS)**

Mesa Community College is committed to the success of all our students. Numerous campus support services are available throughout your academic journey to assist you in achieving your educational goals. MCC has adopted an Early Alert Referral System (EARS) as part of a student success initiative to aid students in their educational pursuits. Faculty and Staff participate by alerting and referring students to campus services for added support. Students may receive a follow up call from various campus services as a result of being referred to EARS. Students are encouraged to participate, but these services are optional.

Early Alert Web Page with Campus Resource Information can be located at:

<http://www.mesacc.edu/students/ears> or locate the "Early Alert" selection at the "mymcc" link from MCC's home page.

#### **DATES:**

M.L.K. DAY: Jan. 19 ..... NO CLASS

PRESIDENTS' DAY: Feb. 16 ..... NO CLASS

SPRING BREAK STUDY WEEK: March 16-22

LAST DAY OF CLASS: May 10

FINAL EXAM: MWF 10:00 a.m. class.....Wednesday, May 13 10:00-11:50 a.m.

#### **GRADING POLICY:**

At least 9 quizzes worth 25 points each will be given and the 8 highest scores will be counted. **10 to 15 minutes will be allowed for each quiz.**

3-4 exams\*---100 points each will be given. Times will be announced at least one week in advance as course dictates.

**OWL Points:** 50 Points

\*Bonus Points:0-5 Points will be given for homework in homework notebook, added at the time of each exam.

Final examination--200 points (comprehensive ACS final).

A	B	C	D	
90-100%	80-90%	70-80%	60-69%	(of <b>HIGH TOTAL</b> i.e. curved from highest student)

NO Quizzes or exams will be given after the scheduled times. Extraordinary circumstances may dictate otherwise.

\*\*\* This is the first of a two-semester course, providing a detailed study of the principles of chemistry for science majors and students in pre-professional curricula. Prerequisites: CHM 130 and CHM 130LL or one year high school chemistry and completion of intermediate Algebra or the equivalent.

\*\*\* Lab is a separate one-credit (CHM 151LL) course. Unless previously taken, a student must be enrolled in a lab.

**COURSE COMPENTENCIES:** Available on the Internet

<http://www.dist.maricopa.edu/cgi-bin/cpr.pl?trm=20002&crs=chm151&inst=99>

**General Information:** (we will cover chapters 1-12 CHM151)

**ALL worked problems should be kept in a SEPARATE, homework only, thin spiral or stitched composition type, to be handed in on test dates. Please write in the starting time (and date) and ending time of each problem working session to help you in "time tracking".** When working problems you should show as much detail as possible including writing notes to yourself and reference pages so studying at test time becomes a review and your homework notebook is your study guide. Bonus Points: 0-5 Points will be given for homework in homework notebook, added at the time of each exam.

Hint: When solving problems always determine **what is being asked first** and its units (and if necessary, its place in a formula), then what is given and its units (and if necessary, how it fits in a formula), and finally convert what is given into what is desired to solve the problem.

**Answers to the Blue end of chapter problems** are located beginning on Page A26 near the end of book. More detailed solutions are found in the student solution manual. **THE STUDENT'S SOLUTION MANUAL IS A VERY USEFUL RESOURCE WHEN DOING PROBLEMS, I HIGHLY RECOMMEND IT.**

**OVERVIEW OF TEXTBOOK: MATH REVIEW** (consult when necessary)

CHEMISTRY , 11th ed. Raymond Chang and Kenneth A. Golbsby

Inside of covers: Front has periodic table. Back has useful physical constants, **conversion factors**, and location of tables. In addition it is recommended that frequently used numbers be written inside the covers for quick reference.

Appendix 1. Page A-1: Derivation of the Names of the Elements.

Appendix 2. Page A-7: Units for the Gas Constant.

