ANOKA-RAMSEY COMMUNITY COLLEGE
COURSE SYLLABUS

Course:	**Chemistry 1020-30: Interpretive Chemistry**. 4 credits, Spring 2009
Prerequisite:	MATH 0200 or equivalent
Lecture:	Section 30: **M** 6:00 pm – 7:15 pm E221
Laboratory:	Section 30: **M** 7:30 pm – 9:25 pm E226
Instructor:	Professor Andrew (Andy) Aspaas, Office E224
E-mail (preferred):	andrew.aspaas@anokaramsey.edu
Telephone:	763-433-1108
Course Webpages:	http://webs.anokaramsey.edu/aspaas/1020/evening (Notes, audio/video, links, announcements, practice worksheets) http://www.masteringchemistry.com (Online homework) http://www.anokaramsey.edu/onlineProg (**D2L**: postlab quizzes, discussion boards, grades)
Office Hours:	**M** 9:00 am – 9:50 am; 11:30 am – 1:20 pm; 5:00 – 5:50 pm
(all are in E224)	**T** 11:00 am – 12:50 pm; 3:00 – 3:50 pm
	W 9:00 am – 9:50 am; 11:15 – 11:50 am
	(additional office hours available by appointment)
Lab Manager:	Daniel Harmon, Office CC-E225, 763-433-1813, daniel.harmon@anokaramsey.edu

COURSE OUTCOMES

Upon successful completion of the course, the student should be able to:

1. Demonstrate the ability to solve problems and demonstrate knowledge of concepts in the following areas:
    a. States and classification of matter
    b. Measurements and dimensional analysis
    c. Atomic theory and bonding theory
    d. Inorganic nomenclature
    e. Organic chemistry
    f. Stoichiometry and the mole concept
    g. Reaction types
    h. Liquids, solids, and solutions
    i. Introductory acid-base chemistry
2. Demonstrate the following laboratory abilities:
    a. Collecting data using a variety of equipment
    b. Recording and analyzing data in tables and graphs
    c. Formulating and testing hypotheses
    d. Laboratory and chemical safety and waste disposal
    e. Effectively communicating results in oral and written form
    f. Working effectively and cooperating in groups

REQUIRED MATERIALS

Textbook: Introductory Chemistry, 3rd Edition, Nivaldo J. Tro;
Ebook available on http://www.masteringchemistry.com for $79.50
MasteringChemistry Access: bookstore bundled with text or separately, also available on masteringchemsitry.com
Lab Manual: Interpretive Chemistry Laboratory Manual, 2009 Edition, ARCC Staff
Scientific calculator (with LOG button)
Outside-class access to an internet-connected computer at home **or** using the ARCC computer labs
Access to school-provided MetNet email address. Instructions at http://www.anokaramsey.edu/IT/emailmetnet.cfm

ADDITIONAL RESOURCES

Ball, David W., Essential Algebra for Chemistry Students (available in bookstore)
Study Guides and Solutions Manual
Website Links: Available at http://webs.anokaramsey.edu/chemistry and http://webs.anokaramsey.edu/aspaas/
On-Campus Tutoring: Schedule will be posted at http://www.anokaramsey.edu/StudentServices/cr_chemistry.cfm
and at the Academic Support Center

BE RESPECTFUL, BE RESPONSIBLE, RISE TO THE CHALLENGE

By enrolling in this course, you have become a welcome member of a *community of learners*, an honor and a privilege for each one of us. Your membership in this community and your success in this course are dependent upon your ability to do the following:

Be Respectful. Respect your instructor as an expert in his or her subject area and as the person responsible for facilitating a productive course for everyone. Respect each of your classmate's right to a valuable class experience, free of offensive language, intolerance, or harassment of any kind. Respect these facilities and our time together by eliminating all distractions, especially cell phones, iPods, and other gadgets, and by refraining from disruptions of any kind, including sleeping in class or talking when no formal class discussion is taking place. Finally, respect yourself by participating fully in each class session and making the most of this learning opportunity.

Be Responsible. As a student in this college course, you are entirely responsible for your own success. You are responsible for reading and following the syllabus. It's expected that you arrive to each class session on-time, with assigned work completed, ready to participate fully. If you miss class, you are responsible for the consequences. You are also responsible for obtaining notes, assignments, and syllabus adjustments. Finally, you are responsible for being an active participant in this class rather than a passive observer.

Rise to the Challenge. College-level courses are demanding. They require deeper thinking, more effective writing, and greater personal involvement than many students realize. In order to succeed at this level, you must be willing to accept the challenges presented by the course material, your instructors, and a rigorous schedule. One of the rewards of this challenge can be the discovery that you are capable of much more than you imagined. Therefore, expect great things from yourself, work hard to achieve them, and seek help when you need it. The other members of this community of learners are here to support you, but it's up to you to *rise to the challenge*.

