CHEM 400: General Chemistry
Jan 21 – May 21, 2019

Instructor: Dr. Michael W. Maddox **Office:** 408-A
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Lectures:	Tuesday and Thursday	**Time:** 11.00 am – 12.20 pm	**Room:** 420	(10290)
Labs:	Monday and Wednesday	**Time:** 9.30 am – 12.20 pm	**Room:** 408	(10761)
	Tuesday and Thursday	**Time:** 8.00 am – 11.50 am	**Room:** 408	(10760)
	Tuesday and Thursday	**Time:** 1.00 pm – 3.50 pm	**Room:** 408	(10384)

Office Hours*: Monday/Wednesday 12.20 pm – 2.20 pm
Tuesday/Thursday 3.50 pm – 4.20 pm

(*if it becomes necessary to permanently change the office hour times during the semester, you will be informed in class, and a note will be posted on Canvas. The times of office hours will always be available on the notice posted at my office and in the latest syllabus posted on Canvas)

Course Description:

This course covers the basic principles of chemistry with an emphasis on chemical calculations, chemical reactions, stoichiometry, gas laws, thermochemistry, atomic structure and bonding theories, ionic equations, solutions, intermolecular forces and phases of matter, and acid/base chemistry (incl. titrations and pH). Lab work includes experiments relating to theoretical work discussed in lecture, problem solving, and discussions of the course material. This class is primarily for students planning to take Chem 401, but it is also a prerequisite for Bio 400, Bio 430, Bio 440, Bio 442, Bio 480, and Engr 413.

Prerequisites:

To be enrolled in Chem 400, each student **must** have at least a 'C' grade in high school chemistry, Chem 305, or Chem 310/300. **Students who have not passed Chem 310/300 must also take the General Chemistry Assessment Test.** Additionally, at least a 'C' grade is required in Math 120, 129 or 133. If you have taken and passed a chemistry or math class within the Los Rios District (ARC, SCC, FLC, CRC) since 2003, I can verify your grade on-line. All other prerequisites should be shown to a counselor, who will verify them and complete a slip for you to bring to class. **Do not** bring transcripts from your high school or out-of-district college to me - I cannot verify that they are valid.

Texts:

- Laboratory Manual, Chemistry 400 (Maddox Version, 11th Edition) (ARC Bookstore) - **REQUIRED**
- *Duplicating Laboratory Notebook* – must have carbonless duplicating pages (ARC Bookstore) - **REQUIRED**
- Any General Chemistry Textbook – any edition - **REQUIRED**

  Openstax Online Chemistry Textbook strongly recommended – this book will be used in Chem 401 at ARC and is free to download at Openstax.org/subjects (you can also buy a hard copy for $55 on Amazon)
- Chemistry 400 Lecture Slides (Maddox Version, 9th Edition) (ARC Bookstore) – **OPTIONAL BUT RECOMMENDED**

Supplies:

Laboratory Safety Goggles

These are **required**, and can be bought at the campus store or in the hallway next to the chemistry stockroom at the beginning of the semester – **see instructor for acceptable models before buying (the type with lots of holes in each side is NOT acceptable)**.

Scientific Calculator

Calculators able to store information are **not permissible** during exams. Acceptable calculators must have a LOG and an EXP key (EE key if made by Texas Instruments) and can be purchased at the campus store, or at stores such as Target or Wal-Mart for less than $20 (ask instructor if you need more information). **Cell phones or PDAs may not be used as calculators**. Acceptable calculators can be checked out of the lab stockroom, but be aware that (a) problems may arise when taking a test with an unfamiliar calculator, and (b) there may be no calculators left in the stockroom when you need one the most. **If you are unsure whether your calculator can be used in an exam, show it to your instructor as soon as possible – don't wait until the day of the exam**.

Laboratory Course:

