Kettering University
Department of Chemical Engineering
CHME 420 Sec. 1 MR 1:20 AM - 3:25 PM, Room: AB 2-232
Applied Transport Phenomena

Instructor: Salomon Turgman Cohen, **Office:** AB2224B
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Office Hours: W 9-11am or by appointment.
Textbook: Bird, R.B., Stewart, W.E., and Lightfoot, E.N., Transport Phenomena. 2nd Edition. Wiley (2007). ISBN 978-0-470-11539-8
Prerequisites: CHME300, MATH204, Corequisite: CHME421

Course Purpose: To understand the fundamental physical phenomena that give rise to momentum, energy, and mass transport in Chemical Engineering. To develop a physical intuition and to sharpen the ability to use mathematical models to describe transport processes.

Course Objectives: At the end of the course, you will be able to:

- Explain and have a intuitive physical understanding of the molecular stress tensor, heat flux vector, mass flux vector, viscosity, thermal conductivity, and diffusivity.
- Develop shell balances to solve problems in momentum, energy, and mass transport.
- Apply shell balances to derive general microscopic conservation equations of momentum, energy, and mass transport.
- Use approximations to simplify and solve the conservation equations and obtain relevant profiles and fluxes.
- Leverage mathematical models in designing new processes or transport systems.

Ethics in the University and Academic Integrity: Kettering University values academic honesty and integrity. Cheating, collusion, misconduct, fabrication, and plagiarism are serious offenses. Each student has a responsibility to understand, accept, and comply with the University's standards of academic conduct as set forth in our statement, "Ethics in the University," and "Academic Integrity" as well as policies established by individual professors. For more information, refer to the Student Life section of the current Undergraduate Catalog. Undergraduate catalogs are located at http://www.kettering.edu/undergraduate. This information is also noted in the Student Handbook.

Homework: Is due at the beginning of class on the due date.

Homework Format: Use one side of each page, begin each problem in a new page, and box the final answer(s). Staple the pages before handing them in. Make sure to write your name , the date, and the assignment number on the assignment.

Late Homework: Homework is due at the beginning of class on its due date. If you are late for class, so is your homework. Late assignments will receive a maximum grade of 70% and will be accepted up to the end of the day on the due date. A maximum of two assignments may be late. Further late assignments will not be accepted.

Posted Solutions: Problem set solutions will not be supplied. It is the student's responsibility to learn to solve the problems by asking in class or during office hours.

Tests: There will be two tests during the term and a comprehensive in-class final exam. The tests will be open-book and open-notes. The lowest of the two test scores will count half as much as the other.

Grading: If you believe an error has been made in grading and believe you should have gotten more points than you got for any reason other than simple addition, write a letter stating your case and bring to the instructor. You have one week from the time the assignment/test is returned to submit your claim for re-grade.

Attendance Policy: Students who miss class due to an excused absence can work with the instructor to make up any missed work.

Course Grade: The weighted average course grade consists of several components:

- 2 Tests (Lowest grade counts 1/2 of the other) 30%
- Final 30%
- Homework 25%
- Quizzes, in-class exercises, participation 15%

The grade for the course will be assigned as follows:

	$100\% \geq$ A $\geq 90\%$	$90\% >$ A- $\geq 87\%$
$87\% >$ B+ $\geq 83\%$	$83\% >$ B $\geq 80\%$	$80\% >$ B- $\geq 77\%$
$77\% >$ C+ $\geq 73\%$	$73\% >$ C $\geq 70\%$	$70\% >$ C- $\geq 67\%$
$67\% >$ D+ $\geq 63\%$	$63\% >$ D $\geq 60\%$	$60\% >$ F

Homework grades will only count if the average grade on class tests and the final exam is 60% or above. In other words, you need to pass the tests to pass the course.

Students with Documented Disabilities: The University will make reasonable accommodations for persons with documented disabilities. Students need to register with the Wellness Center every term they are enrolled in classes. To be assured of having services when they are needed, students should contact the Wellness Center during the first week of each term. Note that it is the student's responsibility to arrange accommodations with each professor. For more information on "Disability Services" refer to the Student Life section of the current Undergraduate Catalog. Undergraduate catalogs are located at http://www.kettering.edu/undergraduate. This information is also noted in the Student Handbook.

Tentative Course Calendar:

Monday	Thursday
Apr 6th **1**	9th **2**
13th **3** HW1	16th **4**
20th **5**	23rd **6** HW2
27th **7**	30th **8** Midterm I
May 4th **9**	7th **10** HW3
11th **11**	14th **12**
18th **13** HW4	21st **14** Midterm II
25th Memorial Day	28th **15**
June 1st **16**	4th **17** HW5
8th **18**	11th **19**
15th **20** HW6	18th Final Exam Week