Appendix 3. Page A-8: **THERMODYNAMIC QUANTITIES FOR SELECTED SUBSTANCES.**

Appendix 4: Page A-13: **MATH REVIEW** (consult when necessary)

Page AP-1: **Answers to Selected Exercises found within the chapters.**

Refer to Back Cover for:

**ACID-IONIZATION CONSTANTS.** Contains  $K_a$  values.

**BASE-IONIZATION CONSTANTS.** Contains  $K_b$  values.

**SOLUBILITY PRODUCT CONSTANTS.** Contains  $K_{SP}$  values.

**FORMATION CONSTANTS OF COMPLEX IONS.** Contains  $K_f$  values.

**STANDARD REDUCTION POTENTIALS.**

Note: The **Student Solutions Manual** provides **detailed** solutions for most of these problems.

**\*\*\*ASSIGNED PROBLEMS\*\*\***

**Remember You Have the Option to do the On-line Connect Homework Instead.**

TO BE DONE IN DETAIL IN YOUR HOMEWORK NOTEBOOK (see previous details).



**Chapter 1: Chemistry: The Study of Change.** (all problems are to be done in your homework notebook)

**The METHODS we use to solve these problems are more important than the problems themselves. Concentrate on the units and how they cancel.** Example:  $454\text{mg} = ? \text{g}$ , Method: since  $m = 10^{-3}$   $\frac{454 \text{ mg}}{m} = 0.454\text{g}$  note:

the “m’s” cancel leaving just grams as the unit.

Look over Tables 1.2, and 1.3,

**Assigned Problems (Chapt 1 page 29):** Be Sure to read the chapter (learning to read science is a very important part of your overall education). Look over *Key Equations* and *Summary of Facts and Concepts* (pages 28-29).

**1.6, 1.7, 1.8, 1.12, 1.16, 1.22, 1.24, 1.26, 1.29, 1.32, 1.34, 1.36, 1.40, 1.42, 1.44, 1.46, 1.48, 1.50, 1.52, 1.56, 1.60, 1.64, 1.78** (use the percent as a conversion factor as on the PowerPoint example in class), **1.90**

**Do extra conversions and problems if necessary.**

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**Chapter 2: Atoms, Molecules, and Ions** (all problems are to be done in your homework notebook)

Be sure to READ the chapter! Note the tables of Common Ions and Polyatomic Ions page 58. Read through the periodic table twice.

Naming compounds (nomenclature) will be covered in lab, but you will be held responsible in lecture. Study the rules in the lab manual and in this book. If you are not in lab, you may want to find a laboratory class to attend as a “guest when this topic is being covered.

Balancing equations will also be covered in lab.

**Assigned Problems (Chapt 2 page 68):** Be sure to look over *Summary of Facts and Concepts* (page 67)  
**2.7, 2.10, 2.11, 2.14, 2.16, 2.21, 2.24, 26, 32, 34, 36, 44, 46, 48, 50, 58, 60, 64, 74, 76, 83, 102,**

**Chapter 3: Mass Relationships in Chemical Reactions.** (all problems are to be done in your homework notebook).

This chapter may well be the most important chapter in CHM 151. A thorough understanding and mastery of this material is imperative if one is to be successful in CHM 152. Many problems are assigned and they will require a considerable amount of time. Work on a regular and consistent basis. \*\*\*The methods we use to solve these problems are more important than the problems themselves. Concentrate on the units and how they cancel.

Balancing equations hint: If any element is found in more than one place on the same side, leave it for last. Balance the others first and then that (or those) element(s).

