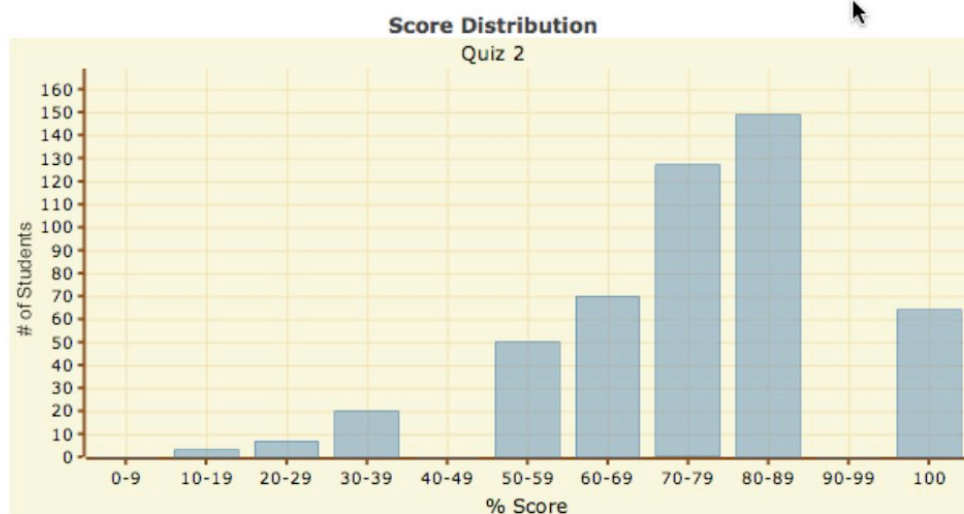


## CH302 Random Musings February 17, 2011— Post V-Day special

1. Quiz 2 Results. Though I wanted an 83, the 75 was actually very good— looking at the distribution, more than half of you missed 1 or fewer. That is good. By the way, last year's group benefited from a killed question that boosted their average and they had an easier quiz. So I am willing to view the two classes as neck and neck in the “smartest class ever” race—exam 1 will tell the tale.

	excluding 0 scores	all scores
Students participating:	490	501
Class median:	75%	75%
Class average:	75.1%	73.45%
Quest average:	61	61
Average points earned:	30.04	29.38
Standard deviation:	7.29	8.45



2. THEORY QUESTIONS—THE BANE OF YOUR EXISTENCE. One reason the quiz 2 average wasn't an 83 is that I intentionally made the van't Hoff problem one where you had to do theory (in other words, you had to read a lot of words.) I did this because you can be guaranteed that the hardest questions on the first exam will be the “theory” questions and there will be a lot of them. Which means you need to start putting the effort into understanding them. To do so, you have to own the vocabulary of this course and be able to construct a series of logical sentences, in sequence, that you can say out loud as proof you know the theory. If you can't, you don't know the theory, and you will miss the questions on the exam. I have highlighted in red, below, the questions for which a conversational knowledge of the material is essential to success on the exam. So for every question in red, be able to look at a study buddy, and talk their ear off without say words like “thingy or stuff.”

3. There is a first exam coming up next Thursday evening. I have provided the question types for it below and will hold a review next Monday night. A format and procedure for exam 1 is found at the end of the musings. But some highlights include:

- The exam will be Thursday evening from 7:30 till 9:30 pm. You get 120 minutes, sharp.
- Room locations: Last name A-L will be Welch 2.224. Last name M-V will be in W. C. Hogg 1.120 and W – Z will be in Welch 2.256.
- You will be given a sheet of equations and constants and a periodic table.
- This is a calculator-free exam. No electronic devices are to be used during the exam, and you may not be in possession of any electronic devices while the exam is in progress.
- A make-up exam will be given the following Sunday evening from 6 to 8:00 pm in Welch 2.224.

