Tarih: 11 Eylül 2025 13:26

Department of Electricity and Energy / Department of Electricity and Energy /

Course Code	Course Name	Teorical	Practice	Laboratory	Credits	ECTS
ENR103	DIRECT CURRENT CIRCUIT ANALYSIS	3.00	1.00	0.00	4.00	4.00

Course Detail

Course Language	:	Turkish
Qualification Degree	:	PreBachelor
Course Type	:	Compulsory
Preconditions	:	Not
Objectives of the Course	:	To analyze the electric circuit of the basic branches of the science of electricity, and to apply the basic theorems and the methods of circuit solution.
Course Contents	:	Static electricity, taking precautions against the unpredictable effects of electrical current, direct current circuit analysis, mesh-current method, node voltage method, resource links, Thevenin's Theorem, Norton's Theorem, Superposition Theorem, Maximum power Theorem, direct current storage elements, direct current power and energy.
Recommended or Required Reading	:	PC, Projection, Experiment sets 1)Doğru Akim Devreleri & Problem Cozumleri, Mustafa Yagimli, Feyzi Akar, Beta Press, 2010. 2)Doğru Akım Devre Analizi ve Çözümlü Örnekler, İhsan Güller,Dora Yayıncılık,lecture notes
Course Instructors	:	Öğr. Gör. Ensar Koşatepe
Presentation Of Course	:	formal
Update Date	:	9/7/2025 8:54:44 PM
Dosya İndirilme Tarihi	:	9/11/2025

Course Outcomes

Upon the completion of this course a student :

1 Know the basic concepts of the electricity.

2 Get the issues that contain the direct-current applications.

3 Apply the basic-circuit solution methods using the law of Kirchhoff.

4 Perform circuit analysis using the method of loop currents.

5 Perform circuit analysis using the method of node voltages.

6 Perform circuit analysis making Star-Delta transformation.

7 Perform circuit analysis using the superposition theorem.

8 Create the Thevenin equivalent of the electricity circuit.

9 Create the Norton equivalent of the electricity circuit.

Preconditions

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Weekly Contents

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
1.Week	*Basic Concepts	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1
2.Week	*Series-Parallel Resistor Circuits	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3
3.Week	*Series-Parallel Resistor Circuits	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3
4.Week	*Kirchhoff's Laws	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3

	Teorical	Practice	Laboratory	Preparation Info	Teaching Methods	Course Learning Outcomes
5.Week	*Kirchhoff's Laws, Delta-Star Transformation	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.3
6.Week	*Voltage Source, Current Source, Dependent Source, Source Transformations	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.3
7.Week	*Introduction to Simulation Software and Basic Circuit Simulation	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.2 Ö.Ç.3
8.Week	*Midterm Exam					Ö.Ç.1 Ö.Ç.2 Ö.Ç.3
9.Week	*Mesh Current Method	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.4
10.Week	*Node Voltage Method	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.5
11.Week	*Superposition Method	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.7
12.Week	*Thevenin's Theorem	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.8
13.Week	*Norton's Theorem	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.9
14.Week	*Two-Port Method, Artificial Variable Method, Planar Circuit, Topological Tree, Millman's Theorem	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.2 Ö.Ç.6
15.Week	*Inductor and Capacitor in DC Circuits	*Demonstration of basic elements, working principles, functions in circuits and material selection for various tasks, ability to set up circuits and incorporate them into systems	*Basic Concepts, definition of circuit elements and establishing meaningful systems with circuit elements	*lecture notes, internet videos, circuit installation training	*Explanation, problem solving	Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.1 Ö.Ç.2
16.Week	*Final Exam					Ö.Ç.1 Ö.Ç.2 Ö.Ç.3 Ö.Ç.4 Ö.Ç.5 Ö.Ç.6 Ö.Ç.7 Ö.Ç.8 Ö.Ç.9

Assesment Methods %

1 Ara Sınav : 40.000

3 Final : 60.000

ECTS Workload

Activities	Count	Time(Hour)	Sum of Workload
Vize	1	1.00	1.00
Ödev	1	5.00	5.00
Proje	1	5.00	5.00
Teorik Ders Anlatım	14	3.00	42.00
Final	1	5.00	5.00
Ders Öncesi Bireysel Çalışma	5	1.00	5.00
Ders Sonrası Bireysel Çalışma	10	2.00	20.00
Ara Sınav Hazırlık	1	4.00	4.00
Final Sınavı Hazırlık	1	5.00	5.00
Laboratuvar	14	1.00	14.00
Uygulama / Pratik	14	1.00	14.00
		Total :	120.00
		Sum of Workload / 30 (Hour) :	4
		ECTS :	4.00

Program And OutcomeRelation

	P.O. 1	P.O. 2	P.O. 3	P.O. 4	P.O. 5	P.O. 6	P.O. 7	P.O. 8	P.O. 9	P.O. 10	P.O. 11	P.O. 12	P.O. 13	P.O. 14	P.O. 15	P.O. 16	P.O. 17	P.O. 18	P.O. 19	P.O. 20
L.O. 1	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0
L.O. 2	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0
L.O. 3	0	0	0	0	0	0	0	0	0	0	1	5	1	0	0	0	0	0	0	0
L.O. 4	0	0	0	0	0	0	0	0	0	0	0	5	1	0	0	0	0	0	0	0
L.O. 5	0	0	0	0	0	0	0	0	0	0	1	5	1	0	0	0	0	0	0	0
L.O. 6	0	0	0	0	0	0	0	0	0	0	1	5	1	0	0	0	0	0	0	0
L.O. 7	0	0	0	0	0	0	0	0	0	0	1	5	1	0	0	0	0	0	0	0
L.O. 8	0	0	0	0	0	0	0	0	0	0	1	5	1	0	0	0	0	0	0	0
L.O. 9	0	0	0	0	0	0	0	0	0	0	1	5	1	0	0	0	0	0	0	0
Avarage	0	0	0	0	0	0	0	0	0	0	0.67	5.00	1.00	0	0	0	0	0	0	0

Engel Durumu/Uyarlama Talebi : Engel durumuna ilişkin herhangi bir uyarlama talebinde bulunmak isteyen öğrenciler, dersin öğretim elemanı ya da Nevsehir Engelli Öğrenci Birimi ile en kısa sürede iletişime geçmelidir.