CBE 141 - CHEMICAL ENGINEERING THERMODYNAMICS (4 UNITS)

COURSE OVERVIEW

SUMMARY

CBE 141 is a lecture based course which focuses on the principles of thermodynamics as relevant to chemical engineers. The basics of thermodynamics are reviewed such as the definitions of entropy and enthalpy, but the course also teaches thermodynamic concepts that would not have been previously taught such as fugacity. The course also focuses on applying thermodynamic principles to chemical engineering applications. See topics below.

PREREQUISITES

CBE 140 (cbe140.html), Engineering 7 (eng7.html)(May be taken concurrently)

TOPICS COVERED

- Thermodynamics concepts, fundamental equations, and definitions
- First, second, and third laws of thermodynamics
- Applications to closed and open systems
- Maxwell relations
- Equations of state
- Phase equilibrium in single component systems
- Power cycles, engines, and refrigeration cycles

- Thermodynamics of fluid (ideal and non-ideal) mixtures
- Fugacity
- Binary phase equilibria
- Thermodynamics of chemical reactions

WORKLOAD

COURSEWORK

- Weekly problem sets
- Weekly quizzes
- 2 midterms
- Final exam

TIME COMMITMENT

3 hours of lecture and 1 hour of discussion per week, ~4-6 hours per problem set per week.

CHOOSING THE COURSE

WHEN TO TAKE

This course is typically taken immediately following CBE 140 and concurrently with CBE 150A.

WHAT NEXT?

Typically, CBE 142 and CBE 150B are taken the semester following this course.

ADDITIONAL COMMENTS AND TIPS

Thermodynamics is a tricky concept to understand for some people, and it definitely makes more sense to some than to others. It seemed, to me, like students either REALLY understood or REALLY struggled with the materia. It can be difficult to take an intangible value like that of entropy and make sense of it, so take time to do practice problems and understand all the reasoning behind the concepts!

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COLLEGE OF CHEMISTRY PEER SERVICES

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lang=en) students/peer-

advising