4. Here are the exam question types—they were posted two weeks ago.

#### Physical Equilibria

1 temperature dependence of phase changes

2 vapor pressure theory

3 salt dissociation in water

4 phase diagram interpretation

5 phase diagram navigation

6 calculating  $\Delta H$  from heating across phases transitions

7 gas solubility in liquids

8 ranking miscibility of liquids

8 calculating vapor pressure in binary system

10 Clausius Clapeyron equation theory

11 colligative property application

12 colligative property calculation

13 colligative property theory

#### Chemical Equilibria

14 setting up K from equilibrium expression

15 calculating equilibrium concentrations from K

16 calculating equilibrium concentrations from K

17 determining reaction direction from Q and K

18 LeChatelier and reaction direction

19 van't Hoff equation calculation (NOT the van't Hoff factor)

20 relationship of  $\Delta G^\circ$  to K

#### Introduction to Water Equilibria

21 theory of auto-protolysis of water

22. temperature dependence of  $K_w$

23. converting between pH, pOH,  $[H^+]$  and  $[OH^-]$

24. simple solubility calculation

25. ranking salt solubility using  $K_{sp}$  estimations

26. ranking acid base strength based on K values

27. strong acid or base calculation

28. weak acid or base calculation

29 weak acid or base calculation

30. simple buffer calculation

5. There will be two reviews for the final.

- Dr. Laude will hold a review on Monday evening, February 22, 2010 from 9:00 pm to 10:00 in Welch 2.224. He will go over the 30 question types, explaining what is expected.
- Travis will hold a review on Tuesday, February 23, 2010 from 9:00 pm to 10:00 pm in WCH 1.120. I don't know what he does during this time, but I have heard he does a really good job.

6. There will be two practice exams, each of which should be done in a calculator-free manner. I will post the first practice exam in the ChemPortal late Friday evening. I will post the second practice exam on Sunday in the Assignment link of the Portal.

6. Worksheets. A reminder that all the worksheets that you need in preparation for the exam have been posted at

<http://laude.cm.utexas.edu/courses/ch302/worksheets302.html>

So breaking down the worksheets you should consider using:

#### Physical Equilibria questions:

- [Worksheet 1: 20 questions to help you learn the material from the first four lectures on physical equilibria](#)
- [Worksheet 2: 10 questions on Colligative Properties to help with Quiz 1](#)

#### Chemical Equilibria Questions:

- [Worksheet 3: 10 questions to get your starting on Chemical Equilibria and the Law of Mass Action](#)

#### Water Equilibria Questions:

- [Worksheet 4: Identifying Acids and Bases by Calculation Type--do it, it is good for you](#) (this isn't essential for this exam but if you can start learning this way, you will survive exam 2.)
- [Worksheet 5: 15 questions to get your starting solving simple \(non-neutralization\) acid base and solubility calculations.](#) (this is a really good worksheet for exam 1.)
- [Worksheet 6: 20 questions more simple solubility and acid base calculations with an introduction to how approximations work](#) (lots of really good questions—you don't need to be able to understand the approximation problems, though. But again, though not on the exam this time, I will have taught the material and it is good to learn.)

7. I know it starts to sound pretty hollow, but the engagement in learning has to pick up soon with better attendance at discussion sessions and academic communities. Yesterday I had my lowest attendance at a discussion session not held the day after a test, IN HISTORY. It should be appreciated that the following is true about CH302:

- It is much harder to earn an A overall
- Exam 2 is close to impossible to earn an A on because of the material and the timing (it is right after spring break).
- This means that you need to get ahead of the curve by doing well on exam 1, an exam that is just one week from now and for which the vast majority of you no little to nothing about acid-base equilibria.

8. Extra credit will be coming—I am already being queried about extra credit. CH302 is a hard course (after exam 2 you may way far more vile things about it.) To appease you , there will be three extra credits for this class, each worth 1% of your grade. Briefly they will include e-mailing me about teaching a science hater some chemistry over spring break, attending a scholarly lecture in a field that interests you, and attending an undergraduate research poster session. Much more to come.

