REPORT GUIDELINES: CHEMISTRY 2283g
EXPERIMENT 7: Reduction of Ethyl Acetoacetate

Include the following in your report:

1. Title, Date, Name
2. Objective: purpose of lab
3. Introduction: brief description of concept studied

4. Reaction Equation:
    a. Include proper structures for reactants and products
    b. Include all reagents used
    c. Include data for reactants and products (i.e. molar mass, mass, mol, etc.)

5. Procedure:
    a. Cite lab manual with proper reference, note any changes

6. Results:
    a. Yield –must show sample calculation
        i. $NaBH_4$ yield (mass and percent)
        ii. Yeast yield (mass and percent)

    b. Physical properties
        i. Appearance – liquid/solid, crystalline character, colour
        ii. Chiral GC – attach, labelled
        iii. IR Spectra – (ethyl acetoacetate and both reduction products) label important peaks with respect to functional groups present
        iv. NMR Spectra – label ^1H spectra (ethyl acetoacetate and both reduction products)

7. Discussion:
    a. Discussion of yield ($NaBH_4$ vs. Yeast – why the difference?)

    b. Discussion of physical properties (**evidence that correct product was obtained**)
        i. Discussion of GC – discuss with respect to asymmetric synthesis
        ii. Discussion of IR Spectra – ethyl acetoacetate, reduction products
        iii. Discussion of NMR
        iv. Questions:
            1. What method do you prefer? When would you use yeast synthesis?
            2. Could you have used $LiAlH_4$ for this same transformation?

    c. Mechanism
        i. mechanism of reduction using $NaBH_4$
        ii. mechanism of reduction using $LiAlH_4$ and acid workup