While I do not take attendance, class attendance is expected by college policy. ***Students are responsible for all information and assignments given in class.*** The easiest way to fall behind and ultimately fail a class is to be absent multiple times. Material moves quickly in this course, so even one absence can put you behind. This is even more important for block and summer schedules, where missing one class is missing a whole week of the course!

REDUCED SEAT TIME/WEB-ENHANCED LECTURE

This course has 50% seat time compared to a totally in-person course with the same number of credits. Our lectures (75 min per week) will only cover the material that students typically have the most problems with. ***You must read ahead in the textbook in order to get the most out of lecture! Have the entire chapter read before it is covered in class!*** The rest of the material will be your responsibility to learn through the use of the textbook reading assignments, textbook problems, MasteringChemistry online homework assignments, expanded lectures made available online (audio and video), practice worksheets, and D2L discussion boards. You should plan to spend a considerable amount of time each week independently studying and learning the material. If you are not a self-motivated learner or if you have problems with procrastination, perhaps a full-seat-time lecture section would be better for you.

This is a recommended studying schedule that will help you keep up in this course:

Tuesday-Wednesday:
- Complete the **D2L lab quiz** (due Wednesday night after a lab)
- **Review notes** from Monday's lecture and complete any sections we didn't do in class. Check against posted completed notes.
- **Re-read** any sections of chapter that were unclear. Consult lecture videos as necessary.
- Complete the assigned end-of-chapter **practice problems** from the material covered in Monday's lecture. Check your answers with the back of the book.
- Begin the **post-lecture assignment** in MasteringChemistry.

Thursday-Friday:
- Complete the **post-lecture assignment** in MasteringChemistry.
- Read next week's **textbook chapter**. Consult expanded lecture videos for sections that are unclear.
- **Print** next week's **blank lecture notes**. Follow along with them while you're reading and fill in whatever blanks you can.
- Begin the assigned end-of-chapter **practice problems** as you are reading the sections. Check your answers with the back of the book.
- Begin next week's **pre-lecture tutorial** in MasteringChemistry.

Saturday-Sunday:
- Complete next week's **pre-lecture tutorial** in MasteringChemistry.
- Complete next week's **prelab worksheet** in your lab packet (check the lab schedule!).
- Complete any **practice worksheets** for this material (posted on the webpage).

Any days:
- Post on **the D2L discussion boards** if you have any questions about the material. If you don't have questions, see if you can answer somebody else's questions. You are required to make at least one thoughtful post (question or comment) per week.
- Visit instructor **office hours** (M, T, or W), or **tutoring center** (M-F) if you need help.
- Meet with a **study group.**

Monday:
- **Lecture and lab**

LABORATORY

Lab meets the first day! By registering for 1020-30, you registered for both lecture and lab. Laboratory attendance is mandatory and experiments must be performed at the assigned time. If you must be absent, including for an illness, notify the instructor in advance. Make-up labs may be arranged during other scheduled lab periods ***that same week*** by consulting with the instructor as soon as possible. If you miss a lab, or are unable to make it up during one of the other lab periods, it will count as a ZERO. Students missing three labs will have their grade reduced by one full letter grade. Students missing four labs will have their grade reduced by two full letter grades. Students missing five or more labs will fail the course. The one lowest lab score will be dropped at the end of the semester.

Laboratory worksheets will be completed during lab and checked by the instructor but will not be turned in. Your credit for the lab (10 points each experiment) will come from online post-lab quizzes will be administered in D2L. More information will be given in lab. Prelab assignments must be completed by the beginning of the laboratory period in which the experiment will be performed. They may not be turned in late. Students will typically work in pairs. There will be no groups of three or more, unless assigned by the instructor, as a laboratory course should involve as much "hands-on" work as possible for each student.

It is crucial that you arrive to laboratory on time, as discussions will start immediately. Safety glasses and goggles will be provided for you to wear whenever chemicals are being used in the laboratory.

In addition to the points for lab reports, 20 points will be dedicated to your participation in lab. Each week you and your lab partner will subjectively evaluate the other on the following five criteria:

1. On time to lab
2. Preparedness
3. Attitude
4. Team effort
5. Safety

You will have a different randomly-chosen partner each week, and your partner will not see the scores you give them. These evaluations along with my own observations as instructor will factor into your laboratory participation score, which will be given at the end of the semester.

There will also be 5 housekeeping points for the semester. Your housekeeping points may be deducted if you leave a mess behind at your lab station. These points may also be assigned for a specific cleanup task near the end of the semester.

