

EXAMPLE

Research Skills Letter

[STUDENT'S NAME]

The purpose of this letter is to explain how I have gained the set of research skills that are necessary to progress in my Ph.D. research. My P.h.D. dissertation involves [FILL IN WITH DETAILS]. The following lists the elective courses that assisted me in achieving these research skills during the course of my study:

C&PE 825 (Graduate Problems in Chemical Engineering): This in-department elective course investigated a research problem on the application of ionic liquids to packed towers for carbon dioxide capture. Researching this problem utilized literature review skills to obtain necessary experimental data to perform mass transfer and engineering design calculations on ionic liquid systems in packed towers. Additionally, data analysis skills were utilized to examine the sensitivity and uncertainty of the model parameters.

C&PE 800 (Seminar): Seminar is an essential course that provides breadth of scientific knowledge. Being aware of research outside of KU is essential to developing future ideas and potential collaborations.

Chem. 820 (Analytical Separations): This elective course instructed the theory behind laboratory separation processes including gas chromatography, high performance liquid chromatography, and electrophoresis. This information is vital to all experimental research as product separation and quantification is imperative.

Chem. 852 (Statistical Thermodynamics): The statistical thermodynamics course was one of the most interesting electives I took. This course demonstrates how microscopic molecular characteristics (i.e. electron spin states) can influence macroscopic thermodynamic parameters. One of the main features of the course was developing a statistical thermodynamic model to solve the using two-dimensional phase transition. In this project, Matlab was utilized as the programing software to develop a Monte Carlo simulation which accurately predicted macroscopic properties of the system critical temperature (T_c) and heat capacity (C_p). The fundamentals learned in this class are applied when reading research papers on computational thermodynamics. Additionally, the knowledge could be used for future collaborations with computational chemists.

CE 895 (Life Cycle Assessment): Life cycle assessment is a course that targets the environmental impacts of chemical processes. Within this course I developed an environmental assessment of the impacts associated with producing ethanol from comstover using an ionic liquid (one of the focal areas within my research). As part of a team we compared three processing technologies and plan to publish the results as this study fills a current void in the literature.

[OPTIONAL: ADD LIST OF PUBLICATIONS AND/OR PRESENTATIONS]

The above listed experiences have aided me in developing the research and critical thinking skills required to progress towards my Ph.D. degree. Thank you for your consideration.

[Signature of student above- Student's name under line]

By signing this document I certify that [STUDENT'S NAME] has the Research Skills necessary for completing the Ph.D. degree in Chemical and Petroleum Engineering.

[Advisor's Name Here]