Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM111-2024	Algorithms and Programming-I				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
1	EEM111-2024	Algorithms and Programming-I	4	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is to equip students with the ability to analyze given problems and develop appropriate algorithms for their solutions, to implement these algorithms using a basic programming language, and to acquire fundamental conceptual and practical knowledge about the selected programming language.
Teaching Methods and Techniques:
Introduction to programming. Algorithms and flowcharts. Structure and features of C language. Variables defined in C language, operators, operation priorities. Basic input/output functions. Conditional statements (if, if-else, switch). Conditional statements and sample programs. Loops (for, while, do-while) break, continue, goto statements. Series. Matrix operations. Character strings. Library functions defined in C language. Functions and subprograms. pointers.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Ali YÜCE
Assistants:

Recommended or Required Reading

Resources

Vatansever, F. (2002). Introduction to algorithm development and programming [in Turkish]. Seçkin Publishing. Çelikkol, S. (2001). Introduction to programming and alg Instructor's Notes, Vatansever, F. (2002). Introduction to algorithm development and programming [in Turkish]. Seçkin Publishing.

Ara Sınav ve Final Sınavı

Course Category

Mathmatics and Basic Sciences	:	30	**Education**	:	0
Engineering	:	70	**Science**	:	0
Engineering Design	:	0	**Health**	:	0
Social Sciences	:	0	**Field**	:	0

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to Programming Concepts		
2	Algorithms and Flowcharts	-	
3	Structure and Features of the C Programming Language	-	
4	Variables, Constants, Data Types, Operators, and Precedence	-	
5	Basic Input/Output Functions in C	-	
6	Conditional Statements (if, if-else, switch-case)	-	
7	Applications of Conditional Structures	-	
8	Midterm Exam	-	
9	Loops (for, while, do-while) and Control Statements	-	
10	Arrays and Their Applications	-	
11	Matrix Operations in C	-	
12	Character Arrays (Strings) and String Functions	-	
13	Standard Library Functions in C	-	
14	Functions and Subprograms	-	
15	Pointers and Their Applications		
16	Final Exam		

Recommended Optional Programme Components

EEM304-2024 Microprocessors

Course Learning Outcomes

No	Learning Outcomes
C01	Develops an algorithm for solving a given problem by analyzing it.
C02	Codes the developed algorithm using an appropriate programming language.
C03	Uses the basic syntax and structures of the selected programming language.
C04	Applies fundamental programming concepts (variables, loops, conditions, arrays, etc.) in practice.
C05	Tests the written program, identifies possible errors and deficiencies, and corrects them.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	1	%10
Attendance	0	%0
Practice	1	%10
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	4	56
Assignments	1	4	4
Presentation	0	0	0
Mid-terms	1	2	2
Practice	14	2	28
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**120**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	4	4	3	4	4	3	4	2	2	2
C01	5	5	5	5	5	5	5	4	4	4	3
C02	5	5	5	5	5	5	5	5	5	5	3
C03	5	5	5	5	5	5	5	5	5	4	2
C04	5	5	5	5	4	4	4	4	3	3	3
C05	4	4	5	5	5	4	4	4	3	3	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM109-2024	Fundamentals of EEE I				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
1	EEM109-2024	Fundamentals of EEE I	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To learn the basic electrical concepts, methods of solution of direct current circuits in temporary and continuous state. Kirchhoff current and voltage laws, Thevenin and Norton equivalent circuits, Circuit analysis methods (superposition, node voltages, environmental currents), First order RL and RC circuits, Second order RLC circuits.
Teaching Methods and Techniques:
Unit systems. Definition of electricity. Conductors and insulators. Effects of electric current. Definitions of current, voltage and resistance. Equivalent resistance calculation. Effect of heat on resistance. Definition of Direct Current (DC). Kirchhoff's Laws. Introduction of basic measuring principles and measuring instruments. Measuring resistance with a Wheatstone bridge. Electrical work and power. Conversion of electrical energy into heat. Voltage drop and energy loss in lines. Equivalent circuit, series and parallel connection of voltage source. Chemical effect of current, battery and accumulator. Maximum power theorem. Thevenin and Norton theorems. Superposition theorem. Capacitor, series and parallel connection and behavior in DC. Magnetic circuits. Inductance, series and parallel connections and behavior in DC.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Deniz KORKMAZ
Assistants:

