CH301 Random Musings September 28, 2010

1. A frightfully large number of you did not fill in your version number or uteid correctly on quiz 1 and 2. Please make sure you double check this on the exam. If you do make a mistake, and believe that the score we report for you on Quest is wrong, please go to the web site and look up how to fix your mistake (hint: it involves Travis.)

2. There is a major exam tomorrow night, Wednesday, October 29, from 7:30 till 9:00 pm.

Room locations as follows:

- Last name: A - K WEL 2.224
- Last name L - Z UTC 2.112A

IMPORTANT: If you go to the wrong room, you will not be allowed to take the exam.

3. The exam is worth 180 points, with 30 6-point multiple choice questions covering material in Chapters 1 and 2. Everything in my course notes from those chapters, as well as the worksheets and practice exams, is fair game. You should use the list of problem types (provided last Tuesday and again today at the bottom of the musings) as your guide for what I will cover. The review on Monday night produced a question by question description of what I expect—you can find it under my lecture notes link.

4. There are two additional review session (in addition to the regularly scheduled ones)
   - Travis' review tonight at 9 in WCH 1.120
   - Ben's last minute Q&A session at 5 pm on Wednesday in WEL 3.402.

5. There are now two practice exams available—the first is one done by the TAs and one that is in the chem. portal.

6. Things to think about in preparing for the exam:
   - Don't think you have to know everything in Chapters 1 and 2—simply focus on how to do the kinds of question types that are listed.
   - Know that you know the material. Assume nothing. For example, I will ask you to explain how a particle in a box works, so before the exam, be able to write down, or say out loud, how it works. If you can't do it, or know that you are shaky on the subject, THEN YOU WILL GET IT WRONG.
   - Don't think that if you did well on the quizzes you will do fine on the exam—the quizzes typically have easier questions, and more important, there was really not a time constraint.
   - Being overconfident is bad. Actually work the problems rather than think you know how to work the problems because you did it once in high school.
   - Time will definitely be a factor on Wednesday for students who don't know the material cold.
   - Don't stay up all night Tuesday night unless you have done it before and know you can handle it

7. Things to think about when you come take the test:
   - Showing up with a working calculator, pencils and picture ID.
   - Use proper hygiene on the day of the exam—many of you will think you don't have time to shower. Think again, the room will smell pretty ripe if you don't.
   - Don't assume your bus will be on time and that the traffic will be good and you know where the exam will be. Give yourself plenty of time so you are not panicked as you arrive.
   - Have a time management strategy in mind while you take the exam—see the test taking advice below.

8. Test-taking advice I. As you prepare for this test, keep the following time management idea in mind. There are 30 equally weighted questions and only 90 minutes to finish them. Some questions will take 2 seconds to answer and some will take 5 minutes to answer. As the end of the exam arrives, if you have spent your time working the really long questions (the calculations and complicated Lewis structures, for example) and still have a bunch of quick questions to work, then you are making a big mistake. Get the easy quick questions out of the way first and then struggle at the end with the couple of long calculations questions that you might not finish, but won't cost you as much in the grading.

9. Test Taking Advice II. Memorize the question types. (I said memorize.) The advantages are numerous. Foremost is that this will automatically program into your head the locations where you can put the material you learn so your brain isn't a jumbled mess while you take the exam. In addition to an organized brain, you will now be able to figure out what to study and what not to study. It will also make it possible to define, question by question, exactly what you need to learn.

10. Test Taking Advice III. How you every noticed that you study with a million study aids, but you take a test without any exam aids save a periodic table and some equations? Try spending some time studying the way you take tests—with nothing in your possession but a pencil, a periodic table, and what is in your brain. Find a blank chalk board, or a quiet corner of the library, and see, for each memorized question type, exactly how much you have actually put into your head. If you start this process, and realize nothing is coming out, it is because nothing has gone in. At least then you will know that you are about to crash and burn on the exam.

11. Grading and regrades: Grades will be posted as soon as possible on Thursday. Don't hassle us—if they are not up there is a good reason. Also, please don't e-mail after the exam to say your don't have a test score. Those of you with grading issues should contact with as much information as possible (in particular your actual version number, uteid, name, etc.) and he will fix your grade in no time and e-mail to confirm. Note, this is THE ONLY WAY WE DO REGRADES.

12. Two pet peeves of mine with respect to the test:

- Test environments are quiet. From the moment you arrive you should be focusing on preparing to take the test and speaking only to the proctors about test-related issues.
- When the test time is over, you will be told to put down your writing implements. That is not the time to start filling in you scantron or bubbling in guesses. If you do so you will be assumed to be cheating and will be treated accordingly.