- You must attend all lab sessions and participate in all experimental activities. You are expected to be prepared BEFORE starting each experiment (see "To prepare for this experiment" section at the beginning of every experiment in the lab manual).
- At the start of each new experiment, you will usually be required to answer five short pre-lab questions about the experiment. These will be turned in and are worth 5 points (out of the 25-35 points available for most lab reports). You should expect to spend **at least** ½ to 1 hour of your Chem 400 study time to prepare for each experiment. Before each new experiment, I will explain any changes to the instructions in the manual and point out safety concerns, after which you will sign the "Experimental Safety Sheet" for that experiment. This states that you have read and understand all the safety instructions and waste disposal directions for the experiment. There may also be a brief class discussion, so be ready to demonstrate your understanding of the experiment you are about to perform.
- It is important that you arrive on time. If you arrive after the pre-lab quiz has started, you will **NOT** be allowed to take the quiz or to make it up later and will therefore lose the 5 available points. If you arrive more than **15 minutes late**, you may not be allowed to participate in the lab session at all (at my discretion) in which case you must attend a different lab session or a Friday make-up session as soon as possible and you will lose an additional 5 points from your lab score.
- You must be properly protected in the lab; safety glasses, closed-toed and closed-heel shoes, and clothing that completely covers you from the shoulders to the knees **must** be worn at all times (no bare backs or stomachs). Lab coats (or aprons) are recommended but not required. If you come to lab without goggles or appropriate shoes or clothing, you will probably not be allowed to take part in the lab, in which case you must attend a different lab session (you must get your instructor's permission in advance) or a Friday make-up session as soon as possible and you will lose 5 points from your lab score. A limited supply of goggles may be available to borrow, but you will still lose 5 points from your lab score.
- If you have **any** medical condition that may be affected by exposure to the chemicals normally used during Chem 400 labs, you should consult your doctor immediately. Specific examples would include respiratory conditions (such as asthma), skin allergies, or pregnancy. Chemistry involves the use of acids, bases, some toxic compounds, and a number of volatile organic compounds, and while exposure to these chemicals is minimal, the potential for accidental exposure to larger quantities always exists.
- You should be able to complete every experiment within the lab time allotted. If you are unable to do so it is usually the result of being unprepared for the experiment, making an error that requires one or more parts to be repeated (or to take much longer than they should), or spending too much time on activities unrelated to the experiment (discussing last night's TV, staring off into space, etc.). With **very few exceptions**, if you fail to finish an experiment in the time allotted, you will be unable to complete all sections of your lab report and will consequently lose points.

- If a lab report is turned in on time, but is less than 80% complete (i.e. the blank spaces or missing attachments total more than 20% of the available points), it will not be graded. It may be resubmitted within one week, but you will lose 10 pts from your lab score. If it is turned in more than one week later, it will be worth no points.
- You are required to complete every experiment and turn in a lab report for each one; **even if it is turned in so late that it is worth zero points**. This will involve turning in the carbonless pages from your lab notebook that show your data collection and analysis, in addition to a completed lab report sheet (lab report sheets can be printed out from the class Canvas site online).
- Lab report due dates are indicated on the class schedule on the back of this syllabus. Labs must be turned in within the first 5-10 minutes of the lab session on the due date. Labs are typically due one week after completion of the experiment. For example, if an experiment is started on a Tuesday, but is completed on a Thursday, it is due within the first 5-10 minutes of the lab session the following Thursday.
- Points will be deducted from late reports as follows; same day it was due, -3 pts; 1 additional point will be deducted for every extra day the report is late, up to 2 weeks (-17 pts). For example, 6 pts will be deducted if a lab report is 3 days late (-3 pts for being late on the due date and -3 for the extra 3 days late). Reports turned in later than two weeks after they are due are worth zero pts.
- **If a lab report is turned in late, you should not expect it to be graded until the end of the semester.**
- **If you do not successfully complete the lab section you will get an 'F' for the class**, regardless of exam and quiz scores. To successfully complete the lab section you must (a) personally complete every experiment (including any pre-lab and post-lab assignments), (b) personally complete and turn in every lab report before the final exam, and (c) score 60% or better ('D' grade) in the lab section (individual lab scores may be less than 60%, as long as the average score is at least 60%). **Be aware that every semester there are several students who fail the class because they turn in too many late labs and consequently score less than 60% in the lab section.**
- Labs should only be missed under **extraordinary circumstances**, and you should always inform me ahead of time (except for genuine emergencies, in which case verification should be provided at the earliest opportunity). Without a valid doctor's note, or other verifiable documentation showing extraordinary circumstances, you will automatically lose 10 points from your lab score (out of a possible 25-35). Family emergencies, automobile accidents, the sudden need to visit Las Vegas, alien abductions, etc., will all cause you to lose 10 points without verifiable documentation.
- A **maximum of 2 missed labs** (including the situation in which a student arrives more than 15 minutes late) can be made-up during a Friday lab make-up session, but only with the correct documentation (see instructor for details – you will not be allowed to make-up a lab without the correct documentation).
- If at any time you miss a second lab before making up the first, without my explicit permission, you may, without notice, be dropped from the class. If you miss more than two labs (including being more than 15 minutes late), you will **not be allowed** to use the Friday make-up session a third time, and you will probably be dropped from the class, without notice.

