Western Illinois University - Department of Agriculture
AGTM 360: Electrical Power & Equipment in Agriculture (4)
Course Syllabus - Fall 2009

COURSE MEETS: Lecture: MWTh 9:00 TO 9:50 in KH 307
Lab: T 8:00 to 9:50 in KH B1

TEXTS:
1. Electrical Wiring Residential, 16th ed., by Ray C. Mullin, Delmar, 2008
2. Farm Building Wiring Handbook, By Midwest Plan Service 28
3. Electronic kit (**only one kit needed**)

LAB FEE: $10.00

INSTRUCTOR: Dr. Buck Tillotson E-mail: RJ-Tillotson@wiu.edu
OFFICE: B-22 Knoblauch Hall Office telephone 298-2395
Home telephone 776-3584

OFFICE HOURS: MTWTH 10:00 to 11:00 or by appointment

Dr. Tillotson's Fall Semester 2009 Class Schedule:

	Monday	Tuesday	Wednesday	Thursday	Friday
8:00 to 8:50		AGTM 360			
9:00 to 9:50	AGTM 360	Lab	AGTM 360	AGTM 360	
10:00 to 10:50	Office hour	Office hour	Office hour	Office hour	
11:00 to 11:50					
12:00 to 12:50	AGTM 461		AGTM 461	AGTM 461	
1:00 to 1:50		AGTM 461			
2:00 to 2:50		Lab			
3:00 to 3:50	AGTM 464		AGTM 464 Lab Sec. 31	AGTM 464 Lab Sec. 32	
4:00 to 4:50					
5:00 to 5:50		Ag Mech Club: 2nd & 4th Tues.			
6:00 to 6:50					

Catalog Course Description: Principles of electricity and its application in building wiring, electric motors, automatic controls, and solid-state equipment used in agriculture.

Overall Course Objectives:

A. Develop knowledge and skill in using basic National Electric Code wiring practices to correctly wire single-phase electrical circuits in agriculture and residential buildings.
B. Describe the principle of operation of an electric motor. Correctly select, troubleshoot, and maintain single or three phase electric motors.

C. Successfully wire automatic control circuits.
D. Identify the components, construct, and explain the electrical or electronic operation of a simple electronic circuit.

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Weekly Schedule - Fall 2009

WEEK 1

Mon. Aug. 24	Introduction to electricity & electronics
Tues. Aug. 25	**Lab:** Laboratory safety; Use of instruments in making electrical measurements (EWR Ch.1)
Wed. Aug. 26	History, Electrical terms, Ohms Law
Thurs. Aug. 27	Series & parallel circuits & resistance in electrical circuits

WEEK 2

Mon. Aug. 31	Series & parallel circuit problems
Tues. Sept. 1	**Lab:** Series & parallel circuit examples
Wed. Sept. 2	Atoms & electricity; Sources of electricity
Thurs. Sept. 3	Induced current; Transformers; Electrical symbols (EWR pgs. 27-35)

WEEK 3

Mon. Sept. 7	NO CLASS - LABOR DAY
Tues. Sept. 8	Circuit types (MWPS pgs. 19-21); Sizing general illumination circuits (EWR Ch. 3, pgs. 295-297)
Wed. Sept. 9	General illumination circuit layout (EWR pgs. 237-249, Ch 9, Ch 13, Ch 15 -16)
Thurs. Sept. 10	Wire types (EWR pgs. 91-103, 108-110, 127-140, 147-151; MWPS pgs. 32-34)

WEEK 4

Mon. Sept. 14	Rough-in wiring (EWR pgs. 36-51, 56-59, 110-127)
Tues. Sept. 15	**Lab:** Building rough-in wiring exercise
Wed. Sept. 16	GFCI circuits (EWR Ch. 6); Fusing (EWR Ch 28)
Thurs. Sept. 17	Wiring switch loops, 3-way and 4-way switches (EWR pgs. 152-172)

WEEK 5

Mon.	Sept. 21	3-way & 4-way switch circuits' cont.; Switch wiring problems
Tues.	Sept. 22	**Lab:** Building finish-wiring exercise
Wed.	Sept. 23	Grounding (EWR pgs. 551-569; MWPS pgs.40-42)
Thurs.	Sept. 24	**Exam I**

WEEK 6

Mon.	Sept. 28	Sizing electrical boxes (EWR pgs. 51-56)
Tues.	Sept. 29	**Lab:** Wiring circuit panels
Wed.	Sept. 30	Shop & Special Purpose Circuits (EWR Ch 18, 19, 21)
Thurs.	Oct. 1	Sizing service entrance panels (EWR pgs. 533-562, Ch 29; MWPS pgs. 35-40)

