

## White Paper Assignment 21W.732

“A **white paper** (or "**whitepaper**") is an authoritative report or guide that often addresses issues and how to solve them. White papers are used to educate readers and help people make decisions.”

[http://en.wikipedia.org/wiki/White\\_paper](http://en.wikipedia.org/wiki/White_paper)

**Summary:** In one or two hours, become an expert on heat transfer from hot coffee. In four or five hours, summarize your expertise in a white paper for engineers who are designing widgets to keep coffee warm. By all means, use the appended fill-in-the-blanks template to structure your white paper. And by all means, adjust the template to your needs as you see fit.

**Collaboration:** You are encouraged to collaborate in two areas.

- First, thermal transfer is complicated enough that talking with other people about the subject is beneficial. There is a high probability that a weekend, thermal, coffee klatch will be arranged to facilitate discussion with your 21W.732 classmates. And by all means, corner upper-class folks who have taken differential equations (18.03) and/or the various heat transfer subjects at MIT—especially 2.005, 2.006, 16.003, 1.044J, 2.66J, 4.42J. Keep track of whom you talk to and cite these experts in your bibliography.
- Second, you are encouraged to self organize so that each student can produce an in depth analysis of focused topic rather than having each student provide a broad overview of the entirety of heat transfer as it relates to hot coffee.

**Equations:** Expect equations to appear as part of your findings and as part of your calculations/value added sections. Handle equations per the AIP style manual guidelines. Do not lose sleep over formatting details—you’ll have an opportunity to iron out the details in subsequent drafts of your proposal and report.

**Bibliography:** Cite your sources appropriately; format them as per the AIP style manual. Do not lose sleep over formatting details—you’ll have an opportunity to iron out the details in subsequent drafts of your proposal and report. Wiki entries and other generic web URLs are (probably) appropriate sources for this white paper. (Bonus question: when may you cite a “private communication”?)

NAME/DEFINE THE REALM OF EXPERTISE YOU ADDRESS

**HEAT LOSS FROM A CUP OF HOT COFFEE  
WHITE PAPER**

fill in your name here

**Summary:** In order to provide guidance on name/define the realm of expertise you address, a survey of name/define where you have obtained your expertise has been conducted. Key findings include key findings. These key findings are used in sample calculations of characterize your back of the envelope calculations (BotECs) that show summarize the utility and results of your calculations. Further work in name/define the realm of expertise you address includes what else needs to be addressed.

**Introduction:**

name/define the realm of expertise you address is vital to the design of devices to keep coffee warm because explain why your topic is vital and define/describe the challenge your topic poses to the designer

**Overview of Consulted Oracles (Methods):**

In order to provide the requisite expertise for name/define the realm of expertise you address, X, Y, Z and P, D, Q (name your sources of expertise) were consulted. These sources were chosen because explain why you think these sources are authoritative and useful.

**Findings:**

Summarize the expertise you have gleaned from your sources.

**Sample Calculations (Analysis):**

This is your value added section. Provide an example of how a designer of a device to keep coffee hot would use the findings. Include the assumptions you make and the calculations.

**Conclusion:**

Re-cap your findings and your value added & how they contribute to overcoming the challenge(s) that name/define the realm of expertise you address present to the designer of devices to keep coffee hot. Explain what further complications must be addressed to fully overcome the challenge.

**Bibliography:**

<sup>1</sup> D. R. Custer, 2010 (private communication).

<sup>2</sup> Heat transfer - Wikipedia, the free encyclopedia, [http://en.wikipedia.org/wiki/Heat\\_transfer](http://en.wikipedia.org/wiki/Heat_transfer).

<sup>3</sup> A. Valan Arasu, T. Sornakumar, Sol. Energy. 81, 1273 (2007).

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