9. Poetry Corner. I am a little out of sync on the love poetry because of the calendar, so you will see various kinds of love poetry coming the next several weeks. For this week, love poetry by people famous for writing love poetry. Next week—student love poetry.

#### Part 1. Famous people Love Poetry.

##### **Oranges By Gary Soto**

The first time I walked  
With a girl, I was twelve,  
Cold, and weighted down  
With two oranges in my jacket.  
December. Frost cracking  
Beneath my steps, my breath  
Before me, then gone,  
As I walked toward  
Her house, the one whose  
Porch light burned yellow  
Night and day, in any weather.  
A dog barked at me, until  
She came out pulling  
At her gloves, face bright  
With rouge. I smiled,  
Touched her shoulder, and led  
Her down the street, across  
A used car lot and a line  
Of newly planted trees,  
Until we were breathing  
Before a drugstore. We  
Entered, the tiny bell  
Bringing a saleslady  
Down a narrow aisle of goods.  
I turned to the candies  
Tiered like bleachers,  
And asked what she wanted -

Light in her eyes, a smile  
Starting at the corners  
Of her mouth. I fingered  
A nickel in my pocket,  
And when she lifted a chocolate  
That cost a dime,  
I didn't say anything.  
I took the nickel from  
My pocket, then an orange,  
And set them quietly on  
The counter. When I looked up,  
The lady's eyes met mine,  
And held them, knowing  
Very well what it was all  
About.  
Outside,  
A few cars hissing past,  
Fog hanging like old  
Coats between the trees.  
I took my girl's hand  
In mine for two blocks,  
Then released it to let  
Her unwrap the chocolate.  
I peeled my orange  
That was so bright against  
The gray of December  
That, from some distance,  
Someone might have thought  
I was making a fire in my hands.

## **Sonnet #18 William Shakespeare**

Shall I compare thee to a Summer's day?  
Thou art more lovely and more temperate:  
Rough winds do shake the darling buds of May,  
And Summer's lease hath all too short a date:  
Sometime too hot the eye of heaven shines,  
And oft' is his gold complexion dimm'd;  
And every fair from fair sometime declines,  
By chance or nature's changing course untrimm'd:  
But thy eternal Summer shall not fade  
Nor lose possession of that fair thou owest;  
Nor shall Death brag thou wanderest in his shade,  
When in eternal lines to time thou growest:

So long as men can breathe, or eyes can see,  
So long lives this, and this gives life to thee.

## **How Do I Love Thee?**

### **Elizabeth Barrett Browning**

How do I love thee? Let me count the ways.  
I love thee to the depth and breadth and height  
My soul can reach, when feeling out of sight  
For the ends of being and ideal grace.  
I love thee to the level of every day's  
Most quiet need, by sun and candle-light.  
I love thee freely, as men strive for right.  
I love thee purely, as they turn from praise.  
I love thee with the passion put to use  
In my old griefs, and with my childhood's faith.  
I love thee with a love I seemed to lose  
With my lost saints. I love with the breath,  
Smiles, tears, of all my life; and, if God choose,  
I shall but love thee better after death.

## **Love Not Me by John Wilbye**

Love not me for comely grace,  
For my pleasing eye or face,  
Nor for any outward part:  
No, nor for a constant heart!  
For these may fail or turn to ill:  
Should thou and I sever.  
Keep, therefore, a true woman's eye,  
And love me still, but know not why!  
So hast thou the same reason still  
To dote upon me ever.

## **My Love Is Like To Ice by Edmund Spenser**

My love is like to ice, and I to fire:  
How come it then that this her cold is so great  
Is not dissolved through my so hot desire,

But harder grows the more I her entreat?  
Or how comes it that my exceeding heat  
Is not allayed by her heart-frozen cold,  
But that I burn much more in boiling sweat,  
And feel my flames augmented manifold?  
What more miraculous thing may be told,  
That fire, which is congealed with senseless cold,  
Should kindle fire by wonderful device?  
Such is the power of love in gentle mind,  
That it can alter all the course of kind.

