

CATALOG INFORMATION

Dept and Nbr: ELEC 51A Title: FUNDAMENTAL ELEC
Full Title: Fundamentals of Electricity
Last Reviewed: 1/28/2019

Units		Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00	Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00	Lab Scheduled	0	6	Lab Scheduled	0
		Contact DHR	0		Contact DHR	0
		Contact Total	3.00		Contact Total	52.50
		Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00

Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable
Grading: Grade Only
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly:

Catalog Description:
Fundamentals of basic physical principles as applied to direct and alternating current, basic circuits, units, components, and test equipment. Electrical safety and energy conservation as it is applied to household and industrial appliances are evaluated.

Prerequisites/Corequisites:

Recommended Preparation:
Completion of IED 90A or one year of high school algebra or equivalent.

Limits on Enrollment:

Schedule of Classes Information:
Description: Fundamentals of electricity as applied to direct & alternating current; basic circuits, units, components & test instruments. (Grade Only)
Prerequisites/Corequisites:
Recommended: Completion of IED 90A or one year of high school algebra or equivalent.
Limits on Enrollment:
Transfer Credit: CSU;

Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	Area			Effective:	Inactive:
CSU GE:	Transfer Area			Effective:	Inactive:
IGETC:	Transfer Area			Effective:	Inactive:
CSU Transfer:	Transferable	Effective:	Fall 1981	Inactive:	
UC Transfer:		Effective:		Inactive:	

CID:

Certificate/Major Applicable:

Not Certificate/Major Applicable

COURSE CONTENT

Outcomes and Objectives:

The student will be able to:

1. make circuit calculations using OHM's Law and WATTS Law.
2. analyze and evaluate series, parallel, and series parallel circuits.
3. apply Basic Circuit Law to interpret circuit faults.
4. identify and give characteristics of rechargeable and non-rechargeable cells and batteries.
5. translate horsepower into watts and vice-versa when determining motor or generator input and output requirements.
6. evaluate power operational costs of electrical appliances.
7. demonstrate the ability to read the typical home type watt-hour and gas meter and compute monthly energy costs.
8. evaluate the feasibility of various "energy saving" devices using electronic laws, basic physical principles, and known operating efficiencies of various devices.
9. explain the basic operating principle and efficiency of the microwave oven and compare power requirement to that of a conventional oven.
10. demonstrate the characteristics of basic magnetism and magnet or non-magnetic properties of common materials.
11. identify the characteristics of the three common types of brush motors or generators.
12. describe the basic characteristics of capacitors, inductors and transformers.
13. relate the properties of the common AC Sine Wave.

Topics and Scope:

1. Atom Structure.
2. OHM's Law.

3. Units of Measurement.
4. Power Law.
5. Series Circuits.
6. Parallel Circuits.
7. Series-Parallel Circuits.
8. Maximum Power Transfer.
9. Power and Operating Costs.
10. Energy Cost Computations.
11. Energy Saving Devices.
12. Cells and Batteries.
13. Magnetism.
14. Motors and Generators.
15. Capacitance.
16. Inductance.
17. Transformers.
18. AC (Alternating Current).

Assignment:

1. Textbook readings.
2. Textbook homework problems.
3. Handout homework problems.

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.

Writing
0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Homework problems, Quizzes

Problem solving
20 - 30%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None

Skill Demonstrations
0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Multiple choice, True/false, Matching items

Exams
70 - 80%

Other: Includes any assessment tools that do not logically fit into the above categories.

None

Other Category 0 - 0%

Representative Textbooks and Materials:
ELECTRICITY & BASIC ELECTRONICS by Steven R. Matt.