



## CHE 2060: Summary of key concepts

### - Module 1, Introduction to organic structure and bonding I

- Thoroughly review (from General Chemistry) the fundamental principles of **atomic structure** and **electron configuration** and review the rules for **drawing Lewis structures**.
- Be very familiar with the **common bonding patterns** in organic molecules - you should be able to quickly recognize where lone pairs exist, even when they are not drawn explicitly, and you should be able to readily recognize incorrectly drawn structures -for example, when carbon is drawn with five bonds.
- Be able to determine the **formal charge** on all atoms of a compound - with practice, you should be able to look at an organic structure and very rapidly recognize when there is a formal charge on a carbon, oxygen, or nitrogen.
- Become adept at interpreting and **drawing line-bond structures** for organic molecules (line structures will be used almost exclusively for the remainder of this textbook). A good test is to determine the molecular formula of a molecule from a line structure.
- Understand the meaning of **constitutional isomer** and be able to recognize and/or draw constitutional isomers of a given compound.
- Be able to recognize and come up with your own examples of the most important **functional groups** in organic chemistry, introduced in this chapter and summarized in table 9 in the tables section at the back of this book (or as posted on the website).
- Be familiar with the **basic rules of the IUPAC nomenclature system**, at the level presented in this textbook, and be able to draw a structure based on its IUPAC name.
- Understand how and when to use **abbreviated organic structures** appropriately.
- You need not memorize in detail the structures of **common classes of biological molecules** illustrated in this chapter (fats, isoprenoids, carbohydrates, proteins, and nucleic acids), but you should be able to **recognize** examples when you see them.
- Also, you should be prepared to refer to section 1.3 when references are made to these structures throughout the rest of this textbook and you need a review.
- As always, you should be familiar with the meaning of all of the **terms written in bold** in this chapter.