13. Speaking of cheating, people get caught cheating all the time—happens every year in my class. I have no tolerance for those folks. Sadly, their college careers are going to be much less happy than they once thought, with that permanent stain sitting on their academic records. The professional schools to whom I will send letters in four years will also be sad to hear about issues with integrity. Those of you who get away with cheating elsewhere and intend to try and get away with it on the exam, know this: we have our ways to catch you, and you may get away with a few times, but you will be caught. So short and sweet:

> Don't cheat--it corrupts the integrity of the academic process that you have chosen to make the centerpiece of your existence.

13. After this exam, 25% of your course grade will have been determined. Should you decide to drop the course on the basis of academic performance, I will rubber stamp the Q-drop up until Thursday, the 7th, at 5 pm. After that Thursday I will permit a Q-drop without academic penalty only for non-academic reasons that are substantiated by your college. So please decide by next Thursday about any intention you might have to Q-drop the course. Should you want to speak with me about this, contact me by e-mail.

14. A make-up exam will be held for students who have academic conflicts, official UT conflicts or religious observances. Your one chance to take the make-up will be Sunday, October 3rd, at 7:30 in Welch 3.502 (the upstairs outdoor classroom directly above this room.) Others who have an extraordinary reason for missing the exam—death in the family, operations, etc, can contact me about also using this makeup time but it will be granted sparingly to the really deserving. E-mail to discuss your issues.

15. Most freshmen are in signature courses. You are required to go to a University Lecture Series Event. This year you have the choice of two—note that one of them involves me. Just saying…

Cirque du Politique

Monday, October 4, 7 p.m.
Bass Concert Hall
Speech coach Martin R. "Randy" Cox will discuss current political discourse, illustrated by presenting his prizewinning students on controversial topics of the day. View supporting materials for this lecture.

World Changers: the Great Debate

Tuesday, October 5, 7 p.m.
Bass Concert Hall
The University claims that we transform lives for the benefit of society. Which subjects are the most important for you to study if you wish to change the world? Faculty from five disciplines will present their subjects and debate in front of student juries.

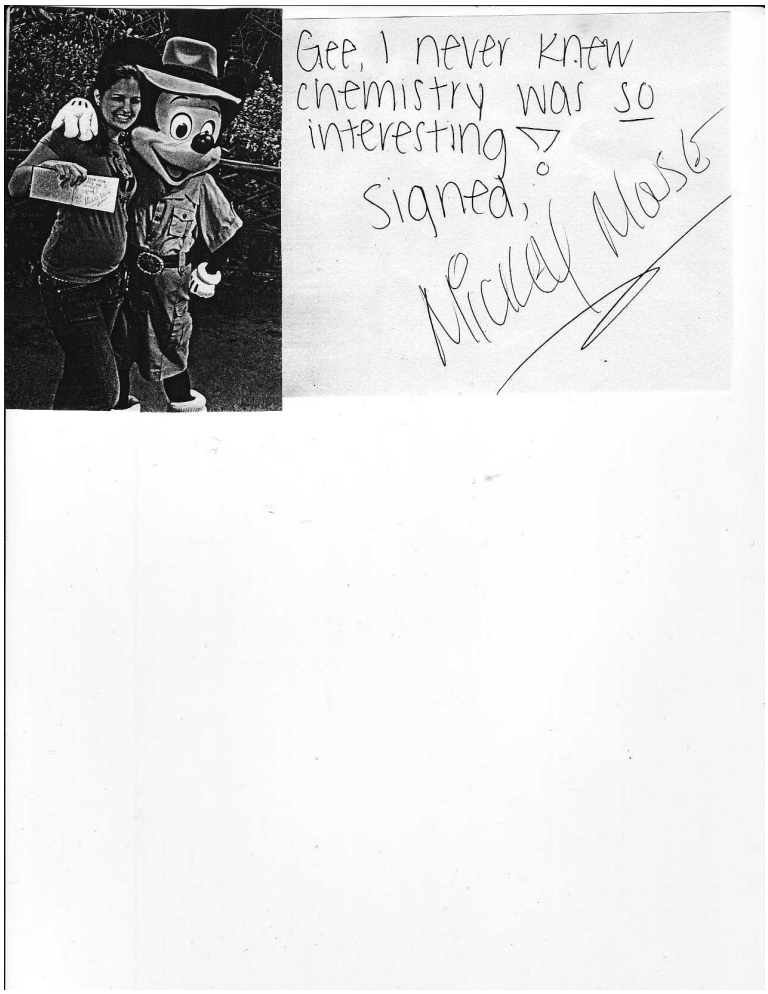
The faculty presenting are:

- Dean David Laude from the College of Natural Sciences
- Professor Leigh McAlister from the McComb's School of Business
- Professor Lawrence Speck from the School of Architecture
- Professor David Springer from the School of Social Work
- Professor Sean Theriault from the College of Liberal Arts

(By the way, I usually I kick butt at these things, but I rarely win, because I don't get the underdog vote—I mean, I represent science and technology, so I start with the huge disadvantage that everyone knows I am supposed to win, and to top it off, I am responsible for global warming—but try to remember that I am the one that gave you smart phones, before you get all sanctimonious.)

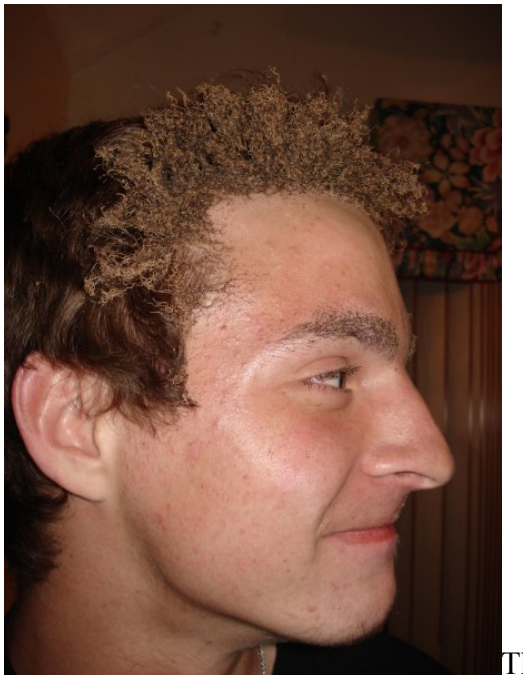
16. Remember, Thursday is the competition between Travis and me—the periodic table-off. This is your chance to earn between 1 and 3 extra points toward your chemistry grade. No purchase necessary, must be present to win.

17. Picture corner. So sometimes you e-mail me pictures.



Some of you will be wanting to earn extra credit in this course. This will happen over Thanksgiving when you are given the chance to final a science hater, teach them some chemistry, and get them to say "Gee, I never knew chemistry was so interesting, just like Mickey Mouse.

Some of you took me up on my recommendation that you work Lewis dot structures at the football game.

 This former student didn't take the admonision "don't try this at home" seriously. It may not appear that I am being careful or know what I am doing when I perform demos, but in 30 years I have never hurt anyone, say, exploding a hydrogen balloon. You on the other hand, as the saying goes, "don't try this at home…."

18. Poetry corner. This is what your brain will look like during the test if you don't memorize the question types before hand and no how to identify them on the exam. So organize, organize, organize as you finish up your exam preparation.

from the cognoscenti e. e. cummings

bingbongwhom chewchoo
laugh dingle nails personally
bung loamhome picpac
obviously scratches tomorrowlobs

wholeagainst you gringlehow

exudes Thursday fasters
by button of whisper sum blinked
he belowtry eye nowbrow

sangsung nee whitermuch grab

sicksilk soak sulksuck whim
poke if inch dimmer twist on
permament and slap tremendous

election who so thumb o'clock
asters miggle dim a ram
flat hombre sin bangaroom

slim guesser goose pin yessir wheel

no sendwisp ben jiffyclaus
bug fainarain wee celibate
amaranth clutch owch

so chuck slop hight evolute

my eerily oh gargle
to jip hug behemoth
truly pseudo yours podia

of rawdarw leschin

sorrydaze bog triperight

Students write poetry rather than study:

The infamous “I love you” Travis poem from last year:

> I can feel the heat released as he falls to a lower energy level
> Behind his scruffy beard lies his bona fide inner devil
> My heart sunk when his protons drew her body nearer
> The way he explained De Broglie made everything seem clearer
> His opponent doesn’t stand a chance in the Battle of the Table
> With him by my side, my formal charge would be more stable
> If he could see me now, I could be the object of his desire
> There is room for two wrapped in my Snuggie™ by the fire
> His eyes. His passion. His chuckle. He will be mine. Travis.
> ...I love you