Recommended or Required Reading

Resources	Linear and Nonlinear Circuits, O. L. CHUA, C. A. DOSER, E. S. KUH, Mcgraw-Hill, 1987. Solution Electrical Problems-Direct Current, Doç.Dr. F.ERALP,Fundamentals of Elect Linear and Nonlinear Circuits, O. L. CHUA, C. A. DOSER, E. S. KUH, Mcgraw-Hill, 1987. Solution Electrical Problems-Direct Current, Doç.Dr. F.ERALP Ders kitabı, çalışma kitabı, videolar, çalışma kağıtları Ders Notları ve Ders Kitabı Ara ve Final Sınavı

Course Category

Mathmatics and Basic Sciences	:	20	**Education**	:	
Engineering	:	40	**Science**	:	
Engineering Design	:	40	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Unit systems. Definition of electricity. Conductors and insulators.		Fundamentals of Electrical and Electroni
2	Effects of electric current. Definitions of current, voltage and resistance. Equivalent resistance calculation.		Fundamentals of Electrical and Electroni
3	Definition of Direct Current (DC). Kirchhoff's Laws.		Fundamentals of Electrical and Electroni
4	The effect of heat on resistance. Introduction of basic measurement principles and measuring instruments.		Fundamentals of Electrical and Electroni
5	Measuring of Resistance with Wheatstone bridge.		Fundamentals of Electrical and Electroni
6	Electrical work and power. Conversion of electrical energy to heat.		Fundamentals of Electrical and Electroni
7	Voltage drop and energy loss in lines.		Fundamentals of Electrical and Electroni
8	Midterm Exam		
9	Equivalent circuit, series and parallel connection of the voltage source. Maximum power theorem.		Fundamentals of Electrical and Electroni
10	Thevenin ve Norton teoremleri. Süperpozisyon teoremi.		Fundamentals of Electrical and Electroni
11	Capacitor, serial and parallel connections and its behavior in DC.		Fundamentals of Electrical and Electroni
12	The behavior of the capacitor in DC.		Fundamentals of Electrical and Electroni
13	Magnetic circuits. Inductance, series and parallel connections.		Fundamentals of Electrical and Electroni
14	The behavior of inductance in DA.		Fundamentals of Electrical and Electroni
15	The chemical effect of current, battery and accumulator.		Fundamentals of Electrical and Electroni
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Defines the basic concepts of Electrical and Electronics Engineering.
C02	Analyze and design simple electrical and electronic circuits to solve a specific problem.
C03	Applies the laws of electrical and electronic engineering.
C04	Apply mathematics, science and engineering theorems to Electrical and Electronics Engineering.
C05	Models and solves engineering problems.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%30
Quizzes	1	%5
Assignment	5	%5
Attendance	0	%0
Practice	0	%0
Project	1	%30
Final examination	1	%30
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	2	28
Assignments	5	1	5
Presentation	0	0	0
Mid-terms	1	2	2
Practice	1	2	2
Laboratory	14	2	28
Project	1	5	5
Final examination	1	2	2
Total Work Load			**100**
ECTS Credit of the Course			**3**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	2	1	2	1	1	2	1	1	1
C01	4	4	2	1	2	1	1	2	1	1	1
C02	3	4	2	1	3	1	1	2	1	1	1
C03	4	4	2	3	3	1	1	2	1	1	1
C04	4	3	2	3	3	1	1	1	1	1	1
C05	4	4	4	3	3	2	3	2	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TBF001-2020	General Physics I				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
1	TBF001-2020	General Physics I	4	4	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The basics of the scientific approach are to give students the Newton's laws and physical description of moving objects.
Teaching Methods and Techniques:
Physics and Measurement, Addition and Subtraction of Vectors, Multiplication of Vectors, Definitions of Scarel and Vector Product, Motion in One Dimension, Motion in Two Dimensions, Laws of Motion, Circular Motion and Application of Newton's Laws of Motion, Work and Kinetic Energy, Potential Energy and Conservation of Energy, Linear Momentum and Collisions, Rotation of Rigid Bodies, Rolling Motion and Angular Momentum, Static Equilibrium
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Tankut ATEŞ
Assistants:

Recommended or Required Reading

Resources

Serway R.A., BeichnerJ., JewettJ.W. 2000 Physics for Science and Engineers, Palme Publishing House
1.SerwayR.A.,BeichnerJ.,JewettJ.W.2000;FenveMühendisleriçinFizik,Palme
Yayınevi,
2.Ankara,PhysicsforScientistandEngineers,P.M.Fishbane, S.Gasiorowicz, S.T. Thornton

