University of Idaho
College of Engineering

Department of Mechanical Engineering

ME 322 – Mechanical Engineering Thermodynamics

Review for Final Exam

<u>See also:</u>

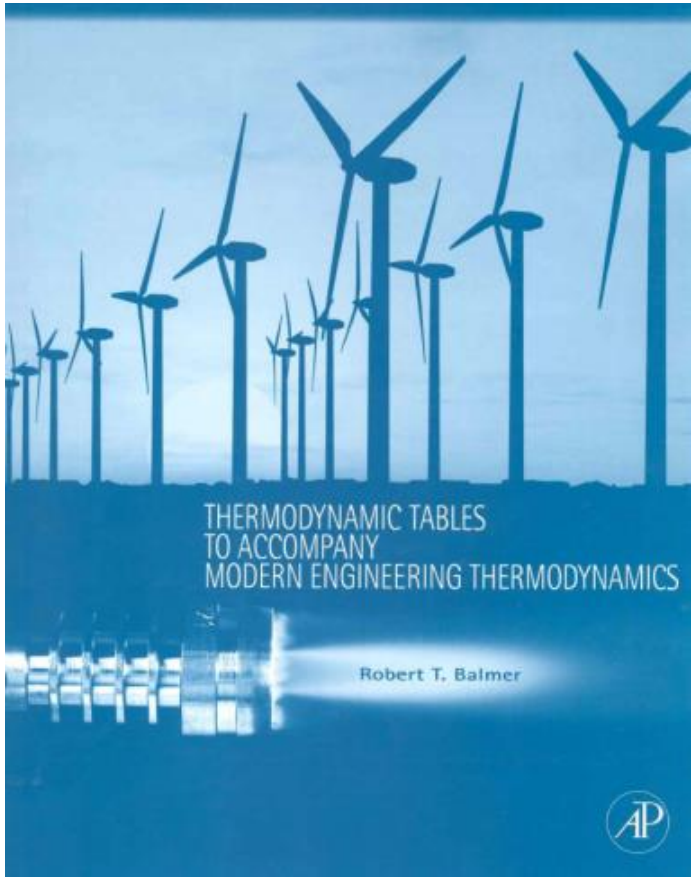
Exam 1 prep

Exam 2 prep

Exam 3 prep

Exam Information

- 2 hours (strictly enforced)
- Resources allowed
  - The blue properties booklet
    - You can write anything you want in the white space of this booklet.
    - NO photocopies, no taping, pasting, photocopies, loose papers
  - A handheld calculator
    - No other electronic devices used including cell phones, computers, tablets, music players, etc.



Exam Information

- A table of conversion factors will be provided
- A psych chart (SI & English) will be provided
- NO interpolation should be necessary
- Material covered
  - **All** assigned reading to date
  - **All** in-class lecture material to date
  - **All** in-class problem solutions to date
  - **All** homework assignments to date

Do you know ...

- How to determine mixture properties?
  - Mole fraction, mass fraction, and mixture molar mass
  - Partial pressure of constituents
  - Internal energy, enthalpy, and entropy (on both mass and molar basis)
- How to use psychrometric charts?
  - Dry bulb, web bulb, and dew point temperatures
  - Water vapor partial pressure
  - Relative humidity and humidity ratio
  - Specific enthalpy and specific volume
- How to model air conditioning applications?
  - Heating and cooling w/o humidification/dehumidification
  - Adiabatic humidification (evaporative cooling)
  - Adiabatic mixing of moist air streams
- How to balance a chemical equation?
  - Find stoichiometric coefficients given fuel composition
  - Find fuel composition (molar and mass basis) given product composition
  - Determine molar and mass air/fuel ratio
  - Account for excess air (theoretical air)
  - Perform volumetric analysis of products
  - Estimate dew point of products
- How to find heats of reaction?
  - Correct for temperatures away from the SRS
  - Properly use heats of formation
  - Apply heats of reaction in the 1st law