Caleb Lind Killed



MONTGOMERY COUNTY, Kan. (KSNW) – A Utah man died in a two-vehicle crash in southeast Kansas Tuesday. The accident occurred shortly before 8:15 a.m. on U.S. 400 Highway near mile marker 385 in rural northeast Montgomery County. The Kansas Highway Patrol says a 2012 Honda Civic driven by 23-year-old Caleb McKay Lind of Provo, Utah was eastbound on US 400 when it crossed the center line and side-swiped a 2009 Peterbuilt semi tractor-trailer driven by a 56-year-old Severy man. The KHP report says the Honda came to rest in the eastbound ditch while the semi ended up in the middle of the drighway.

The driver of the Honda was pronounced dead at the scene of the crash. Both drivers were wearing seat belts.



Business

- Online course evaluation (64/87 = 74%)
 Counts as a homework assignment (by Thurs)
- Professional program application
 Past due!
- · Case study due today by 5 pm
 - Leadership evaluation by 5 pm as well
 - Please put your name in the title if a MS Word document
- · ABET questionnaire
- You can mark the Dean's lectures on the final exam

Schedule Today

- Review Exam #3
- Start Review for Final







Business (cont.)

- I will be leaving Sunday for a conference in Maryland
 - US National Meeting of the Combustion Institute
 - I return on Wednesday, April 26



• Blake Billings will proctor the final exam on Tuesday morning

Exam Format

- Closed Book
- Closed Notes
- · Closed Homework
- Bring a Ruler, Calculator
- One 8 ½ by 11 inch paper with handwritten or hand-typed notes on both sides

Review Session by TAs

- Friday, April 21

 2:00 to 4:00 PM in 393 CB (Wade)
- Monday, April 24 - 2:00 to 4:00 PM in 406 CB. (Blake)
- I am available as well

 Thursday 10am-noon, 1-2pm, 3-5pm
 - Friday 1-5 pm

How to Review for Final

- Course Competencies
- Exam Review Sheets
 - Online if you have lost your copy
- Homework, Exams, Case Study
 Studying exams from previous years, except for the practice final
 - and practice exams, is an honor code violation
- Make your own final exam
 - What are the important concepts in the class?What types of problems are appropriate for an exam without a
 - computer?
 - What are the things I understand least?

Steam vs. Water Turbines

- When is the mechanical energy balance valid?
 - "when heat flows and internal energy changes are secondary in importance to kinetic and potential energy changes and shaft work."
 - -i.e., when temperatures are relatively constant



Heat Exchanger Concept

- Transfer heat from one stream to another
- Q = positive when heat is added
- Q_{stream 1} = -Q_{stream 2}

$$Q_{1} = \dot{m}_{1} (\hat{H}_{1,out} - \hat{H}_{1,in}) = \int_{\tau_{out}}^{\tau_{out}} C_{p,1} dT$$
$$Q_{2} = \dot{m}_{2} (\hat{H}_{2,out} - \hat{H}_{2,in}) = \int_{0}^{\tau_{out}} C_{p,2} dT$$

• Also, material balance for each stream separately

Vapor Pressure

- Suppose you have a large covered liquid tank of gasoline at 25°C
- Does the amount of vapor above the liquid change if the tank is 50% full vs. 90% full?
- · How about the mole fraction?
- Are you comfortable with Raoult's law?
- Pure component vs. multicomponent

Degrees of Freedom (Material Balances)

- Non-Reacting
- Reacting
 - Molar ratios (not used much)
 - Extent of reaction method (ξ)
 - Element balance method

Energy Balances

- Know both methods
 - Path
 - uses heat of reaction (but not heat of formation)
 - In vs. Out
 - uses heats of formation
 - · does not use heat of reaction explicitly
 - Dangerous ground
 - Equations 9.5.1a, 9.5.1b
 - Part 5, page 463
 - Tables B.8 and B.9















Practice Final Exam

- Find a partner
- · Read through the exam
 - Correlate each problem with a competency
 - Talk about a solution strategy
 - Identify topics to study

