

**ARCE 760 -- AUTOMATIC CONTROLS FOR  
BUILDING MECHANICAL SYSTEMS**  
Fall Semester 2018

*Course Meets:* TR 8:00 to 9:15 a.m. in 2410 LEEP2

*Instructor:* Brian A. Rock, Ph.D., P.E., F. ASHRAE  
2134-D Learned Hall, 864-3603, hvacman@ku.edu

*Catalog Description:*

An introduction to controls for building mechanical systems. Discussions of the theory, design, and equipment used for control systems. The benefits of pneumatic, electrical, and electronic (DDC) controls will be examined.

*Prerequisites:* ARCE 660 or consent of instructor.

*References:*

*Handouts*

Fundamentals volume of the ASHRAE Handbook, I-P ed.,  
Control Systems for Heating, Ventilating and Air Conditioning, 5th or  
6<sup>th</sup> ed., Haines and Hittle, 1993 or 2006.

*Grading:*

Homework	100%	Final Grades:		
		90% to 100%	=	"A"
		80% to 89.9%	=	"B"
		70% to 79.9%	=	"C"
		60% to 69.9%	=	"D"
		Less than 60%	=	"F"

Homework assignments will each be graded on a 0 to 10 point scale. Each homework solution is due one week after assignment unless otherwise stated. Late work may lose 10% per 24 hours or fraction thereof. Some computer programming (in Basic or Fortran?), but will be taught in class if unknown. Plus/minus (+/-) grading will not be utilized for the final letter grades.

Students assume the liability for personal injury during any lab work; do not perform any tasks without proper training, safety precautions, and/or supervision.

*Final Exam:* None.

*Other:*

*All work submitted for grading in this course must be completed independently unless specifically assigned as a team effort by the instructor, as well as be original (no cutting & pasting, for example).*

Students are referred to and expected to abide by KU's academic misconduct policies. The instructor's penalties for discovered academic misconduct range from no credit given on a particular requirement to portion or course failure. Incidences are reported to the course coordinator, CEAE, and the SoE's Dean's Office for potential further action.

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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. They can be contacted at 22 Strong Hall, or via 785-864-4064 (V/TTY) or [achieve@ku.edu](mailto:achieve@ku.edu).

*Note: If you are taking the F.E. exam this semester be sure to plan for your exam preparation as well as for completing all your courses' requirements.*

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**COURSE OBJECTIVES**

- ☞ To begin to learn the terminology, "language", and analysis methods of controls engineering
- ☞ To gain an appreciation of control equipment and systems
- ☞ To examine some basic characteristics of electronic data acquisition and control through lab demonstrations, etc.

**HOMEWORK**

- √ Be neat. Rewrite if needed.
- √ Use engineering paper (front side only) for calculations, graph or computer paper for graphs
- √ Show all calculations, units, conversions, and references. Show a sample calculation for repetitive calculations.
- √ Box only the *final* answer for each problem
- √ For assignments that include computer programming, be sure to turn in a printout ("hard-copy") of your source code. Do not turn in a USB drive, email your code, etc. unless requested.
- √ Staple pages together in the upper left-hand corner
- √ If less than about 12 pages, fold lengthwise and write your name on the outside. Otherwise, keep the pages flat.

Last revision: August 12, 2018