Chemistry things that you need to know

Learning Chemistry, especially Organic Chemistry, can be hard. This page contains some topics and advice to help you succeed.

- HCl is a gas.
- NaOH is a solid.
- 1 M HCl is mostly water (97% by mass).
- 1 M NaOH is mostly water (96% by mass).
- When you do an extraction, there is always a “water” (aqueous) layer, even if you didn’t add pure water.
- Concentrated HCl is still almost 2/3 water by mass (and 12 M in HCl)
- In general, like dissolves like. Really. Even in Organic Chemistry. So, organic compounds tend to dissolve in organic solvents (and not water). However… while water has a certain polarity (very polar), different organic solvents have a wide range of polarities (from nonpolar to very polar).
- “Solvent” just means the substance in the highest amount. In many cases, we add a solvent that does not directly take part in a reaction (but creates a good medium for a reaction to take place). In some cases, the solvent does directly take part in a reaction.
- Solvolysis means that the solvent takes place directly in the reaction.
- Hydrolysis means that the solvent takes place directly in the reaction, and that the solvent is water.
- Practice drawing resonance structures. Of all kinds of things. After you learn about new ways to have resonance structures (cations, anions, radicals, etc.), and what resonance structures really mean (conjugation), go back and practice them again.
- Carbon never has more than 4 bonds. Carbon never has more than 4 bonds.
- Organic structures have implied hydrogen atoms. Lots of them. If you find that you make mistakes because you forget about the implied hydrogen atoms (see resonance structures, above; see carbon never has more than 4 bonds, above), then draw in the hydrogen atoms. All of them. On every structure.
- Make sure you can recognize different functional groups. An amide is different than an amine. A ketone is different than an ester. Make sure you know them all, whether they are written forwards, backwards, or upside-down. Reactivity is not just about knowing what the reagents do, but also about how they may react differently with different functional groups.
- Methylene chloride and dichloromethane are the same compound. CH_2Cl_2.

How do I study for organic chemistry?

Organic chemistry, at its heart, is a subject that involves solving puzzles using knowledge learned from past organic chemistry experiments. First you will need to gain a sufficient knowledge of the material in order to have a foundation from which to draw upon. Then, you will want to work through a lot of practice problems until you get used to the patterns and ways the course material is applied to new situations and structures.

Uh, right, so how do I go about doing that…?

First, make sure that you review and practice these concepts from General Chemistry (you will really need them, and confusion here will put you at a disadvantage when trying to learn new stuff!):

These concepts are <u>super</u> important for CH241/242:

Octet rule	Valence electrons	Ionic bonds
Covalent bonds	Electronegativity	Polar covalent bonds
Formal charge	Writing Lewis structures	Writing resonance structures
Atomic orbitals	Molecular orbitals	

These concepts are also important for CH241/242 (but less critical than the group above):

Electronic configuration of atoms	Ionizaton Potential
Hund’s rule	Pauli exclusion principle
Bond dissociation energy	Dipole moment

OK, now that you have practiced all of the stuff listed above, here are some good strategies.

- Be prepared for class. This is hard. This takes a lot of work. What this means is:
- Read the textbook chapters. OK, you knew this. But read them before the lecture that covers the chapter material. Really. It is most difficult to learn new material the first time you see it. If the first time you see something is in class, it is harder to learn/process/work with the new information. It also makes it much harder to participate in class and ask questions. After a subject is covered in class (and you read the chapter ahead of time), go back through the chapter and do the “in chapter” practice problems, reading again as needed.