Exams:

No notes, cards, or books of any kind may be used during lab quizzes, mid-term exams, chapter quizzes, or the final exam. Only the contents of your brain and the periodic table/equation sheet provided may be used to answer the questions. There will be 3 mid-term exams during the semester, followed by a comprehensive final exam during Finals Week. The mid-term exams will mainly focus on the material covered since the previous exam. Although there will be **no make-up exams** given under any circumstances, your lowest mid-term exam score will be replaced by your final exam score (if it is higher), when calculating your final grade. Therefore missing one exam due to **extraordinary circumstances** is not a complete disaster. Mid-term exams will be taken during lab periods, and will be made up entirely of free response questions (no multiple choice). The final exam will also be made up entirely of free response questions (no multiple choice).

Homework and Quizzes:

Homework sets will be available on Canvas prior to the start of each chapter. Homework will not be collected or graded. Completion of the assigned homework problems is an effective tool for studying chemistry. This is a subject that **cannot** be learned simply by attending lectures or reading the textbook. Working problems, and **lots of them**, is the most effective way to master the concepts that you will have to know. I encourage you to work together on homework assignments, **but it is not in your interest to be a passive participant in a study group.** All homework

sets provided by the instructor include answers, and full worked solutions are available on Canvas for some of the most challenging problems. If you believe that a given answer is incorrect, contact me to check it before you spend hours trying to get the wrong answer. See me during office hours or lab periods for help with problems that you cannot solve yourself. You should expect to spend about 1-5 hours on the homework problems for each chapter (longer chapters will have more homework). Approximately a week after the completion of each chapter, there will be a short chapter quiz at the start of a lab period. Each quiz will include questions taken directly from the assigned homework (with numbers and elements changed) and may also include one calculation taken from a previous experiment (you would be told which one in advance). Quizzes are not strictly timed, but you will usually have a maximum of about 20 minutes to complete each quiz. Always arrive on time - **if you arrive after the start of a quiz, you will not be allowed to take it and you will get a zero score for the quiz.**

Extra Credit:

Although it is possible to score slightly more than 100% on Mid-Term exams and on the Final, there will be no other extra credit opportunities in this class. It is therefore important to get as much regular credit as possible by studying hard for exams and quizzes, and by completing lab reports fully, carefully, and on-time. **Please do not ask me for extra credit opportunities.**

Electronic Devices:

Cell phones and pagers must be in SILENT mode during lecture and lab. If you receive a call during class, you must leave the classroom to take it. Electronic means of recording the lectures are not permitted (this includes both audio and video recording – you should consult me if you have a special need to do this). **No electronic devices of any kind (except a scientific calculator, as specified above) are permitted during tests or exams – if you have one with you, it must be turned off and remain out of sight at all times**.

Autodrop:

To be successful in this class, it is important that you participate in all class activities (lectures and labs). Furthermore, regular attendance is required for all students who are receiving financial aid. In keeping with this policy, students **will automatically be dropped** from the class if they **miss two consecutive lab periods** without contacting the instructor. Although roll is not taken during every lecture, it will be taken occasionally, and without notice. Attendance is required and students who are **absent or substantially late (or who leave before the end of class) on more than 2 occasions** will be **dropped from the class**. Once dropped, a student will not be allowed to re-enroll in the class until the next semester.

Letters of Accommodation:

Every student with the appropriate prerequisites and the desire to learn has the opportunity to enroll and participate in this course, and every reasonable effort will be made to accommodate any special needs of students with physical or learning disabilities. If you have a condition that may affect your ability to participate fully in either the lecture or laboratory portion of this course, you should see your instructor immediately so that any potential problems can be resolved **before** they develop. The College's **Disabled Students Programs and Services (DSPS) (484-8382)** offers services to identify students who may be dyslexic or require other accommodations in coursework or examination situations. If you have a "Letter of Accommodation", you should arrange to meet with your instructor as soon as possible to discuss accommodations. If your accommodation is extra time to take exams, you will still be required to take exams with the rest of the class (not at DSPS), but you will be given extra time at the end, as stipulated by your letter of accommodation. Even if you have not been tested by DSPS, the instructor may decide that you would perform better given more time, and may allow you also to have extra time at the end of an exam.

It is your responsibility to make sure that your instructor has been informed at least 2 weeks in advance about any specials accommodations you require for exams - if you fail to do this, you will have to take the exam with no accommodations.

