

YouTube Videos: DrMorrisonMTU

Transport 1 CM3110

Module 1: prereq and Mechanical Energy Balance

Keyboard entry of equations in Microsoft Word 2010

Unit conversion issue with intervals

Introduction to manometers: Two essential rules

Elementary mass balances in chemical engineering

Balances on multiple units—No reaction, part 1, part 2, part 3

Balances on multiple units with reaction

Balances on reactive systems (extent of reaction)

Short introduction to the mechanical energy balance

Unit conversion issues with the mechanical energy balance

Analysis of a pitot tube

Steady state macroscopic energy balances heating a flowing liquid stream

Steady state macroscopic energy balances heating with condensing steam

Module 2: Navier Stokes

Microscopic momentum balances with the Navier-Stokes equation, part 1, part 2, part 3

Average fluid velocity in a pipe (steady, turbulent flow)

Calculating flow rate from velocity profile

Fluid force on a surface, (via stress tensor), part 1, part 2, part 3

Fluid force on a surface (scalar version), part 1, part 2

Module 3: Internal flow, macro momentum

Force on the wall in turbulent pipe flow

Macroscopic momentum balance—nozzle flow to tilted wall

Module 4: Heat 1

Microscopic energy balance in a tube (1D radial heat transfer)

Microscopic energy balance in a slab (1D rectangular heat transfer)

Module 5: Heat 2

To appear as time permits