## **Love by Samuel Taylor Coleridge**

And in Life's noisiest hour,  
There whispers still the ceaseless Love of Thee,  
The heart's Self-solace and soliloquy.  
You mould my Hopes, you fashion me within;  
And to the leading Love-throb in the Heart  
Thro' all my Being, thro' my pulse's beat;  
You lie in all my many Thoughts, like Light,  
Like the fair light of Dawn, or summer Eve  
On rippling Stream, or cloud-reflecting Lake.  
And looking to the Heaven, that bends above you,  
How oft! I bless the Lot that made me love you.

## **Longing by Matthew Arnold**

Come to me in my dreams, and then  
By day I shall be well again!  
For then the night will more than pay  
The hopeless longing of the day.  
Come, as thou cam'st a thousand times,  
A messenger from radiant climes,  
And smile on thy new world, and be  
As kind to others as to me!  
Or, as thou never cam'st in sooth,  
Come now, and let me dream it truth;  
And part my hair, and kiss my brow,  
And say: My love! why sufferest thou?  
Come to me in my dreams, and then  
By day I shall be well again!  
For then the night will more than pay  
The hopeless longing of the day.

**She Walks In Beauty Lord Byron**

She walks in beauty, like the night  
 Of cloudless climes and starry skies;  
 And all that's best of dark and bright  
 Meet in her aspect and her eyes:  
 Thus mellow'd to that tender light  
 Which heaven to gaudy day denies.  
 One shade the more, one ray the less,  
 Had half impair'd the nameless grace  
 Which waves in raven tress,  
 Or softly lightens o'er her face;  
 Where thoughts serenely sweet express  
 How pure, how dear their dwelling place.  
 And on that cheek, and o'er that brow,  
 So soft, so calm, yet eloquent,  
 The smiles that win, the tint that glow,  
 A mind at peace with all below,  
 A heart whose love is innocent!

**A Red, Red Rose Robert Burns**

O my luv'e's like a red, red rose,  
 That's newly sprung in June;  
 O my luv'e's like the melodie  
 That's sweetly play'd in tune  
 As fair art thou, my bonie lass,  
 So deep in luv'e am I;  
 And I will luv'e thee still, my Dear,  
 Till a' the seas gang dry.  
 Till a' the seas gang dry, my Dear,  
 And the rocks melt wi' the sun;  
 I will luv'e thee still my Dear,  
 While the sands o' life shall run.  
 And fare thee weel, my only Luv'e,  
 And fare the weel, a while!  
 And I will come again, my Luv'e,

**Counting the Beats****by Robert Graves:**

You, love, and I,  
 (He whispers) you and I,  
 And if no more than only you and I  
 What care you or I?  
 Counting the beats,  
 Counting the slow heart beats,  
 The bleeding to death of time in slow heart beats,  
 Wakeful they lie.  
 Cloudless day,  
 Night, and a cloudless day,  
 Yet the huge storm will burst upon their heads one  
 day From a bitter sky.  
 Where shall we be,  
 (She whispers) where shall we be,

When death strikes home, O where then shall we be  
 Who were you and I?  
 Not there but here,  
 (He whispers) only here,  
 As we are, here, together, now and here,  
 Always you and I.  
 Counting the beats,  
 Counting the slow heart beats,  
 The bleeding to death of time in slow heart beats,  
 Wakeful they lie.

**Trague:****By Viggo Mortensen**

I swallowed the reel  
 And the rod  
 And the faith that  
 So sweetly I had  
 The afternoon of the day  
 That I met you  
 I saw myself in your eyes  
 And in your arms  
 And an entire lifetime  
 In your lips I lived  
 The afternoon of the day  
 That I met you.

