Case Study

- Printed copy of Excel sheet and accompanying explanation of equations
- Email spreadsheet to Allen Black
  - allen.m.black@gmail.com
- Email the leadership evaluation to me
  - If email only, put name in subject box
  - If MS Word, put name in name of file

AWARDS!!!

- Damon Petersen
- Thomas Webber
- Landon Schofield
- Clarissa Westover
- Joshua Frei

Thank you TAs!

Matt Johnson

Spencer Ottley

Allen Black

Payden Yates

ABET Survey

- Please take the survey at:
 http://goo.gl/forms/Q4WuDZd8AD

Final Exam

- 221 MARB
- Tuesday, Apr 19, 7-10 am
  - **Closed Book, Closed Notes/Homework**
  - Two 8×10 pages with notes on both sides
    - I am not supplying equations
    - I am supplying data (C_p's, $\Delta H_f°$, etc.)
  - Calculator needed
  - Straight edge needed
- Time limit is 3 hours
- Aligned with competencies!!
- Somewhat aligned with what was missed on previous exams

Grades

- High score on final exam gets an A in the class
  - Not usually the highest cumulative score in the class!
- Must get 60% on the final exam to pass the class!
  - Better to find out now rather than next year if you need to seek a different major

Grades

Cumulative Score
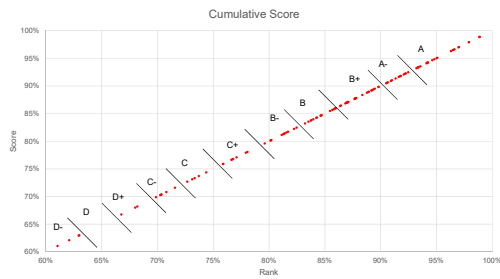
Level	Competency Expectation
3	Students will be able to use basic engineering units in both SI and AES systems in solving problems, and be able to convert between unit systems both by hand and with an equation solver.
3	Students will be able to solve steady-state, overall, material and energy balances for systems which include one or more of the following: recycle, multiple units, chemical reactions.
3	Students will understand the phase behavior of pure substances in relationship to the variables T, P, and density (including vapor pressure, critical point, freezing line, triple point, etc.).
3	Students will be able to use the mechanical energy balance equation to solve fluid flow problems both with and without friction.
3	Students will be introduced to the first law of thermodynamics for closed and open systems.
3	Students will understand and be able to use the extent of reaction in material balances
2	Students will be able to set up and solve simple transient material balances.
2	Students will be able to use a degree-of-freedom approach to assist in the solution of material and energy balances.
2	Students will be able to read mixture phase diagrams (solid solubility, liquid-liquid, VLE) and construct mass balances from them using the lever rule, tie lines, etc.
2	Students will be able to solve simple fluid statics problems (e.g., manometers, fluid head, etc.).
2	Students will be able to apply Raoult's law to solve VLE problems including bubble point, dew point, and flash calculations.
2	Students will be introduced to equations of state and corresponding states correlations.
2	Students will be introduced to the concepts of heat capacity, latent heat, heat of reaction, heat of combustion, and heat of formation.
2	Students will be introduced to calculations involving work in turbines, compressors, and pumps.

Ways to Prepare for Final Exam

- Get some SLEEP!
- Bring a snack
- Rework previous exams
  - What did you miss?
- COMPETENCIES!
  - Do you really know this stuff?
  - If not, come see me!!!

Terms

- Adiabatic, isothermal, isentropic, etc.
- SCFM, SLPM, etc.
- Path method vs. ΔH_f^0 method
- ΔH_f^0 vs ΔH_r
- Q, W_s, ΔE_p, ΔE_k
- Mechanical Energy Balance (Bernoulli)
- Transient balances
- Manometers, pressure head
- Gauge vs. absolute pressure

Psychrometric Chart

Figure 8.4-1 Psychrometric chart—SI units. Reference states: H₂O (L, 0°C, 1 atm), dry air (0°C, 1 atm). (Reprinted with permission of Carrier Corporation.)

Refrigerant 22
P-H diagram