# COLLECTION DEVELOPMENT STATEMENT

# CHEMICAL ENGINEERING (FUND 34313)

Greg Nelson

The library seeks to support teaching and research in Chemical Engineering at the Teaching level.

## About the Department

The undergraduate program in Chemical Engineering prepares students for a variety of careers within industry, such as the biomedical, petroleum and chemical industries. Undergraduates in Chemical Engineering rarely use the resources of the library due to the very few research assignments in their coursework. Undergraduates fulfill their Advanced Writing requirement by taking ENG 316, Technical Writing.

The graduate program in Chemical Engineering offers a Master’s of Science and Doctor of Philosophy degree. Students are trained to be leaders in all areas of Chemical Engineering with the ability of effectively apply fundamental chemical and engineering principles to new problems. Of necessity there is required coursework, but the programs are primarily research-oriented. A written thesis is required for all Master’s students and a written dissertation is required for all doctoral students.

DIPPR® Project 801- DIPPR (Design Institute for Physical Properties) is a source of critically evaluated thermophysical and environmental property data. Students at BYU, primarily undergraduates, search the available literature for predefined chemical properties and then verify those properties under standard conditions. The DIPPR lab is a heavy user of select library databases and print reference resources.

## Formats

Without question, Chemical Engineering faculty and students use online databases and journal articles. Online journal article access is available through publisher packages, database subscriptions, and individual title management. Books are purchased mainly via the YBP approval plan. Three to four times a year faculty are provided with a list of new books from YBP slips and queried for firm order requests; very few firm order purchases are made without faculty request. Circulation rates are quite low for monographs. E-books are purchased where possible, to increase accessibility and use. The DIPPR lab uses the library’s print reference section heavily.

## Degree Programs and Collecting Levels

Bachelor of Science, Chemical Engineering: Teaching Level

Master of Science, Chemical Engineering: Teaching Level

Doctor of Philosophy, Chemical Engineering: Teaching Level

## Research Interests

* Structure/function of heterogeneous catalysts
* Plasma reaction engineering
* Coal gasification
* Carbon dioxide capture and storage
* Sustainable energy research
* Coal combustion
* Cell-free synthetic biology
* Biocatalysts
* Vaccine development
* Tissue engineering
* Regenerative medicine
* Combustion
* Pyrolysis of coal and low-grade fuels
* Electrochemical Engineering
* Modeling and optimization of dynamic systems
* DNA Hybridization on Surfaces
* Protein-Surface Interactions
* Folding Cooperativity with Multiple Proteins
* Biomaterials
* Biological interactions with nitric oxide
* Computational modeling and simulation of turbulent reacting flows
* Nuclear reactor design
* Nuclear safety
* Nuclear system modeling
* Polymeric biomedical materials and drug delivery
* Ultrasonic enhanced drug delivery
* Modeling and experimental work to optimize batteries, fuel cells, and electrodeposition
* Thermophysical property measurement and correlation
* Environmental engineering
* Process design

## Subject Librarian Annual Collection Reports

2015

* **Infotherm database.** Secured funding for the license of this database of thermodynamic data.
* **JoVE evaluation**. Evaluated the use of the Journal of Visualized Experiments (JoVE) and potential need for acquiring or cancelling sections.