

ENGT 020: DC CIRCUIT ANALYSIS I

Originator

dgonzalez

Justification / Rationale

Labor market indicators show that there are jobs available and an advisory committee recommended the course.

Effective Term

Fall 2019

Credit Status

Credit - Degree Applicable

Subject

ENGT - Engineering Technology

Course Number

020

Full Course Title

DC Circuit Analysis I

Short Title

DC CIRCUITS I

Discipline**Disciplines List**

Engineering Technology

Modality

Face-to-Face

Catalog Description

This is the first course in a two-part series in Direct Current (DC) circuit analysis. Topics to be covered include Ohm's Law, series and parallel circuit analysis, voltage and current dividers.

Schedule Description

This is the first course in a two-part series in Direct Current (DC) circuit analysis. Advisory: MATH 060, PH 001, ESYS 004

Lecture Units

2

Lecture Semester Hours

36

Lab Units

1

Lab Semester Hours

54

In-class Hours

90

Out-of-class Hours

72

Total Course Units

3

Total Semester Hours

162

Prerequisite Course(s)

Advisory: MATH 060, PH 001, ESYS 004

Required Text and Other Instructional Materials**Resource Type**

Book

Author

Boylestad, Robert L.

Title

Introductory Circuit Analysis

Edition

13

Publisher

Pearson

Year

2015

College Level

Yes

ISBN #

978-0133923605

Resource Type

Book

Author

Boylestad, Robert L., Kousourou, Gabriel

Title

Laboratory Manual for Introductory Circuit Analysis

Publisher

Pearson

Year

2015

College Level

Yes

ISBN #

978-0133923780

For Text greater than five years old, list rationale:

Lab manual has ISBN: 978-0133923780

Class Size Maximum

30

Entrance Skills

Basic Industrial Math skills

Prerequisite Course Objectives

ESYS 004-Compute using the four basic operations of addition, subtraction, multiplication, and division on the rational numbers.

ESYS 004-Compute the value of expressions containing natural number exponents.

ESYS 004-Apply the order of operations to simplify expressions involving several operations.

ESYS 004-Convert between improper fractions, mixed numbers, and decimals.

Entrance Skills

Basic Math Skills

Prerequisite Course Objectives

MATH 060-Apply the basic operations to solve application problems that involve whole numbers, integers, and rational numbers.

MATH 060-Apply the order of operations to simplify expressions involving several operations using rational numbers.

MATH 060-Employ decimal notation and place value to compare, order, and round numbers.

MATH 060-Determine the solution to equations involving percents by deductive reasoning.

MATH 060-Recognize and convert between units of measurements in the American and metric systems.

MATH 060-Use the properties of natural number exponents to simplify algebraic expressions.

Entrance Skills

Basic Physics skills

Prerequisite Course Objectives

PH 001-Utilize good problem solving techniques on real world science and engineering problems.

PH 001-Determine and use correct units for physical quantities

Course Content

1. Introduction
 - a. Units of measurement
 - b. Review math skills
2. Sources
 - a. Voltage sources
 - b. Current sources
3. Resistors
 - a. Conductors
4. Ohm's Law
 - a. Power and batteries
5. Series Circuits
 - a. Kirchhoff's Voltage Law
 - b. Divider Rule
 - c. Loading effects
6. Parallel Circuits
 - a. Resistors in parallel
 - b. Kirchhoff's Current Law
 - c. Current Divider Rule
 - d. Voltage Sources in parallel

Lab Content

1. Safety procedures
2. Math review and calculator fundamentals
3. Resistors and color code
4. Ohm's Law
5. Series resistance
6. Series DC circuits

7. Parallel Resistance
8. Parallel DC Circuits

Course Objectives

	Objectives
Objective 1	Identify and define electrical terminology concepts, such as, voltage, current, and resistance.
Objective 2	Evaluate the mathematical concepts used to calculate the electrical expressions.
Objective 3	Analyze and apply different mathematical methods in the analysis of series and parallel circuits.
Objective 4	Practice electrical safety.
Objective 5	Calculate voltage, current, resistance using Ohm's Law.

Student Learning Outcomes

	Upon satisfactory completion of this course, students will be able to:
Outcome 1	Utilize test and measurement equipment to measure characteristics of Direct Current circuits and diagnose problems.
Outcome 2	Construct working electronic Direct Current circuits containing basic components from a functional schematic diagram.
Outcome 3	Evaluate a Direct Current circuit and calculate the voltage and current of each component in the circuit.

Methods of Instruction

Method	Please provide a description or examples of how each instructional method will be used in this course.
Discussion	Students will discuss the material during lecture and lab.
Laboratory	Laboratory will be used to gain a hands-on understanding of the material presented in lecture.
Lecture	Lecture will provide a theoretical introduction and explanation of the material being covered.
Participation	Students will be asked questions during lecture and lab.

Methods of Evaluation

Method	Please provide a description or examples of how each evaluation method will be used in this course.	Type of Assignment
Mid-term and final evaluations	Students will be tested through Canvas to determine their understanding of the material.	In Class Only
Group activity participation/observation	During lab students will work in teams to perform and solve the lab report. Students may also work in teams on homework assignments.	In and Out of Class
Laboratory projects	During Lab students will be expected to discuss with their classmates the purpose of the lab and their findings. Laboratory projects and findings will be evaluated to gain a better understanding for the students' comprehension of the material.	In and Out of Class
Student participation/contribution	Students will be evaluated by their participation in both lecture and lab.	In Class Only
Tests/Quizzes/Examinations	Quizzes and exams will include multiple choice questions.	In and Out of Class
Written homework	Homework will be assigned via Canvas and some questions will require a short written response.	Out of Class Only

Assignments

Other In-class Assignments

1. Take notes
2. Lab work
3. Lab notebook
4. Quizzes

5. Exams
6. Discussion

Other Out-of-class Assignments

1. Reading assignments
2. Writing assignments
3. Lab writeups

Grade Methods

Letter Grade Only

MIS Course Data**CIP Code**

15.0000 - Engineering Technology, General.

TOP Code

092400 - Engineering Technology, General

SAM Code

C - Clearly Occupational

Basic Skills Status

Not Basic Skills

Prior College Level

Not applicable

Cooperative Work Experience

Not a Coop Course

Course Classification Status

Credit Course

Approved Special Class

Not special class

Noncredit Category

Not Applicable, Credit Course

Funding Agency Category

Not Applicable

Program Status

Not program-applicable

Transfer Status

Transferable to CSU only

Allow Audit

No

Repeatability

No

Materials Fee

No

Additional Fees?

No

Files Uploaded

Attach relevant documents (example: Advisory Committee or Department Minutes)

EngrTech Advisory 02-27-18 Minutes and Handouts.pdf

Approvals

Curriculum Committee Approval Date

11/06/2018

Academic Senate Approval Date

11/29/2018

Board of Trustees Approval Date

12/14/2018

Chancellor's Office Approval Date

3/20/2019

Course Control Number

CCC000603615

Programs referencing this course

Engineering Technology AS Degree (<http://catalog.collegeofthedesert.eduundefined?key=209>)

Electronics Certificate of Achievement (<http://catalog.collegeofthedesert.eduundefined?key=210>)