**Assigned Problems (Chapt 3 page 107):** 8, 13, 14, 16, 20, 24, 26, 28, 30, 40, 44, 46 start with a balanced equation, 48, 50, 52, 54, 60, 64, 66, 68, 72, 74, 78, 86, 90, 92 (One of your major lab quizzes has similar problem), 94, 102, 106, 126,

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**Chapter 4 assigned problems (Chang page 178-):**

**This may well be the most important chapter regarding your success in CHM152. Be sure to read the chapter and do even more problems if necessary.**

1, 2, 3, 8, 10, 11, 12, 14, 18, 20, 22, 26, 27, 32, 34, 46, 48, 50, 54, 56, 64, 66, 68 ab&c, 74, 76, 78, 90, 92, 96, 106, 110, 112, 116, 144, 154, 160,

**Chapter 5 assigned problems :** 14, 18, 20, 22, 24, 26, 32, 34, 40, 42, 44, 48, 54, 56, 62, 68a, 70, 88, 94, 96,

**Chapter 6: (Thermochemistry)** Note: You will need to refer to appendix 3 page A-8 for thermodynamic data. Assigned Problems 7, 11, 12, 26, 31, 32, 34, 36, 38, 46, 48, 54, 56, 58, 62, 63, 64, 71, 74, 78, 84, 88, 98, 104.

**Chapter 7 assigned problems:** 8, 10, 16, 18, 20, 28, 30 relates to lab, 32, 34, 58, 70, 76, 78, 88, 90, 120, 130

**Chapter 8 assigned problems (Chang):** 20, 22, 24, 26, 28, 30, 32, 38, 40, 42, 44, 46, 52, 54, 56, 72, 76, 82, 94, 120, 124, 130.

**Chapter 9 Assigned Problems (Chang):** 16, 18, 20, 26, 36, 38, 40, 44, 46, 48, 52, 54, 56, 64, 72, 74, 76, 80, 86, 90, 92, 98, 106, 124.

**Chapter 10 Assigned Problems:** 8, 10, 12, 14, 20, 22, 24, 32, 34, 36, 40, 42, 56, 66, 76, 88

**Chapter 11 assigned problems:** 10, 12, 14, 16, 18, 52, 54, 56, 76, 82, 86, 92, 94, 106, 108, 112.

**Chapter 12 assigned Problems:** 10, 12, 16, 18, 22, 62, 72, 82, 92, 104, 126.

# PERIODIC TABLE OF THE ELEMENTS

1A

1 <b>H</b> 1.008																2 <b>He</b> 4.003	
<b>2A</b>												<b>3A</b>	<b>4A</b>	<b>5A</b>	<b>6A</b>	<b>7A</b>	
3 <b>Li</b> 6.941	4 <b>Be</b> 9.012											5 <b>B</b> 10.81	6 <b>C</b> 12.01	7 <b>N</b> 14.01	8 <b>O</b> 16.00	9 <b>F</b> 19.00	10 <b>Ne</b> 20.18
11 <b>Na</b> 22.99	12 <b>Mg</b> 24.31	<b>3B</b>	<b>4B</b>	<b>5B</b>	<b>6B</b>	<b>7B</b>	<b>8B</b>	<b>1B</b>	<b>2B</b>	13 <b>Al</b> 26.98	14 <b>Si</b> 28.09	15 <b>P</b> 30.97	16 <b>S</b> 32.07	17 <b>Cl</b> 35.45	18 <b>Ar</b> 39.95		
19 <b>K</b> 39.10	20 <b>Ca</b> 40.08	21 <b>Sc</b> 44.96	22 <b>Ti</b> 47.88	23 <b>V</b> 50.94	24 <b>Cr</b> 52.00	25 <b>Mn</b> 54.94	26 <b>Fe</b> 55.85	27 <b>Co</b> 58.93	28 <b>Ni</b> 58.69	29 <b>Cu</b> 63.55	30 <b>Zn</b> 65.39	31 <b>Ga</b> 69.72	32 <b>Ge</b> 72.61	33 <b>As</b> 74.92	34 <b>Se</b> 78.96	35 <b>Br</b> 79.90	36 <b>Kr</b> 83.80
37 <b>Rb</b> 85.47	38 <b>Sr</b> 87.62	39 <b>Y</b> 88.91	40 <b>Zr</b> 91.22	41 <b>Nb</b> 92.91	42 <b>Mo</b> 95.94	43 <b>Tc</b> (98)	44 <b>Ru</b> 101.1	45 <b>Rh</b> 102.9	46 <b>Pd</b> 106.4	47 <b>Ag</b> 107.9	48 <b>Cd</b> 112.4	49 <b>In</b> 114.8	50 <b>Sn</b> 118.7	51 <b>Sb</b> 121.8	52 <b>Te</b> 127.6	53 <b>I</b> 126.9	54 <b>Xe</b> 131.3
55 <b>Cs</b> 132.9	56 <b>Ba</b> 137.3	57 <b>La</b> 138.9	72 <b>Hf</b> 178.5	73 <b>Ta</b> 181.0	74 <b>W</b> 183.8	75 <b>Re</b> 186.2	76 <b>Os</b> 190.2	77 <b>Ir</b> 192.2	78 <b>Pt</b> 195.1	79 <b>Au</b> 197.0	80 <b>Hg</b> 200.6	81 <b>Tl</b> 204.4	82 <b>Pb</b> 207.2	83 <b>Bi</b> 209.0	84 <b>Po</b> (209)	85 <b>At</b> (210)	86 <b>Rn</b> (222)
87 <b>Fr</b> (223)	88 <b>Ra</b> 226.0	89 <b>Ac</b> 227.0	104 <b>Unq</b> (261)	105 <b>Unp</b> (262)	106 <b>Unh</b> (263)	107 <b>Uns</b> (262)	108 <b>Uno</b> (265)	109 <b>Une</b> (266)									

