

# Lab 1: Specific Heat

## Background

Your firm has been hired to design a steam heating system for UW's new student housing. You will determine which of three materials would be best for the underground piping conduits that will convey the steam from the steam plant to the buildings.



## Challenge

Determine the identity of three separate cubes of different materials by devising an experiment to measure their specific heat values. The website [engineeringtoolbox.com](http://engineeringtoolbox.com) may prove useful.

### Available materials:

glass beakers	styrofoam containers	calipers	scale
hot plate	temperature probes	tongs	water
your phone's camera	<i>Logger Pro</i> software	metal cubes	gloves

### Lab report considerations

Based on your data and experimental results, do your best to identify the three selected materials.

Every number should have a corresponding uncertainty.

Compute uncertainties on the specific heats via propagation of errors.

Compute "errors" as percentage differences from their nominal specific heats.

A photo, sketch, or diagram of the lab setup must be included.

Which of the three materials would be best for constructing the piping in the heating system? Why?

If a change in the lab room's temperature were to account for the discrepancy between the measured and expected specific heats, what would be the necessary change in room temperature?

### Teacher signatures

Please get your TA to sign your experimental plan and the completion of the lab. These signatures will help to promote a successful experience.

### Please be safe!

Use safety goggles, gloves, pliers, etc. when handling the equipment.

Unplug hot plates after use.

Avoid burning/melting the temperature probe wires!