

# MIE550S

## Advanced Momentum, Heat and Mass Transfer

### 2025

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**Text:**

“Transport Phenomena” by Bird, Stewart and Lightfoot, Springer (chapter assignment are based on the 2<sup>nd</sup> edition)

Ref: Fluid Mechanics, Frank White, 7<sup>th</sup> Edition

**Website:** We will be using the U of T Quercus for MIE550. Announcements, handouts, solutions etc. will be posted at the course web site. Please check it frequently.

**Mark Composition:**

Midterm TBA	35%
Final Exam TBA	35%
Homework	30%

### Topics Covered

Week		
1	Viscosity and Mechanism of Momentum Transport	Ch 1
2	Momentum Balances and Velocity Distributions in Laminar Flow	Ch 2
3	The Equations of Change for Isothermal Systems	Ch 3
4	The Equations of Change for Isothermal Systems cont.	Ch 3
5	Velocity Distribution in More than one Independent Variables	Ch 4
6	Thermal conductivity and the mechanism of energy transport	Ch 9
7	Midterm exam	
8	Shell energy transport	Ch 10
9	Solution of energy transport in flows with dissipation	Ch 10
10	Diffusivity and Mechanism of mass transport	Ch 17
11	Concentration Distributions in Solids and in Laminar Flow	Ch 18
12	Problems	
13	Review	