General

This is arguably one of the most demanding courses you will take. A normal 2-credit course given during the academic year requires 4-6 hours work per week outside the classroom for successful completion. This is a conservative estimate; this course may well require more.

Goals

1. To appreciate the importance of the First Law: Conservation of energy.
2. To be able to correctly manipulate energy relationships and conversions and solve engineering problems through application of them.
3. To acquire an understanding of fundamental energy concepts vital to advanced studies of petroleum engineering.
4. To be able to excerpt the essential points of a given problem.
5. To be able to present solutions to complex problems in clear, understandable fashion.
6. To give the basic concepts and petroleum engineering applications in phase equilibria.

Textbook


References


Attendance

By university policy attendance is required, and will be taken. It will also be indirectly factored into your grade (see Quizzes).

Homework

Homework assignments will be delivered to the students every one or two weeks. Cooperation between the students in solving the HW is encouraged, but cheating is absolutely forbidden and will result in getting zero in the grade of HW.

Quizzes

Each week has a 10-min block that will be used for a straight forward quiz.
Tests

There will be 2 semester tests and one comprehensive final examination. All tests are open book. **There will be no excuses for missed tests, other than certified medical reasons** (i.e., a doctor's official note). If you fail to attend an exam, you will receive a grade of zero.

Topics

1. Basic concepts of thermodynamic. (6 classes)
2. Properties of pure substances. (6 classes)
3. Energy transfer by heat, work, and mass. (4 classes)
4. The first law of thermodynamics. (4 classes)
5. The second law of thermodynamics (2 classes)
6. Introduction to phase equilibria. (4 classes)
7. Tests. (2 classes)

Grading

The final grade will be calculated as follows:

- Test #1 10%
- Test #2 10%
- Quizzes 20%
- Homework 10%
- Final exam 50%

Please note that there will be no "curving" in this course. Students are NOT competing for grades. It is possible that many students could earn an "A++", but unfortunately also possible that many students could earn an "F".

Prepared by: Dr. Inas Muen AlNashef