

ARCE 661 -- HVAC&R SYSTEMS DESIGN

Spring Semester 2018

Time/Place: MWF 11:00 to 11:50 a.m.

Classroom: 2133 Learned Hall

Labs: 3101 Learned Hall and 2410 LEEP2

Instructor: Brian A. Rock, Ph.D., P.E., Fellow ASHRAE

2134-D Learned Hall, 785-864-3603, docrock@ku.edu

Office hours: almost any time I'm at 2134-D, or by appointment

Catalog: Analysis and design of heating, ventilating, air-conditioning, and refrigeration equipment and systems

Prereqs: ARCE 660, or consent of the instructor

References: *Fundamentals volume of the ASHRAE Handbook, I-P* ed., 2013 or 2017

(best obtained via the provided ASHRAE snail-mailed form
or ASHRAE's website using the provided information)

A Trane Ductulator® or similar (wait until after the first class)

ASHRAE Standards, especially 55, 62.1, and 90.1

LEED® Criteria, e.g., for New Construction (NC)

Uniform Mechanical Code; International Mechanical Code

Designer's Guide to Ceiling-Based Air Diffusion, Rock and Zhu

SMACNA's (and/or ASHRAE's?) duct design manual

<i>Grading:</i>	Homework, in-class problems,	Final Grades: (+/- not used)
	etc. <u>100%</u>	90% to 100% = A
	Total = 100%	80% to 89.9% = B
		70% to 79.9% = C
		60% to 69.9% = D
		Less than 60% = F

Each homework solution is due one week after assignment unless otherwise stated in class by the instructor. Late homework may lose 10% per full or partial 24 hours. All work submitted for grading must be completed independently unless specifically assigned as team-based.

Final Exam: Tuesday, May 8th, 10:30 a.m. to 1:00 p.m. No in-person exam, but a take-home problem may be assigned. If so, it is due by 1:00 p.m. at 2134-D Learned Hall. No electronic or late submissions.

Other: 1) Students are expected to abide by KU's academic integrity policies. Discovered violations are reported to CEAE and the Dean's Office. Penalties for academic misconduct range from receiving a zero on an assignment or exam to dismissal from the School or KU. 2) All your

courses' content is copyrighted; don't redistribute without advance written permission of the copyright holders.

The Academic Achievement & Access Center (AAAC) coordinates accommodations and services for all KU students who are eligible. If you have a disability for which you wish to request accommodations and have not contacted the AAAC, please do so as soon as possible. Their office is at 22 Strong Hall; their phone number is 785-864-4064 (V/TTY).

FUNDAMENTALS OF ENGINEERING EXAM

All KU CEAE undergraduates are required to take the Fundamentals of Engineering (F.E.) exam; ARCEs often take the exam during this spring semester. Be sure to schedule plenty of exam preparation time. Most KU ARCEs take the "Other Disciplines" version of the exam. The F.E. has specific registration deadlines so you are strongly encouraged to investigate its requirements as soon as possible. Visit www.ksbtp.ks.gov and www.ncees.org for details.

COURSE OBJECTIVES

Methods of teaching: lectures, demos, home- and in-class work, etc.

- To continue learning the terminology, history, and philosophy of the arts and sciences that form the field of heating, ventilating, air-conditioning, and refrigerating (HVAC&R) systems' design
- To introduce various types of HVAC&R equipment, systems, and applications
- To analyze and/or select equipment for various applications

HOMEWORK

- √ Be neat; rewrite if needed. See the example handout.
- √ Use engineering paper (front side only) for hand calculations, graph or computer paper for graphs, and appropriate paper for drawings and computer output.
- √ Show all calculations, units, conversions, and references. Show one complete sample calculation for repetitive calculations, but show all the results.
- √ *Box* the *final* answer (only!) for each problem. Provide a cover page with a summary or table of the results for lengthy assignments.
- √ Organize the pages so your text reads from the bottom or the right, only. Then staple all the pages together in the upper left-hand corner. Write your name on the outside and the inside.
- √ If less than 12 pages or so, fold lengthwise. If thicker, leave unfolded.

January 5, 2018