1. Be able to quickly determine from a proton NMR spectrum whether the following types of hydrogens are present in a molecule: -OCH$_3$, -CH$_3$, CH$_2$CH$_3$, -phenyl ring, alkene, aldehyde, carboxylic acid.

2. Be able to determine the exact $J$ and $\delta$ values for all first-order coupling patterns.

3. Understand and be able to explain the following: chemical equivalence, exchangeable protons, shielding, off-resonance decoupling, spin decoupling, high field nmr, magnetic equivalence, chemical shifts, induced magnetic fields.

4. Understand the principal advantage of Fourier transform spectroscopy (FT) over the continuous wave (CW) or scanning methods.

5. Given appropriate spectral and other information, be able to determine the structure of an unknown compound.