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	: 40	**Science**	: 60
Engineering Design	:	**Health**	:
Social Sciences	:	**Field**	:

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Unit systems and size analysis	Course notes and books	Course notes and books
2	Vectors, scalar and cross product	Course notes and books	Course notes and books
3	Motion in one dimension	Course notes and books	Course notes and books
4	Motion in two dimensions	Course notes and books	Course notes and books
5	Newton laws of motion	Course notes and books	Course notes and books
6	Circular motion	Course notes and books	Course notes and books
7	Action and Kinetic Energy	Course notes and books	Course notes and books
8	Problems with work and kinetic energy	Course notes and books	Course notes and books
9	Potential energy and conservation of energy	Course notes and books	Course notes and books
10	Problems with potential energy and conservation of energy	Course notes and books	Course notes and books
11	Linear momentum and collisions, Problems	Course notes and books	Course notes and books
12	Rotational motion of the center of mass and rigid bodies	Course notes and books	Course notes and books
13	Problems with solid body and center of mass	Course notes and books	Course notes and books
14	Rolling motion and angular momentum, Problems	Course notes and books	Course notes and books

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the basic concepts and principles of physics in a clear and logical way.
C02	Discusses the laws of motion and motion in two dimensions.
C03	Explains circular motion and other applications of Newton's laws.
C04	Solves physics problems with the help of work and energy, potential energy and conservation of energy.
C05	Solves physics problems.
C06	Solves the physical problems faced in daily life.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	4	56
Hours for off-the-c.r.stud	14	2	28
Assignments	5	2	10
Presentation	6	2	12
Mid-terms	1	18	18
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	24	24
Total Work Load			**148**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	4	4	4	3	2	3	4	2	2
C01	5	5	4	4	4	3	2	3	2	4	4
C02	5	5	4	4	4	3	2	3	4	2	3
C03	5	5	4	4	4	3	2	3	2	5	2
C04	5	5	4	4	4	3	2	3	4	2	4
C05	5	5	4	4	4	3	2	3	4	3	2
C06	5	5	4	4	4	3	2	3	2	2	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TBF003-2020 **General Physics Laboratory I**

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
1	TBF003-2020	General Physics Laboratory I	0	1	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To reinforce the knowledge of students with experiments suitable for the subjects seen in General Physics I course
Teaching Methods and Techniques:
Introduction of experimental systems, Motion in one dimension: Speed and acceleration; Motion in two dimensions: Oblique shooting; Newton's Laws of Motion; Flexible Collision; Inelastic collision; Simple harmonic motion; Conservation of energy; Calculation of simple pendulum and gravitational acceleration; Conservation of momentum in one dimension; Conservation of momentum in two dimensions; Uniform circular motion; Angular momentum Rotation of a solid body around an axis
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Tankut ATEŞ
Assistants:

Recommended or Required Reading

Resources General Physics I Experiment Guide
General Physics Laboratory-I (Mechanical) Experiment guide.

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	: 40	**Science**	: 60
Engineering Design	:	**Health**	:
Social Sciences	:	**Field**	:

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction of test systems		
2	Motion, velocity and acceleration in one dimension		
3	Motion in two dimensions, tilted shot		
4	Newton`s laws of motion		
5	Make-up Experiments		
6	Flexible collision		
7	Inelastic collision		
8	Simple harmonic motion		
9	Conservation of energy		
10	Make-up Experiments		
11	Calculation of simple pendulum and gravitational acceleration		
12	Conservation of momentum		
13	Uniform circular motion		
14	Make-up Experiments		

Course Learning Outcomes

No	Learning Outcomes
C01	Recognizes measurement systems and tools.
C02	It recognizes constant velocity motion and measures the velocity of an object.
C03	It recognizes variable velocity motion and measures the velocity of an object.
C04	Sets up and applies the mechanisms of collision experiments.
C05	Recognizes simple harmonic motion.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	1	14
Assignments	14	1	14
Presentation	0	0	0
Mid-terms	1	4	4
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	6	6
Total Work Load			**66**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	4	3	4	2	2	1	4	5	3	3
C01	5	4	3	4	2	3	3	4	2	1	3
C02	5	4	3	4	1	1	2	3	3	2	3
C03	5	4	3	4	1	4	4	4	2	1	3
C04	5	4	3	4	2	2	1	3	4	4	3
C05	5	4	3	4	1	2	5	4	2	1	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