58 <b>Ce</b> 140.1	59 <b>Pr</b> 140.9	60 <b>Nd</b> 144.2	61 <b>Pm</b> (145)	62 <b>Sm</b> 150.4	63 <b>Eu</b> 152.0	64 <b>Gd</b> 157.3	65 <b>Tb</b> 158.9	66 <b>Dy</b> 162.5	67 <b>Ho</b> 164.9	68 <b>Er</b> 167.3	69 <b>Tm</b> 168.9	70 <b>Yb</b> 173.0	71 <b>Lu</b> 175.0
90 <b>Th</b> 232.0	91 <b>Pa</b> 231.0	92 <b>U</b> 238.0	93 <b>Np</b> 237.0	94 <b>Pu</b> (244)	95 <b>Am</b> (243)	96 <b>Cm</b> (247)	97 <b>Bk</b> (247)	98 <b>Cf</b> (251)	99 <b>Es</b> (252)	100 <b>Fm</b> (257)	101 <b>Md</b> (258)	102 <b>No</b> (259)	103 <b>Lr</b> (260)

### Student Study Schedule

Use this schedule to plan your week. Schedule chemistry and other classes or labs. Allow two to three study hours between each chemistry lecture before the next lecture occurs. Allow study time for all classes and labs. Then include work, travel time, family time, meals, sleep, exercise, etc. Remember you NEED SLEEP.

Time	Monday	Tuesday	Wednesday	Thursday	Friday
5-6					
6-7					
7-8					
8-9					
9-10					
10-11					
11-12					
12-1					
1-2					
2-3					
3-4					
4-5					
5-6					
6-7					
7-8					
8-9					
9-10					
10-11					
11-12					

**WEEKEND STUDY TIMES. DON'T WASTE FRIDAY AFTERNOON AND EVENING AS WELL AS SATURDAY AND SUNDAY.**





## student registration information

### course

General Chemistry  
with LearnSmart

### instructor

Paul Gilletti

CHM151 Spring 2015 Section 33899

### section

01/14/15 - 05/19/15

### registration dates

#### online registration instructions

Go to the following web address and click the "register now" button.

<http://connect.mheducation.com/class/p-gilletti-copy-of-chm151-spring-2015-section-33899>

This is a unique address for  
**CHM151 Spring 2015 Section 33899**