

The Chemistry 151 Companion

*Lab Manual, Problem Sets,
and Learning Resources*

**Dr. Michael A. Russell
Mt. Hood Community College
Summer 2018**

**This page included for printing purposes only –
do not include this page when sending to the printers**

CHEMISTRY 151 TABLE OF CONTENTS

All of these materials can be found on the Chemistry 151 website (<http://mhchem.org/151>)

CH 151 Laboratory Experiments

Getting Started in Chemistry 151	iv
Laboratory Safety & Etiquette	I-1
Types of Lab Glassware and a ScienceNotes.org Periodic Table	I-3
Eight Bottles	I-7
Problem Solving - The Dimensional Analysis Method	I-11
Chemical Formulas - Nomenclature	I-17
Determining the Density of Liquids and Solids	I-23
Chemical Bonding and Molecular Models	I-29
Chemical Equations and Reaction Types	I-33
Percent Potassium Chlorate in a Mixture	I-39

CH 151 Problem Sets

Problem Set One	II-1-1
Problem Set Two	II-2-1
Problem Set Three	II-3-1
Problem Set Four	II-4-1
Problem Set Five	II-5-1

CH 151 Learning Resources

Dimensional Analysis Worksheet	III-1
Common Polyatomic Ions and the Corresponding Acids	III-5
Nomenclature Self Quiz	III-7
Mass, Moles, Atoms Study Questions	III-11
Chemical Reactions Worksheet	III-13
Limiting Reactant Example	III-15
Predicting Atomic Electron Configurations	III-17
CH 151 Study Questions for the Final Exam	III-19
An Aufbau Diagram	III-21

CH 151 Sample Quizzes and Exam (*with answers*)

Sample Quiz One	IV-1-1
Sample Quiz Two	IV-2-1
Sample Quiz Three	IV-3-1
Sample Quiz Four	IV-4-1
Sample Quiz Five	IV-5-1
Sample Midterm Exam	IV-6-1

More learning resources can be found on the CH 151 website: <http://mhchem.org/151>

Getting Started in Chemistry 151

Welcome to Chemistry 151! I am glad you enrolled in CH 151 this quarter! Here are some hints on how to get started in the class:

- First, **know that I am here to help you succeed in this class.** If you have any questions, please email me (mike.russell@mhcc.edu), give me a call (503.491.7348) or stop by my office (AC 2568) during office hours. I normally respond to student inquiries within 24 hours on email, and I return calls the next time I am in my office. *For this summer course, email is the best way to contact me outside of class.*
- Download the free **Chemistry 151 Textbook** using this link: <http://mhchem.org/text/GChem.pdf> This is an "Open Education Resource" PDF file and downloading the textbook is legal and free.... do not pay for this textbook!
- Obtain the **Chemistry 151 Companion** from the **MHCC Bookstore** (<http://www.bookstore.mhcc.edu/>) or from the CH 151 website (<http://mhchem.org/151>). The "Companion" contains all the problem sets, labs, learning resources, and more that you will need this term.
- You will need to purchase **two 100-question scantrons** from the MHCC Bookstore. You will also need a dedicated **calculator** (the calculator should at least have the EXP or EE function (for powers of ten), and having both an "log" and "ln" button will help you all the way through Chemistry 223 if necessary. **Cell phones cannot be used as a calculator on quizzes and exams in Chemistry 151.**
- The "**What's Due This Week**" **Schedule for CH 151** located on page 2 of your syllabus **lists all the relevant dates for this class.** You can plan your term by referencing this handout! **Problem sets** are due on the date listed. **Lab reports** are usually due at the beginning of the following class period unless noted otherwise. **Quizzes** are all "show your work" and last about 30 minutes. The **midterm exam** and **final exam** will last about two hours, and you will need a 100-question total scantron (available from the MHCC Bookstore) for each exam.
- Now it is time to **explore the Chemistry 151 website.** The Chemistry 151 website has a host of learning opportunities waiting for you. You can download and/or print copies of the syllabus, PowerPoint notes, labs, quiz answers, and more; plus there are opportunities for extra credit available on the website.

To get started, send your web browser to: <http://mhchem.org/151>

You should see the CH 151 website on your screen.

- Finally, **start problem set #1 as soon as you can.** This class moves quickly, and keeping up with the material is the greatest challenge. Also: due to the short nature of this course, if you miss a lab for any reason, you will not be able to make it up.... so plan on coming to class every day, ok? ☺

Again, welcome to Chemistry 151! Let me know if I can make your learning experience better in any way, and I look forward to working with you this term!

Peace, Dr. Michael Russell (mike.russell@mhcc.edu, 503.491.7348, AC 2568)