Getting Help:

Please feel free to ask me for help, or discuss any problems you have with the course during my office hours (listed at the top of the syllabus) or in quiet moments during lab. I encourage you all to ask questions in class if you don't understand something (and I will try to explain it there and then, as long as it does not significantly sidetrack the lecture), or to talk to me during lab time. **If you contact me via email, I am usually quick to respond, but you should not *expect* a reply outside my normal class and office hours.** Many students also find it useful to form study groups for help and moral support. However, you should avoid study partners who simply give you the answers – this will not help you when the time comes to take exams (and exam results largely determine your grade in this class). In addition, the Learning Resource Center and the MESA center both have chemistry tutors available at no cost, and there are free open-tutorial sessions twice a week in the Chemistry building (see Canvas or instructor for more information). **Use these services.** There is also a wealth of on-line chemistry resources available by simply doing an Internet search for a particular topic. A Beacon Study Group may be available for this class. If so, details will be given at the start of the semester.

Please note:

- **While I am committed to helping you achieve your goals in this class, it is inappropriate for any student to inform me of their need for a particular grade. If you need a 'C' or an 'A', then you must work appropriately hard.**
- **I will help you all I can whether or not I am aware that you need a specific grade.**
- **No grades will be changed after the final exam scores and semester grades have been posted, so please don't ask me to do so. If you have 69% you have a 'D', if you have 89% you have a 'B'.**

Academic Fraud:

All of your work must be your own. Plagiarism (direct copying) from any source (books, papers, classmates, Internet, etc.) and unethical behavior during exams (unauthorized notes, looking at another student's exam, or any communication: verbal, written, electronic, or otherwise) **is not allowed.** Additionally, students must actively participate in all lab activities (sitting off to the side while your lab partner does all the work is NOT actively participating) and all experimental data must be collected individually (not copied from anyone other than your lab partner). **For any contravention of these regulations, a failing grade may be assigned for the course and drop forms will not be permitted**. In addition, the matter will be turned over to the College and your home department for further judiciary and disciplinary actions. Consult your student handbook for additional information on this and other Honor Code stipulations.

Grading:

My general grading philosophy is that your grade should reflect your knowledge and understanding of chemistry upon leaving the class, not simply the amount of effort you put in during the semester (I'm sure you wouldn't choose to be treated by a doctor who worked hard in class but left with no knowledge or understanding of medicine). Consequently, **exams (particularly the final) are heavily weighted**. The breakdown of your overall grade is as follows;

Lab Reports	15 %
Quizzes	10 %
Mid-Term Exams	45 %
Final Exam	30 %

Your overall grade will be assigned as follows;
0-59% = Fail, 60-69% = D,
70-79% = C, 80-89% = B, 90-100% = A

Your grades will be available throughout the semester at the class Canvas site, along with other useful items:
Canvas.losrios.edu

NOTE: Please check your on-line grades frequently and inform me immediately if you feel an error has been made. Corrections can only be made if the error is noted in a timely manner.

Chemistry 400 Student Learning Outcomes

After completing a Chemistry 400 class at American River College, students will be able to:

1) successfully complete laboratory experiments (involving evaluation of experimental data and confirmation of physical constants) in a safe and timely manner, after receiving written and/or verbal instructions.
2) demonstrate the proper collection and recording of scientific measurements in tables with the correct units and number of significant figures (i.e. measuring mass, volume, temperature, length, and pressure), and the recording and evaluation of observations (physical and chemical changes and properties).
3) analyze and then solve chemical calculation problems that involve solids, solutions, or gases, in a clear and logical fashion; for example, stoichiometry, acid-base, and colligative property problems.
4) analyze and then solve chemical calculation problems that involve heat energy transfers in calorimeters or chemical reactions; for example, determining the heat of fusion, heat of solution, heat of reaction, and heat capacity.
5) construct balanced chemical equations from written descriptions of chemical reactions.
6) synthesize data into computer generated graphical outputs, and make predictions by interpolation, using linear and non-linear regression analyses.
7) evaluate errors related to experimental procedures, and assess their effects on experimental results.
8) predict the products of inorganic chemical reactions using solubility rules and the activity series, by assessing electrolyte strength, and by employing the fundamental rules of acid/base chemistry.
9) apply chemical naming rules to inorganic molecular and ionic compounds, acids, and simple straight-chained hydrocarbons.
10) predict changes in solution properties based on colligative property calculations; for example, changes in boiling point, freezing point, vapor pressure, and osmotic pressure.
11) explain how and why substances dissolve in other substances and perform calculations to evaluate solution concentration in various units (Molar, molal, % mass, mole fraction).
12) use the ideal gas law and the empirical or combined gas laws to predict temperature, pressure, volume, mass, or molar quantity of a gas.
13) explain and predict observable properties of gases (pressure, temperature, volume) from an understanding of the behavior of the individual particles in a gas.
14) produce Lewis structures of simple molecules and polyatomic ions and predict their shape and relative polarity.
15) label the parts of a phase diagram, use it to predict the temperature and pressure at which phase changes will occur, and construct heating curves that include phase changes.
16) analyze the structure of an atom and explain the origin of atomic emission spectra.