**Stanza for Music:****by Lord Byron**

They say that Hope is happiness;  
 But genuine Love must prize the past,  
 And Memory wakes the thoughts that bless;  
 They rose the first- they set the last;

And all that Memory loves the most  
 Was once our only Hope to be,  
 And all that Hope adored and lost  
 Hath melted into Memory.

Alas! it is delusion all:

The future cheats us from afar,  
 Nor can we be what we recall,  
 Nor dare we think on what we are.

**Come Slowly by Emily Dickinson**

Come slowly, Eden  
 Lips unused to thee.  
 Bashful, sip thy jasmines,  
 As the fainting bee,  
 Reaching late his flower,  
 Round her chamber hums,  
 Counts his nectars -alights,  
 And is lost in balms!

## CH 302 Procedures: Format and Administration

### Exam format:

1. A major CH302 exam covering the first nine lectures on chemical and physical equilibria will be administered Thursday, February 24 from 7:30 till 9:30 pm (note the 120 minute length). The exam will be worth 180 points. Only problems similar in content and difficulty to those from quizzes and worksheets will be included on the exam. Many of the problems are more challenging than the quiz questions.
2. Test structure: The exam will consist of 30 questions with each question worth 6 points. Questions are in a multiple-choice format. Look below for an exact breakdown of problem types.
3. In addition to the problems, you will be provided a bubble sheet, a table of the elements, and a list of useful equations and constants. Plenty of space for working problems is provided on the exam. Do not bring your own scratch paper.

**Exam Administration:** READ THIS CAREFULLY. IF YOU DO NOT FOLLOW PROCEDURES, YOU MAY NOT BE ALLOWED TO TAKE THE EXAM. The supreme rule for my exams: everyone has the right to an optimum test-taking environment. I am less concerned with cheating than I am with you making life miserable for others taking the exam. All of the rules for this exam are constructed with this in mind.

1. Exam location: Last name A-L will be Welch 2.224. Last name M-V will be in W. C. Hogg 1.120 and W – Z will be in Welch 2.256.. If you go to the wrong room, you will not be allowed to take the exam. There is only enough seating for the students as listed above.
2. Exam start time: 7:30 pm. We may decide not to administer the exam to late arrivals if it becomes too disruptive to those taking the exam. Once you start the exam, you may not leave to take the make-up. You must turn in scantron with validated identity.
3. What you may bring to your seat for the exam: number 2 pencils, calculator (I don't care what kind you bring), something to drink. What you may **not** bring to your seat: anything else including coats, food, back packs, books, paper, and obviously, electronic communication devices. If you must bring them to class, place them at the bottom of the class room before the exams begins.
4. During the exam, the TAs will be available to answer questions. Raise you hand and one of us will come to help you as best we can. Do not leave your seat unless you are finished and are leaving the room.
5. When you leave, do so quietly. **AS YOU LEAVE YOU MUST SHOW YOUR UT IDENTIFICATION** when you turn in your exam. Make sure your name, special code and SSN are bubbled in.
6. Exam finish time 9:30 pm. You will be given fair warning that the exam is about to end so you can start guessing on questions you don't know. **I WILL NOT TOLERATE ANYONE WRITING AFTER YOU ARE TOLD TO PUT DOWN YOUR PENCILS.** Anyone who is observed to be writing on their exam after the exam ends will be assumed to be cheating and will receive a 0 for the exam and will face additional academic penalties. **READ THIS AGAIN IF YOU DON'T UNDERSTAND. I WILL NOT TOLERATE ANYONE ANSWERING QUESTIONS AFTER THE EXAM STOPS AT 9:30 PM.**
7. If all goes well the exam scores will be posted by Friday morning. Please don't hassle us if they are not up right away. We are doing our best.
8. If you have any special considerations please contact me immediately by e-mail so we have documentation.