İNG101-2020 English I

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
1	İNG101-2020	English I	3	3	3

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is for students to acquire basic English speaking, writing, reading and listening comprehension skills.
Teaching Methods and Techniques:
This course covers basic English reading, comprehension, writing, and listening skills. Countries and Nationalities Possessive Adjectives and Personal Information a/an, plurals, this/that/these/those Present Tense, Regular/Irregular Plurals, and Writing Practice a/an + occupations, possessive suffix 's', and Family Writing Adjectives, quite/a lot Telling the Time, Present Tense, and Daily Routine Adverbs of Frequency and Time Words and Expressions Prepositions of Time and History Can/can't and Verbal Phrasals Object Pronouns: I, you, it, etc.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Instructor Emre AK
Assistants:

Recommended or Required Reading

Resources
Captain 1 – Starter Level, English SB/WB, Blackswan Publishing House, 2021.
Worksheets, videos, slides
Ders kitabı, çalışma kitabı, videolar, çalışma kağıtları

Course Category

Mathmatics and Basic Sciences	:	**Education**	:	100
Engineering	:	**Science**	:	
Engineering Design	:	**Health**	:	
Social Sciences	:	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	To be, imperatives		course book, workbook, videos
2	Possessive adjectives		course book, work book, videos
3	Question forms of to be		course book, work book, videos
4	Indefinite articles		course book, work book, videos
5	Prepositions (on, in, at, under etc.)		course book, workbook, videos, pictures
6	Articles (a, an, the)		course book, work book
7	Plurals, These, Those, But conjuction.		course book, workbook, videos
8	Present Simple, positive statements		course book, workbook, videos.
9	Mid-Term Exam		
10	Present simple, negative forms		course book, workbook, videos
11	Present simple, yes/no questions		course book, workbook, videos
12	Present simple, wh- questions		course book, workbook, videos
13	Present simple Time Expressions		coursebook, workbook, videos
14	Free time activities, daily activities, offering		coursebook, workbook, videos
15	Revision of present simple, days of the week, numbers		Coursebook, workbook
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	At the end of this lesson, students will be able to describe themselves, their family, their place of residence, their hobbies, their talents, their likes and dislikes using the target language.
C02	At the end of this lesson, students will explain their past experiences and ask questions in the target language.
C03	At the end of this lesson, students will summarize a basic level English passage they have read.
C04	At the end of this course, students will be able to interpret conversations at a basic level.
C05	At the end of this course, students will be able to select relevant information and use correct grammatical structures appropriately in the texts they write at a basic level.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	3	3
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	3	3
Total Work Load			**90**
ECTS Credit of the Course			**3**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	3	5	1	1
C01	1	1	1	1	1	1	1	3	5	1	1
C02	1	1	1	1	1	1	1	3	5	1	1
C03	1	1	1	1	1	1	1	3	5	1	1
C04	1	1	1	1	1	1	1	3	5	1	1
C05	1	1	1	1	1	1	1	3	5	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TBM003-2020	Linear Algebra				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
1	TBM003-2020	Linear Algebra	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To give basic Linear Algebra knowledge.
Teaching Methods and Techniques:
Vectors. Vector sum and number-vector product, vector spaces, scalar product, length of a vector and angle between two vectors, linear conjunction, linear dependent and independent vectors, basis and dimension, orthogonal and orthonormal vectors, antibase and antispace, subspace. Matrices and matrix operations, vectors and matrices, invertible matrices, elementary row operations and echelon form, determinants and their properties, determinant expansions, linear transformations and properties, representation of transformations with matrices and base transformations, rank of a linear transformation, systems of linear equations and solution spaces, Cramer system, rank rule and geometric interpretation, convex sets, characteristic value and characteristic vectors, diagonalization of symmetric matrices, quadrature forms, inner product and inner product spaces, vector and mixed products, area and volume.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Sezer ERDEM
Assistants:

Recommended or Required Reading

Resources

Lineer Cebir - Mühendislik ve İstatistik Bölümleri İçin, A. Sabuncuoğlu, Nobel Yayıncılık, 2. Basım, 2014.,Uygulamalı Lineer Cebir, B. Kolman, D. R. Hill, Palme Yayıncılık, 2(
1. Lineer Cebir - Mühendislik ve İstatistik Bölümleri İçin, A. Sabuncuoğlu, Nobel Yayıncılık, 2. Basım, 2014.