WEEK 7

Mon.	Oct. 5	Voltage drop (EWR pgs. 103-107)
Tues.	Oct. 6	**Lab:** Wiring circuit panels
Wed.	Oct. 7	Illumination levels and Lighting equipment (EWR Ch 7, 10, & 11, pgs. 285-294; MWP pgs. 12-18)
Thurs.	Oct. 8	Three phase service and phase converters

WEEK 8

Mon.	Oct. 12	Standby power systems (EWR Ch 32; MWPS Ch 4)
Tues.	Oct. 13	**Lab:** Utility Company field trip
Wed.	Oct. 14	Stray voltage (MWPS Ch. 6)
Thurs.	Oct. 15	Lightning protection (MWPS Ch 7)

WEEK 9

Mon.	Oct. 19	Electric motor types
Tues.	Oct. 20	**Lab:** Electric motor rewinding shop field trip
Wed.	Oct. 21	Electric motor types continued
Thurs.	Oct. 22	Selection of electric motors

WEEK 10

Mon.	Oct. 26	Selection of electric motors continued
Tues.	Oct. 27	**Lab:** Electric motors
Wed.	Oct. 28	Electric motor circuit equipment (MWPS pgs. 22-32)
Thurs.	Oct. 29	**Exam II**

WEEK 11

Mon.	Nov. 2	Introduction to electrical controls (EWR p. 173)
Tues.	Nov. 3	**Lab:** Electrical controls wiring
Wed.	Nov. 4	Electrical controls cont.
Thurs.	Nov. 5	Resistors, capacitors, & introduction to solid-state electronics; **presentation topic due**

WEEK 12

Mon.	Nov. 9	Electronic Components – diodes
Tues.	Nov. 10	**Lab:** Electronic components exercise
Wed.	Nov. 11	Electronic components –transistors & amplifiers
Thurs.	Nov. 12	Electronic components - SCR'S and TRIACS

WEEK 13

Mon.	Nov. 16	Electronic components – logic gates
Tues.	Nov. 17	**Lab:** Electronic kit project
Wed.	Nov. 18	Electronic components – transducers
Thurs.	Nov. 19	Quiz – electronic components;

THANKSGIVING BREAK Nov. 23-27

WEEK 14

Mon.	Nov. 30	Wet environment wiring (MWPS pgs. 1-11)
Tues.	Dec. 1	**Lab:** Wet environment wiring exercise
Wed.	Dec. 2	Low voltage electrical systems (EWR pgs. 495-506, 512-530; MWPS Ch 5)
Thurs.	Dec. 3	Buried wiring

WEEK 15

Mon.	Dec. 7	**Student presentations** - New issues in electricity/electronics
Tues.	Dec. 8	**Lab:** Wet environment wiring exercise
Wed	Dec. 9	**Student presentations** -New issues in electricity/electronics
Thurs.	Dec. 10	Final review

FINAL EXAM: **Wednesday December 16th from 8:00 to 9:50 in room KH 307**

COURSE EVALUATION

Hour Exams, quizzes, laboratories, assignments, and final exam.

Grading Scale:	90% - 100%	= A
	80% - 89%	= B
	70% - 79%	= C
	60% - 69%	= D
	<60%	= F

Use of unauthorized notes or aids during quizzes and tests will be dealt with according to University regulations. Student's rights and responsibilities can be found by going to the WIU home page, Personnel, Provost Page, Student Rights and Responsibilities.

I encourage you to obtain help if you do not understand how to do a "take home" assignment. I am available at most any time to assist you, but if this is not convenient, you may get someone else from the class to explain or demonstrate the task at hand.

I do, however, strongly suggest that you do your own work. That is, you must mentally and physically work through the assignment so that you can demonstrate, when required, that you have the required competency (ies).

Assignments are due on the day specified. Assignments turned in after the graded assignment is returned to the rest of the class will be scored ZERO.

ABSENCE POLICY

One hundred percent class attendance is expected. If because of illness or other unavoidable event a class or laboratory is missed, it is the student's responsibility to make arrangements with Dr. Tillotson to make up the work missed. Arrangements should be made ahead of time if the student knows that he/she is going to have to miss a class.

ADA COMPLIANCE

In accordance with University policy and the Americans with Disabilities Act (ADA), accommodations in the area of test or note taking may be made for any student who notifies me of the need for an accommodation. It is imperative that you take the initiative to bring such needs to my attention, as I am legally not permitted to inquire about the particular disability needs of students. Furthermore, I would like also to request that student who may require special assistance in emergency evacuations (i.e., fire, tornado, etc.) contact me as to the most appropriate procedures to follow in such an emergency.