Course Number and Title	EG 220 Machines & Power Systems

Credit Hours	4

Course Description	An introduction to industrial and commercial power distribution and utilization practices. The course covers: (1) types of single phase and polyphase A.C. motors; (2) transformers, including sizing, testing, and connections; (3) short circuit calculations; (4) lighting design and practices; (5) breaker and fuse sizing applications; (6) conductor insulation; (7) review of National Electric Code; (8) industrial motor control; (9) single phase and 3 phase A.C. power.

Prerequisite(s) and/or Corequisite(s)	EG 172
	MT 124

Required Textbooks/References/Course Materials:

Electrical Transformers and Rotating Machines	4th	Herman	Cengage	1305494814

	General Education Outcomes
1	Utilize written and verbal language to discuss and comprehend information, incorporating a variety of technologies, such as text, data, and images (written language, verbal language, and information technology).
2	Identify and interpret relevant information in order to formulate an opinion or conclusion (critical thinking).
3	Demonstrate and communicate computational methods and mathematical reasoning in a variety of formats (using words, tables, graphs, mathematical equations, etc., as appropriate) (quantitative literacy and fluency).
4	Communicate in appropriate ways with those who are culturally diverse (intercultural competence).

	Program/Department Outcomes
1	Prepare students to become safe and competent electrical technicians
2	Provide opportunities to display critical thinking skills
3	Demonstrate responsible professional conduct and behavior.
4	Effectively communicate.
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	Course Outcomes (CO)	Bloom's Domain for CO (C, A, P), Category, and Level	Program/ Department Outcome(s)	Written Language	Verbal Language	Information Technology	Critical Thinking	Quantitative Literacy and Fluency	Intercultural Competence
1	Compare and contrast the properties of permanent magnets, electromagnets, magnetic induction, inductance in an AC circuit.	C-Analyzing (4)	1, 2, 4	1	1	1	2	1	0
2	Compute inductive reactance, inductance, reactive power, and Q of a coil.	C-Applying (3)	2, 4	1	1	1	1	2	0
3	Compute the voltage, current, and turns ratio for single-phase transformers, autotransformers, current transformers, and three-phase transformers.	C-Applying (3)	2, 4	1	1	1	1	2	0
4	Describe the characteristics of open delta, delta and wye connections for transformers and motors.	C-Remembering (1)	1, 2, 4	1	1	1	2	1	0
5	Compute voltage and current values for open delta, delta and wye circuits, power factor correction.	C-Applying (3)	2, 4	1	1	1	1	2	0
6	Analyze the correct conductor size, proper size branch circuit protection for transformers of different ratings in accordance with the NEC.	C-Analyzing (4)	1, 2, 4	1	1	1	2	1	0
7	Describe the theory of operation of DC generators, DC motors, single phase and three-phase motors.	C-Remembering (1)	1, 2, 4	1	1	1	1	1	0
8	Compute the full-load current rating, overload sizes, short-circuit protective devices, proper size starters for different types of motor loads.	C-Applying (3)	2, 4	1	1	1	1	2	0
9									
10									

Bloom's Domain Legend
C = Cognitive
A = Affective
P = Psychomotor

General Education Outcome Legend
2 = Included and Measurable
1 = Introduced and/or Minimally Addressed and Not Measurable
0 = Not included

Approved: May 2021
Reviewed: November 11, 2021