

MME 2305—Material and Energy Balance

Instructor: David A. Roberson, Ph.D., droberson@utep.edu, 747-5924

Office Hours: M201-L Tuesday, Wednesday, 2:00 PM – 4:00 PM or by appointment

Class Days: M-W 12:00 – 1:20 UGLC 336

Recommended Text: Elementary Principles of Chemical Processes, Third Edition, By Richard M. Felder and Ronald W. Rousseau

Prerequisites: CHEM 1306, and MATH 2313, with grades of “C” or better.

Course description: Introduction to process variables, stoichiometry, materials balance, first law of thermodynamics, and energy balance applied to materials system. **Note: An effort will be made to conduct this class through Flipped Classroom Methodologies.**

Course objective: At the end of this course, students will be able to apply the principles of conservation of mass and energy to materials systems.

Topics: Units and unit analysis; stoichiometry; conservation of mass; mass balances; First law of thermodynamics; energy balances; combined mass and energy balances.

| Grading | Percent |
|-------------------|---------|
| Quizzes/ Homework | 10% |
| 5 Exams | 60% |
| Final Exam | 30% |

| Tentative Exam Schedule | Date |
|-------------------------|---------------------------------|
| Exam 1 | February 5 |
| Exam 2 | February 26 |
| Exam 3 | March 11 |
| Exam 4 | April 1 |
| Exam 5 | April 23 |
| Final | Fri, May 15th 1:00 am – 3:45 pm |

Class Calendar

(All dates are tentative and subject to change at the instructor’s discretion)

| WEEK | TOPIC |
|------|--|
| 1 | Introduction |
| 2 | Introduction to Engineering Calculations |
| 3 | Processes and Process Variables |
| 4 | Fundamentals of Material Balances |
| 5 | Review, |
| 6 | Fundamentals of Material Balances/Single Phase Systems |
| 7 | Review, Exam 2 |
| 8 | Spring Break, No Class 3/16/2020-3/20/2020 |
| 9 | Single Phase Systems / Multiphase Systems |
| 10 | Multiphase Systems |

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| 11 | Energy and Energy Balances |
| 12 | Review, Exam 3 |
| 13 | Balances on Nonreactive Processes |
| 14 | Balances on Nonreactive Processes / Balances on Reactive Processes |
| 15 | Balances on Reactive Processes |
| 16 | Review, Exam 4 |

Course Withdrawal Policy: If a student withdraws from a course prior to the official census date of any semester, the course will be deleted from the student's record. Withdrawal from a course initiated by a student after the census date but prior to the course drop deadline, will result in a grade of "W." After the course drop deadline, withdrawal from a course initiated by a student will result in a grade of "F."

→Last day to drop this class is April 3, 2020.

Attendance: University policy dictates that all students attend all scheduled classes meaning that attendance to both the class and laboratory sessions is mandatory, however, I understand if you have conferences or other school-related activities to attend. Please notify me of any commitments you may have prior to you being absent from class. "Emergency" absences will be handled on a case by case basis

Homework: Homework assignments will normally be due two class periods after they are assigned.

E-Mail Policy: Please do not send e-mails regarding the course to me with an account other than your UTEP account e.g. jfsmith@miners.utep.edu. Do not turn in homework assignments via e-mail unless directly instructed to do so.

Use of Electronic Devices: As a courtesy to me and the other students in class, the use of cell phones, and pagers is not allowed while class is in session. I am wise to Electronic devices should be stored IN a backpack or purse. I have seen many instances of folks trying to hide electronic device usage behind a backpack or purse while texting, etc. so do not even try it! Use of said electronic devices will result in your being asked to leave the class and receiving a zero grade for attendance for that day (counts as a homework/quiz grade)

Cheating, Plagiarism, Scholastic Dishonesty, and Student Discipline

Students who engage in scholastic dishonesty will be subject to disciplinary action as stated in the UTEP-HoOP:

"Scholastic dishonesty (which includes the attempt of any student to present the work of another as his or her own, or any work which s(he) has not honestly performed, or attempting to pass any examination by improper means) is a serious offense and will subject the student to disciplinary action. The aiding and abetting of a student in any dishonesty is held to be an equally serious offense. All alleged

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acts of scholastic dishonesty should be reported to the Dean of Students for disposition. It is the Dean of Students' responsibility to investigate each allegation, dismiss the allegation, or proceed with disciplinary action in a manner which provides the accused student his or her rights of due process."

See the Dean of Students office for further information at website

<http://sa.utep.edu/studentlife/>; judicial affairs process at

<http://sa.utep.edu/studentlife/files/2010/10/Appendix-A-Discipline-process-NEW-OSL-2009.pdf>

Cite, reference, or quote information obtained from other sources and give credit where credit is due. In addition, when it is specified that a task needs to be performed individually, soliciting your classmates' help is considered scholastic dishonesty. Do NOT copy any material regardless of where you obtained it into your own work. Do NOT submit work under your name if you did not complete it entirely yourself; you may **not submit work you completed for another class**, unless specifically stated otherwise. In accordance with university policy, any instances of plagiarism and dishonesty will be reported to the Dean of Students Office. If you are caught cheating you will be subject to the disciplinary action defined by UTEP's Standards of Conduct and Dishonesty including the receiving of an incomplete "I" for the class and adjudication by the Dean of Students.

Disabilities: UTEP seeks to provide reasonable accommodations for all qualified individuals with disabilities, including learning disabilities. This university will adhere to all applicable federal, state, and local laws, regulations and guidelines with respect to providing reasonable accommodations as required affording equal educational opportunity. It is the student's responsibility to register with The Center for Accommodations and Support Services in The Union Building East Room 106 and arrange the appropriate accommodations. The contact information for CASS is:

<http://sa.utep.edu/cass/>

(915) 747-5148

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