Chemistry 400 Syllabus - Lite

The following list highlights some of the more important points from the syllabus; see the full syllabus for more details.

- Do not show your instructor any chemistry transcripts – show them to a counselor. They will give you a slip to show your instructor.
- Unless you have a 'C' or better in Chem 310, you will have to take the General Chemistry Assessment test at the Assessment Center. If you do not to take the test before the date specified by your instructor, you will be dropped from the class.
- If you miss 2 lab periods at any point in the semester without informing your instructor (either before or after the absence), you will be dropped from the class.
- If you miss, or arrive late for more than 2 lectures, you will be dropped from the class.
- You are only allowed to attend 2 official lab make-up sessions. If you miss more than 2 labs (even with a verifiable excuse), you will not be able to easily make them up, and will probably fail the class.
- If you fail the lab section (less than 60%) you will automatically fail the class, regardless of your test performance.
- If you fail to finish an experiment within the allotted lab period, you will probably have to turn in an incomplete lab report and will lose points as a result.
- If a lab report is turned in with more than 20% of the material missing, it will not be graded.
- Many points are deducted from lab reports that are turned in late – several students drop out or fail the class each semester because they get behind with their lab reports.
- Late lab reports will not be graded until the end of the semester – so you won't know your grade until the very end (very annoying for you).
- Acceptable goggles and clothing must be worn during all lab sessions or you will not be allowed to take part (with bad consequences).
- The chapter quizzes, three mid-term exams and the final exam make up 85% of your class grade – if you would like lab reports, homework, and 'showing up' to be worth more, this probably isn't the class for you. If you are 'bad at test taking', you are probably not preparing properly or not really understanding the material in the first place – unless both these things change, this probably isn't the class for you.
- There are no make-up exams or quizzes, but your final exam score will replace your lowest mid-term exam score, if the final exam score is higher. No quiz scores or lab report scores will be dropped or replaced.
- If your calculator cost more than $20, you probably won't be allowed to use it during any test, quiz, or exam in this class, so buy a cheaper one as well.
- Chapter quizzes are taken during lab sessions and are made up of homework questions (and sometimes lab calculations) with the numbers/compounds changed. If you can do the homework problems without help (from a study partner or class notes), you can do the quizzes. The average score on quizzes is historically around 65% because students; (a) don't do the homework, (b) get through the homework with a lot of help, but without really understanding it, (c) do the homework, but can't remember how to do it 24 hours later.
- If you arrive late to class and a quiz (Chapter or Pre-lab) has already started, you will not be allowed to take the quiz and you will get a zero score.
- There are no extra credit opportunities in this class.
- Please do not use electronic devices to record any lectures (sound or video).
- Please don't ever tell me that you need a certain grade in the class, or on any exam (e.g. "I really need to get an 'A' in this class so that I can transfer to ….. next semester", "If I don't get a 'B' in this class, I'll never get into the …. program").
- Grades start at 60%, 70%, 80%, and 90%. If you get 89%, you *almost* got an 'A'. Which means you got a 'B'. Please don't ask me to give you a grade you didn't get.
- If you remain enrolled in class beyond the last allowed drop date, you will be assigned a grade. Think very carefully about this if you are in danger of failing the class: <u>no student</u> will be given a 'W' on their transcript if they remain in class after this date.
- Current grades, homework, lab report sheets, important announcements, and other useful things are available on the class Canvas site throughout the semester: Canvas.losrios.edu.

