**CHE 201 - Introduction to Chemical Engineering**

**Course Credit 3-2-3**

**First Semester 2014-2015 (201410)**

**Course Instructors**

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**Course Text:** R.M Felder and R.W. Rousseau, Elementary Principles of Chemical Processes, 2005 Edition with Integrated Study and Media Tools, Wiley (2005).

**Course Prerequisites:** PHYS 102, CHEM 102

**Objective:**

To introduce the undergraduate students to basic concepts in chemical engineering including basic principles and calculations of chemical engineering; material balances and their applications; ideal and real gases including mixtures; concepts of multiphase systems.

**Outcomes:**

Upon successful completion of this course, you will be able to:

1. Show how chemical engineer can serve the community.
2. Fit any experimental data to model equations using both linear regression and Excel.
3. Convert quantities from one set of units to another quickly and accurately.
4. Define and determine properties of process streams including fluid density, flow rate, chemical composition (mass and mole fractions, concentrations), fluid pressure, and temperature.
5. Draw and label process flowcharts from verbal process descriptions. Carry out degree of freedom analyses (process bookkeeping).
6. Write and solve material balance equations for single-unit and multiple-unit processes, processes with recycle and bypass, and reactive processes.
7. Perform pressure-volume-temperature calculations for ideal and non-ideal gases. Incorporate the results of these calculations into process material balance calculations.
8. Perform vapor-liquid equilibrium calculations for systems containing one condensable component and for ideal multicomponent solutions. Incorporate the results of these calculations into process material balance calculation.

**Grading Policy:**

Three class tests 45% (10%, 15%, and 20%)

Final 35%

## Quizzes 5%

Homework and Computer Assignment 10%

Attendance & Class participation 5%

**Remarks:**

1. Attendance will be regularly taken and the university regulations will be strictly enforced. Each unexcused absence will detect 1 mark.
2. A student possessing a valid excuse has to present it no longer than a week time after his absence.
3. Excuses are not accepted for missing quizzes.
4. Only 6 excused absences are allowed after which excuses will not be considered.
5. A DN grade will be given automatically for any student misses a total number of 9 classes.

**Examination Schedule:**

1st Exam, Monday, September 22nd, 2014, 6:00 pm

2nd Exam, to be decided.

3rd Exam, to be decided.

**Course Outline:**

**• Introduction to Chemical Calculations (Chapter 2)**

Sec 2.5 is not included

**• Process and Process Variables (Chapter 3)**

**• Fundamentals of Material Balances (Chapter 4)**

**• Single-Phase Systems (Chapter 5)**

**• Multi-Phase Systems (Chapter 6)**

**• Review**