And new this year:

> Last quiz I missed the Indium one
> For doubt consumed my thinking squad
> I went along though it was wrong
> I filled the bubble, that’s so dumb!
>
> But dear D. Laude was so nice that gave me another, one more chance
> I did not think he would do that, but God I thank him lots for that!
>
> After all this, I want to say:
>
> **Don’t be so s2p3 next time!!!**

And evidence that I am actually the side show:

Your TAs are like the seven dwarves (minus two)
They're not even short, but only this name would do
Each is unique in a special way
They keep me alert in class every Tuesday and Thursday

The first one there is Grumpy 2.0
He tells us all we need to know
He sometimes has those brain farts
But even then, he's still really smart
A funny guy and really cynical
His beard is like a jungle
Perhaps if he wasn't paid $11 an hour
Maybe his expression would not be so dour.

The second one I call Smiley
He just sits there in class
Smiling and grinning, so silly
And somewhat abashed
To educate the class of the effects of Viagra

The third I dub Baldy
Because he was bald when I came up with the name
Fast-growing is his scant mane
Unhappy if the discussion gets rowdy
His frustrated expression seems to say
You can go fail that quiz of Laude's
But to those who listen, he shows us the way

The fourth one I named Lady
For she is the only TA that is a lady
For being a biology major myself
I sit and listen to her full of awe and respect
When put in demonstrations
Two male TAs are often put against each other
To fight for the fair maiden
Oh how they love her!
My friend and I turn to laugh and say
Hey, now that's Chemistry!

The last but not least I called Chapstick
For it's what he applies on his lips during lecture
His mind must be full of conjectures
For he always looks like he is daydreaming
This TA seems full of mystery
That Korean hair makes me feel a bit jittery
Secretly, I call him Pretty Boy
Because seeing him causes me joy
You may raise your voice in dispute
But I never thought physicists could be pretty cute!

CH301 Fall 2010 Exam 1 question types

Material from Quiz 1—First half of Chapter 1 on EMR and QM

1. electromagnetic radiation theory and calculation
2. classical theory falls apart (blackbodies, photoelectric effect and atomic emission)
3. Rydberg equation calculation
4. particle in a box theory
5. uncertainty principle theory and calculation
6. deBroglie equation theory and calculation
7. Schrodinger wave equation theory
8. applying quantum number rules to boundary conditions
9. applying quantum number rules rules to boundary conditions

Material from Quiz 2—First half of Chapter 1 on Electronic Configurations and Trends

10. applying Aufbau, Pauli and Hund
11. assigning electronic configurations of atoms and ions
12. assigning electronic configurations of atoms and ions (exceptions)
13. assigning electronic configurations of atoms and ions (exceptions)
14. periodic table nomenclature
15. theory of periodic trends: ENC and shielding explain IE, EA, AR, IR, metals
16. ranking periodic trends: IE, EA, AR, IR, metals
17. ranking periodic trends: IE, EA, AR, IR, metals (exceptions)

New materials from Chapter 2 on Drawing ionic and covalent Lewis dot structures

18. Lewis structures of ionic compounds
19. Lewis structures of covalent compounds, resonance
20. Lewis structures of covalent compounds, multiple bonds
21. Lewis structures of covalent compounds, multiple central atoms
22. Lewis structures of covalent compounds, multiple central atoms
23. Lewis structures of covalent compounds, exceptions to octet (too large, too small, too odd)
24. Lewis structures of covalent compounds, exceptions to octet (too large, too small, too odd)
25. Lewis structures of covalent compounds, exceptions to octet (too large, too small, too odd)
26. ranking crystal lattice energy
27. electronegativity calculation and ranking
28. assigning formal charge
29. formal charge and correct Lewis structures
30. ranking bonding trends: EN, bond energy, bond length

CH301 Exam 1 Help sheet (to be provided with the exam)

Constants

$c = 3.0 \times 10^{8}$ m/s

$h = 6.626 \times 10^{-34}$ Js

$R = 3.289 \times 10^{15}$ Hz

Equations:

$\nu = c/\lambda$

$\Delta E = h\nu$

$\nu = R(1/n_1^2 - 1/n_2^2)$

$T\lambda_{max} = c_2/5$

$E = 0.5mv^2 = h\nu - \Phi$

$\lambda = h/mv = h/p$

$\Delta x \Delta p \geq h\ 4\pi$

$H\Psi = E\Psi$

$\lambda = 2L/n$

$E_n = n^2h^2/8mL^2$