ASSIGNMENTS AND QUIZZES

Reading assignments are given later in this syllabus. You must have each of the reading assignments completed *before* the class period where that material is covered.

A small number of **quizzes** (usually 3) will be administered online in D2L approximately halfway between the exams. Quizzes are worth 10 points each. You will typically have 5 days to complete the quiz after it has been assigned.

Textbook practice problems will also be assigned. You should plan to work on these assignments around the time the related topics are covered in class. Practice is ***crucial*** for many of the skills and concepts learned in this class, These problems will *not be collected*. You have college-level expectations in this course, so therefore I will not "hold your hand" and collect and grade daily work each period. Students should take the initiative to keep up with their work in order to prepare themselves for quizzes and exams. Additional practice worksheets for certain concepts will be posted on the course webpage.

Online homework problems in MasteringChemistry will be assigned for every chapter. There are two types of assignments: **pre-lecture tutorials** which will cover the material in the next lecture and will give you interactive feedback and hints as you attempt to solve the problems; and **post-lecture assignments** which will resemble the end-of-chapter practice problems and will assess whether or not you understood the material in the previous lecture.

Your score on the pre-lecture tutorial will be scaled to 3 points per assignment, and your score on the post-lecture assignment will be scaled to 4 points per assignment. The one lowest online pre-lecture and the one lowest post-lecture score will be dropped at the end of the semester.

MasteringChemistry access can be purchased in the bookstore in a bundle with your textbook or separately. Access instructions will be emailed to your MetNet email address the first week of class. More information on these assignments will be given to you in the first week of class.

Discussion assignments will be introduced throughout the semester. These will be a series of short research, analysis, and opinion-based posts you will make to the D2L discussion boards. These will be worth from 10-30 points each (usually 2 assignments). More information on these assignments will be presented in class.

Online participation will be assessed through your informal participation on the D2L discussion boards, an online collaboration environment where you can converse with your classmates and the instructor by posting messages. I think you'll find this to be a very useful way to get clarifications or alternative explanations on difficult concepts presented in this class. The online message boards will be separated into forums for Exam 1, Exam 2, and Exam 3 material. For full credit on these participation points, ***you must contribute at least one thoughtful post (question, answers, or comments) every week.*** These will be counted every two weeks so if you miss one week you can post extra the next week, but you will lose points if you go two weeks without posting. Approximately 20 points will be awarded over the course of the semester for this participation. More information on this will be presented in class.

EXAMS

There will be three midterm exams (100 points each) ***plus one comprehensive final exam*** (150 points). Topics covered in lecture, laboratory, the reading assignments, or the problem assignments may appear on the exams. Exams must be taken at the scheduled time. ***Make-up exams may be available in the case of documented school activities, illness, emergencies, or other serious situations (but <u>not</u> family vacations). Except in the case of documented emergencies, make-up exams are <u>only</u> available if you contact the instructor by email, phone, or voicemail <u>before the exam</u>. The make-up exam must be completed before the exams are returned to the class (1-2 class periods following the exam). Put the exam dates on your schedule now.*** The instructor has the right to refuse a make-up exam. Some exams may be arranged to be taken early, see the instructor as soon as possible if you may need this option. Make-ups may be allowed for excused absences from the final exam ***but only if the instructor has been consulted in advance***.

As an incentive to do well on the final exam, ***your lowest midterm exam score will be replaced by your final exam percentage score (if it is an improvement).*** If you miss one exam, its score will be replaced by your final exam percentage score. You should try your very best for each exam, since you never know when unplanned events may prevent you from taking a future exam. In order to pass the course, you must take at least two of the three midterm exams, and you must take the final exam.

ACCOMODATIONS

Alternative testing situations can be arranged for those students with a documented learning disability. Contact the school's disability services office for more information. Please notify the instructor well in advance of the exam if you elect for this service. *The alternative exam time may not be later than the assigned exam time.*

Every effort will be made to provide accommodations for religious observations. Please notify the instructor as far in advance as possible.

Please notify the instructor if you have any issues with loud noises, small explosions, flames, or other concerns.

EXTRA CREDIT

There may be one or two opportunities for a small amount (~10 points) of extra credit in this semester. Only those opportunities announced to the entire class will be available for extra credit, and they must be completed by the announced due dates.

ACADEMIC DISHONESTY

Cheating or plagiarism of any kind will not be tolerated. Any incidents of cheating or plagiarism will be arbitrated through the school's administration and may result in the exam, quiz, or assignment in question to be given a grade of zero, which cannot be made up. Extreme cases may result in a grade of F for the course. Care will be taken to discuss proper formats for citing sources in written projects as needed throughout the semester. Many lab reports and group projects involve sharing of data and collaboration between several students; these instances do not constitute plagiarism as long as all contributors are listed on the assignment.