2. Uygulamalı Lineer Cebir, B. Kolman, D. R. Hill, Palme Yayıncılık, 2002 (Çeviri Kitap).

3. Lineer Cebir, H. H. Hacısalihoğlu, Birsen Yayınevi, 2002.

Course Category

Mathmatics and Basic Sciences	:	100	**Education**	:	
Engineering	:	0	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Linear equations		
2	Introduction to Matrix Algebra		
3	Some special matrices, operations on matrices		
4	Solution of linear equation systems with the help of matrices		
5	Solution of linear equation systems with the help of matrices		
6	Determinant, its properties and Laplace expansion		
7	General exercises		
8	Cramer rule, Additional Matrix		
9	Algebra of vectors		
10	Linear dependence, linear independence		
11	Concept of rank		
12	Eigenvalues, eigenvectors		
13	Gram-Schmidt method		
14	General Exercises		

Course Learning Outcomes

No	Learning Outcomes
C01	Performs matrix operations.
C02	Finds solution sets of systems of equations.
C03	Calculates the determinant.
C04	Performs basic operations on eigenvalues and eigenvectors and applies the Gram-Schmidt method.
C05	Applies operations related to vectors.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	18	18
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	20	20
Total Work Load			**122**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	3	5	4	3	2	3	3	2	3
C01	5	4	3	4	4	3	2	4	3	2	3
C02	4	5	4	5	3	4	3	3	4	2	2
C03	4	5	3	4	4	3	2	4	3	3	3
C04	4	4	3	5	4	3	2	3	3	2	3
C05	5	4	4	5	3	5	3	3	3	3	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TBM001-2020	Mathematics I				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
1	TBM001-2020	Mathematics I	4	4	6

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To provide basic mathematics knowledge and analytical thinking skills.
Teaching Methods and Techniques:
Functions and Graphs, Limit, Continuity, Intermediate Value Theorem, Types of Discontinuity, Derivative, Chain Rule, Derivative in Linear Functions, Linearization and Differentials, Increasing-Decreasing Functions, Transcendental Functions, Special Functions and Derivatives, Uncertainties and L'Hopital Rule, Average Value Theorem, First Derivative Test for Local Extremums, Second Derivative Test, Asymptotes of Graphs, Curve Drawing, Inverse Derivatives, Integral, Indeterminate Integral, Specific Integral and Applications, Mean Value Theorem for Specific Integrals, Fundamental Theorem of Calculus, Integration Techniques, Applications of Certain Integrals, Area Calculation, Volume Calculation, Arc Length, Areas of Rotational Surfaces, I.Type and II. Type Generalized Integrals.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Sezer ERDEM
Assistants:

Recommended or Required Reading

Resources

Thomas 'Calculus, 12th Edition, G.B Thomas, M.D.Weir, J.Hass and F.R.Giordano, Addison-Wesley, 2012.,2. Calculus: A Complete Course, Robert A. Adams, C Essex 7th E
1. Thomas' Calculus, 12th Edition, G.B Thomas, M.D.Weir, J.Hass and F.R.Giordano, Addison-Wesley, 2012.
2. Calculus: A Complete Course, Robert A. Adams, C Essex 7th Edition, Addison Wesley Longman Toronto 2010.
3. Matematik I, Mustafa Balcı, Nobel Yayınevi, 2013.

Course Category

Mathmatics and Basic Sciences	:	60	**Education**	:	
Engineering	:	40	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Functions		
2	Functions		
3	Limit		
4	Continuity		
5	Derivative, Derivative Rules		
6	Derivative, derivate rules		
7	Uncertainties and L`Hopital Rule		
8	Extremums		
9	Curve drawing		
10	Indefinite Integral		
11	Indefinite Integral		
12	Definite Integral		
13	Applications of Integrals		
14	Generalized Integrals, Type I and II. Type Generalized Integrals.		