Class Schedule

Lecture: Tues/Thurs 11.00 am – 12.20 pm, Room 420
Labs: Mon/Weds 9.30 am – 12.20 pm, Room 408
Tues/Thurs 8.00 am – 10.50 am, Room 408 Tues/Thurs 12.45 pm – 3.50 pm, Room 408

	Lecture Topic (Tues/Thurs)	Laboratory Activity (Mon/Weds, or Tues/Thurs)	Expt. Due
Week 1 1/21 – 1/24	**Ch.1:** Getting Started	**Mon:** Holiday **Tues:** Introductory Activities	
	Ch.2: Atoms and Elements	**Weds:** Introductory Activities **Thurs: Exp. 1:** Nomenclature; **Check-in**	
Week 2 1/28 – 1/31	**Ch.3:** Stoichiometry	**Mon: Exp. 1:** Nomenclature; **Check-in** **Tues:** Lab Activities	
	Ch.3: Stoichiometry	**Exp. 2:** Laboratory Procedures	
Week 3 2/4 – 2/7	**Ch.3:** Stoichiometry	**Exp. 3:** Graph Drawing; **Quiz (Ch.1-2)**	
	Ch.4: Chemical Reactions	Mini-Experiments	
Week 4 2/11 – 2/14	**Ch.4:** Chemical Reactions	Review of Exps. 2 and 3; **Quiz (Ch.3)**	**2/3**
	Ch.4: Chemical Reactions	**Exp. 4:** Limiting Reactants	
Week 5 2/18 – 2/21	**Ch.4:** Chemical Reactions	**Mon:** Holiday **Tues:** Lab Activities	
	Ch.5: Acids and Bases	**Exp. 8:** Electrolytes and Ionic Equations	**4**
Week 6 2/25 – 2/28	**Ch.6:** Gases	Team Quiz Game (Ch. 1, 2, 3, 4, 5)	
	Ch.6: Gases	**Mid-Term 1 (Chapters 1, 2, 3, 4, 5)**	
Week 7 3/4 – 3/7	**Ch.6:** Gases	**Exp. 6:** Acid and Base Titrations	**8**
	Ch.7: Thermochemistry	**Exp. 6:** Acid and Base Titrations	
Week 8 3/11 – 3/14	**Ch.7:** Thermochemistry	**Expt. 9:** Percent Composition of $KClO_3$; **Quiz (Ch.6)**	
	Ch.7: Thermochemistry	**Expt. 9:** Percent Composition of $KClO_3$	**6**
Week 9 3/18 – 3/21	**Ch.8:** Quantum Theory	**Exp. 10:** Intro to Thermochemistry	
	Ch.8: Quantum Theory	**Exp. 10:** Intro to Thermochemistry	**9**
Week 10 3/25 – 3/28	**Ch.8:** Quantum Theory	Mini-Experiments; **Quiz (Ch.7)**	
	Ch.8: Quantum Theory	Team Quiz Game (Ch. 6, 7, 8)	**10**
Week 11 4/1 – 4/4	**Ch.9:** Periodic Trends	**Exp. 12:** Atomic Structure	
	Ch.10: Chemical Bonding	**Mid-Term 2 (Chapters 6, 7, 8)**	
Week 12 4/8 – 4/11	**Ch.10:** Chemical Bonding	**Exp. 14:** Chemistry in Action	
	Ch.10: Chemical Bonding	**Exp. 13:** Cycle of Copper Reactions	
Spring Break (4/15 – 4/19)			
Week 13 4/22 – 4/25	**Ch.10:** Chemical Bonding	**Exp. 13:** Cycle of Copper Reactions; **Quiz (Ch.9)**	
	Ch.10: Chemical Bonding	**Exp. 15:** Lewis Structures; Titration Test	
Week 14 4/29 – 5/2	**Ch.11:** Intermolecular Forces	**Exp. 15:** Lewis Structures; Titration Test	**13**
	Ch.11: Intermolecular Forces	**Exp. 16:** VSEPR; **Quiz (Ch.10)**	
Week 15 5/6 – 5/9	**Ch.12:** Solutions	**Exp. 16:** VSEPR; **Check-out**	
	Ch.12: Solutions	Team Quiz Game (Ch. 9, 10, 11, 12); **Quiz (Ch.11)**	
Week 16 5/13 – 5/15	Final Exam Preview	**Mid-Term 3 (Chapters 9, 10, 11, 12)**	
	No Class (Finals begin)	**Weds:** Mid-Term 3 Viewing & Study Session (All welcome) **Thurs:** No Class (Finals begin)	
Final Exam – Tues, May 21, 10.15 am – 12.15 pm, Room 420			

*Please note that both the lecture and lab schedules are provisional, and may be revised as deemed appropriate. The most up-to-date version will always be available on Canvas.