STUDYING

> *"By failing to prepare, you are preparing to fail."* -Benjamin Franklin

It is very important that you *discipline* yourself to become an organized, conscientious student who studies regularly. Set aside some time each day and devote it to studying chemistry. Last-minute cramming for cumulative exams usually results in poorer understanding of concepts and lower exam scores.

Read the assigned text ***before*** each chapter is covered in lecture. No matter how clearly the material is presented in lecture, you will not retain the information if that is the first time you see it. By reading the material carefully in advance, the lectures will become entirely more valuable by reinforcing and cementing your understanding of the concepts.

Work the assigned practice problems by yourself, ***without resorting to the answer key!*** If you're stuck, re-read the relevant section of the text, come back to it later, or ask a friend, a tutor, or the instructor for a nudge in the right direction. The struggle to get a problem solved is an integral part of the learning process. Only ***after*** you've gotten an answer you're confident with should you check the answer key.

You should also form or join a study group as a ***supplement*** to your individual studying and practicing. Helping another student with a difficult problem is one of the best ways to reinforce your own learning.

Overall you should try to focus on ***underlying concepts, problem solving skills,*** and ***common themes*** more than simply memorizing facts. You should always view difficulty as a challenge to overcome.

KEEPING TRACK OF YOUR PROGRESS IN THIS COURSE

You should always, on your own, keep track of your scores for all work you do in this course. To determine where you stand in the course, divide the total of your points earned by the total number of points possible. Then multiply by 100. This will give you a percentage which you can use to determine your letter grade. All your recorded scores will appear in D2L. Check these regularly to ensure they were entered correctly.

APPROXIMATE COURSE POINTS AND LETTER GRADES

~12 **Labs** $\times$ 10 pts (1 lowest dropped)	~110 points
Lab participation/housekeeping	25 points
~20 **Homework** (1 lowest pre&post dropped)	~70 points
Online discussion assign./participation	~60 points
3 **Quizzes** $\times$ 10 pts	30 points
3 **Midterm exams** $\times$ 100 pts (lowest midtem replaced by final exam % if improvement)	300 points
Final exam $\times$ 150 pts	150 points
Total	approx. 745 points

The course grade will typically be based on a total point system with the following letter grades:

A 90.0 % and above
B 80.0 - 89.9 %
C 70.0 - 79.9 %
D 60.0 - 69.9 %
F below 60.0 %

No scores or grades will be curved in this class. Occasionally, the above percentages may be lowered, but will never be raised. In other words, if you earn greater than 90% of the points in the course, you are guaranteed an A. Your official course letter grade will only be calculated at the end of the semester.

Postlab Quizzes in D2L

Students in your lab section will keep your worksheets at the end of the lab period. You will then, outside of lab, take a short postlab quiz in the D2L learning environment.

- After you leave lab, you can access the postlab quiz in your **lab section's** D2L course.
- Prelab questions are due in lab at the beginning of each lab. The instructor will quickly check and return them to you with a score out of 2 points. The first question in the D2L postlab quiz asks what score you received on your prelab. Be honest on this question, as the instructor may double check these scores at any time. Any dishonest responses will cause your quiz score to be penalized or voided.
- During lab, the instructor will also initial the worksheet of students that successfully completed the experiment and the worksheet. The second question in the D2L postlab quiz asks if you completed the experiment and all questions on the worksheet. Again, answer this question honestly as your score will be penalized or voided otherwise.
- Many of the quiz questions will be very similar to the questions on your lab worksheets. It is to your benefit to work carefully with your partner on your worksheet **during lab**, as you may use the worksheet to help complete the quiz. You may also use class notes and the textbook, if you like.
- These weekly quizzes will be the sole source of points for the laboratory portion of your course. If you do not attempt the quiz, you will get no credit for that week's lab.
- You have 48 hours from the end of the lab period to submit the quiz. Late submissions will not be accepted. It is strongly recommended that you complete the quiz as soon as possible.
- You have 120 minutes from the time you begin the quiz until you submit it. Normally, it should take you less than 20 minutes to complete.
- This must be treated as a quiz, meaning you are to complete it **alone and without the assistance of any other people**. Failure to follow this rule will result in the assignment score changed to a zero. Repeat offenses will cause you to be referred to the administration and your passing of this course will be in jeopardy. If you witness other students disobeying this rule, contact the instructor immediately. Each student gets a randomly-generated set of questions, so assistance from another student will be of little help anyway.
- You will be able to see your score and responses after the quiz's due date.

CHEMISTRY 1020 READING/PROBLEM ASSIGNMENTS

Chap	Title	Reading Assignments	Suggested Problem Assignments
1	*The Chemical World*	All sections	none
2	*Measurement and Problem Solving*	All sections	#7, 11, 23, 35, 37, 39, 41, 45, 51, 55, 63, 67, 69, 73, 89, 93, 95, 97, 105, 107
3	*Matter and Energy*	3.1-3.7, 3.10	#3, 7, 11, 13, 15, 25, 31, 35, 41, 63, 97, 99
4	*Atoms and Electrons*	All sections	#5, 13, 15, 19, 21, 27, 29, 33, 49, 53, 55, 57, 61, 69, 73, 83, 87, 89, 99, 105, 107, 113
5	*Molecules and Compounds*	All sections	#1, 7, 9, 13, 19, 21, 27, 29, 37, 41, 45, 47, 53, 55, 57, 59abcde, 63abcdf, 65, 67, 71, 73, 75, 87abcd, 89
6	*Chemical Composition*	6.1-6.7	#21, 31, 37, 47, 59, 69, 71, 79, 99, 103
7	*Chemical Reactions*	7.1-7.6, 7.8-7.10	#5, 7, 11, 15, 29, 33, 35, 37, 43, 49, 51, 53, 55, 57, 59, 61, 65, 67, 69, 87, 89, 107
8	*Quantities in Chemical Reactions*	8.1-8.6	#3, 5, 9, 11, 17, 19, 25, 29, 33, 43, 47, 53, 57, 59, 63, 69
9	*Electrons in Atoms and the Periodic Table*	9.1-9.8	#1, 11, 15, 17, 21, 25, 27, 43, 49, 53, 55abd, 57, 61, 67, 69, 73, 75, 89, 91, 97, 99
10	*Chemical Bonding*	10.1-10.5	#7, 9, 11, 25, 29, 31, 35, 39, 41, 45, 47, 49ac, 51, 53, 93, 97(skip polarity), 99
18	*Organic Chemistry*	18.1-18.8, 18.11-18.12	TBA
12	*Liquids, Solids, and Intermolecular Forces*	10.7-10.8, 12.1-12.2, 12.4-12.8	Ch. 10, #77, 83, 89acd Ch. 12, #3, 7, 13, 17, 20, 25, 27, 33, 41, 47, 61, 63, 65, 71, 73, 77, 99
13	*Solutions*	13.1-13.7, 13.9 (no calcs from 13.9)	#3, 5, 6, 7, 8, 11, 15, 19, 25, 33, 35, 37, 45, 49, 63, 65, 73, 75, 79, 81, 83, 85, 123
14	*Acids and Bases*	TBA (as time permits)	#1, 3, 6, 9, 10, 19, 22, 23, 26, 33, 57, 61acd, 71, 73, 77, 81

Also, see the collection of practice worksheets on the course webpage,
http://webs.anokaramsey.edu/aspaas/1020

CHEMISTRY 1020 TENTATIVE LECTURE AND LAB SCHEDULE

Changes and updates to this schedule will be announced in class and posted at http://webs.anokamsey.edu/aspaas

Lecture	Lab
Jan 12 Intro / Ch 1	**Intro / Safety**
Jan 19 No Classes MLK Day	No Classes MLK Day
Jan 26 Ch 2	**Exp 1** Does It Make Cents?
Feb 2 Ch 3/4	**Exp 2** How Do You Measure Up?
Feb 9 Ch 5	**Exp 6** TLC
Feb 16 No Classes President's Day	No Classes President's Day
Feb 23 **EXAM 1** Ch 1-5	**Exp 14** It's Snow Big Deal
Mar 2 Ch 5/6	**Exp 9** It's A Gas!
Mar 9 Ch 7	**Exp 8** What's In A Cent?
Mar 16 No Classes Spring Break	No Classes Spring Break
Mar 23 Ch 8/9	**Exp 4** Which Solution Is Which?
Mar 30 **EXAM 2** Ch 5-9	**Ch 9 activity** (no prelab)
Apr 6 Ch 9/10	**Exp 5** Molecular Models
Apr 13 Ch 10/18	**Exp 15** Soaps
Apr 20 Ch 18/12	**Exp 16** The Solution Is Dilution
Apr 27 **EXAM 3** Ch 9, 10, 18, 12	**Ch 13 activity** (No prelab)
May 4 Ch 13/14	**Exp 10** Antacids
May 11 **FINAL EXAM** 6:00-8:00pm	**Cleanup**