Course Learning Outcomes

No	Learning Outcomes
C01	Defines functions and explains their properties.
C02	explains limits and applies them to problems.
C03	explains contunity and applies them to problems.
C04	explains derivatre and applies them to problems.
C05	explains integrals and applies them to problems.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	4	56
Hours for off-the-c.r.stud	14	4	56
Assignments	1	8	8
Presentation	0	0	0
Mid-terms	1	30	30
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	30	30
Total Work Load			**180**
ECTS Credit of the Course			**6**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	4	3	3	3	2	2	2	2	2	2
C01	5	4	3	3	3	2	2	2	2	2	2
C02	5	4	3	3	3	2	2	2	2	2	2
C03	5	4	3	3	3	2	2	2	2	2	2
C04	5	4	3	3	3	2	2	2	2	2	2
C05	5	4	3	3	3	2	2	2	2	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

USD139-2021	Community Service Practices				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
1	USD139-2021	Community Service Practices	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To introduce the society to the concept of volunteering; To contribute to the personal development of our students by enabling the development of values ??such as sharing, recognizing and accepting the different, adapting to differences, problem solving, being productive and creative.
Teaching Methods and Techniques:
Community Service Practices course is a course in which social awareness is gained practically in order to support our students' social sensitivity and awareness, cooperation, solidarity, effective communication and self-evaluation skills.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Instructor Dilan Aydın
Assistants:

Recommended or Required Reading

Resources
Examples of projects done in other universities
Practice
Farklı üniversitelerde yapılan projeler
MProje ödevi
1 ara sınav, 1 yarıyıl sonu sınavı

Course Category

Mathmatics and Basic Sciences	:	**Education**	:	
Engineering	:	**Science**	:	
Engineering Design	:	**Health**	:	
Social Sciences	:	**Field**	:	100

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	The responsible lecturer informs the students about the "Community Service Practices" course and guides them for the pro	Reading	Lecture Notes
2	Students submit their "project proposals", which they will prepare individually or as a team, to the responsible lecturer.	Preparing proposal	Project Examples
3	The responsible lecturer submits the report on the project proposals prepared by the students individually or as a team to t	Report preparing	Report Examples
4	Practice		Project Examples
5	Practice		Project Examples
6	The students inform the responsible lecturer about the work they are doing in relation to the work they do individually or a	Preparing a presentation	Projects Made
7	Practice		Project Examples
8	Midterm /Students prepare the "project final report" regarding their work individually or as a team within the scope of the '		
9	Practice		Project Examples
10	Practice		Project Examples
11	The students inform the responsible lecturer about the work they are doing in relation to the work they do individually or a	Preparing a presentation	Projects Made
12	Practice		Project Examples
13	Practice		Project Examples
14	Practice		Project Examples
15	Practice		Project Examples
16	Final Exam/ Students prepare the "project final report" regarding their work individually or as a team within the scope of th		

Course Learning Outcomes

No	Learning Outcomes
C01	It produces solutions against local and universal problems.
C02	Actively participates in solving local and global problems.
C03	It produces new projects against local and universal problems.
C04	It takes an active role in new projects against local and universal problems/works in cooperation.
C05	Develops self-assessment skills.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	16	2	32
Hours for off-the-c.r.stud	14	2	28
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	2	2
Practice	4	6	24
Laboratory	0	0	0
Project	0	0	0
Final examination	1	4	4
Total Work Load			**90**
ECTS Credit of the Course			**3**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	2	3	2	2	3	3	3	4	4	2	2
C01	2	3	2	2	3	3	3	4	4	2	2
C02	2	2	2	2	3	3	2	4	4	2	2
C03	2	2	2	2	3	3	3	4	4	2	2
C04	2	3	2	2	3	3	3	4	4	2	2
C05	2	3	2	2	3	3	3	4	4	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TDB101-2020 Turkish Language I

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
1	TDB101-2020	Turkish Language I	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The main objective of this course is to teach the young the structural features, methodology and richness of language and enable them to arouse the love of Turkish language which is fundamental principle of our national unity.
Teaching Methods and Techniques:
Language and languages; (Language-Nation Relations, Language-Culture) Languages in the world and the place of Turkish language among other languages; (Language families in terms of their sources) Historical Development of Turkish written language: (Old Turkish- Middle Turkish-Divanü Lügati't-Türk, Atabet'ül Hakayik, Harezm Turkish) . Old Turkey Turkish (Old Anatolian Turkish) ; The era new Turkish, Modern Turkish era, West (West eastern Turkish) Turkey's Turkish, East (North-eastern Turkish); Phonetics; (Sound and the formation of sound the harmony of vowel sounds) , Fundamental sound Features in Turkish; (Features sound of Turkish, Spelling structure of Turkish, Sentence Emphasis) . Morphology; (Words in terms of form, prefixes, suffixes, roots) . Enumeration and words in respect to their functions; (Noun, pronouns, and adjectives) Verbs; (Shape and Tense supplements). Prepositions-Gerunds; (Derived from nouns-verbs). Meaning Science: Meaning in word, The frame of word meaning. Sentence Knowledge: (Kinds of Sentences). The analysis of sentences.
Prerequisites and co-requisities:

Course Coordinator:
Asist Prof. Dr. Yılmaz İNCE
Name of Lecturers:
Instructor Dr. Mustafa Selçuk DİLSİZ
Assistants:

Recommended or Required Reading

Resources TDK Yazım Kilavuzu- Sözlük, • Banguoğlu, Tahsin; Türkçenin Grameri, TDK Yay. Ankara- 1990. • Ergin, Muharrem. (1995). Üniversiteler İçin Türk Dili, Bayrak Yay. İstanbu
Instructor's lecture notes.
İnce, Yilmaz ve digerleri, 2006; Türk Dili ve Kompozisyon Bilgileri, Celebler Matbaacilik, Trabzon

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	:	**Science**	:
Engineering Design	:	**Health**	:
Social Sciences	: 100	**Field**	:

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Language. (Language- nation communication/ language- culture comminacation).		
2	All Languages at the world.How basic Turkish Language amongst other Languages.		
3	According to the basics languages families.For structure language groups.		
4	Historical Times of Turkish Language.Historical Development of Turkish Written Language.		
5	Old Turkish- Middle Turkish- New Turkish- Modern Turkish(up to date).		
6	To days condition of Turkish Language and The areas of expansion.		
7	Phonetics.		
8	Phonetics. Morphology - Roots and Suffixes (Derivational and Inflectional Suffixes).		
9	Mid-term exam		
10	The words for mean and fonctions.		
11	Semantic- semantic in word- comminaction for words.		
12	Syntax- The specialities of word groups.		
13	The kinds of word groups.		
14	Basics of sentence.		
15	Kinds of sentence and Analyses of sentence.		
16	End-of-term exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Compares the languages spoken worldwide an explains the position of the Turkish language among the world language.
C02	Studies the historical periods of the Turkish language and argues that Turkish is an ancient and rich language of civilization.
C03	Plans their written and oral expression needs using their native language.
C04	Use science and knowledge by improving mothertongue.
C05	Applies their native language at a level that facilitates their social and professional life.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	15	2	30
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	1	1
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	1	1
Total Work Load			**60**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	4	1	1	1	1
C02	1	1	1	1	1	1	4	1	1	1	1
C03	1	1	1	1	1	1	4	1	1	1	1
C04	1	1	1	1	1	1	4	1	1	1	1
C05	1	1	1	1	1	1	4	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM110-2024 EEE and Ethics

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
2	EEM110-2024	EEE and Ethics	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim is to develop the competence to explain the responsibilities and ethical principles of the engineering profession and to justify ethical decisions in professional and academic case studies.
Teaching Methods and Techniques:
Concepts of ethics and morality; development of ethical thought and fundamental theories; ethical justification; ethics in education, business, and the profession; engineering ethics principles; ethical conduct of public officials; academic integrity; professional responsibility, societal impacts, and lifelong learning in electrical and electronics engineering.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources Articles at Online Ethics Center http://www.onlineethics.org/,Articles from http://www.ee.ed.ac.uk/~gerard/Management/ about engineering soft skills.,Introduction to En
The World of an Engineer, J. L. Adams, Tübitak Publishing, 1999.
Ethics, Ethics and Professional Principles, TMMOB Chamber of Electrical Engineers, 2004.

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	40
Engineering	:	20	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:	30	**Field**	:	10

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to the course, Basic Concepts	Reading source material and review	Recommended resources
2	Basic Concepts, Information and its types	Reading source material and review	Recommended resources
3	Philosophical Logic, Basic Concepts of Moral Philosophy	Reading source material and review	Recommended resources
4	A Look at Ethics in the Historical Development Process	Reading source material and review	Recommended resources
5	Relationship between Ethics and Morality, Why are Ethics Necessary?	Reading source material and review	Recommended resources
6	Basic Types of Ethical Theory, Basic Principles of Ethics, Ethics as a Science of Practice	Reading source material and review	Recommended resources
7	Education and Ethics, Ethical Justifications and Justifications, Ethical Justification Methods	Reading source material and review	Recommended resources
8	MIDTERM EXAM		
9	Business and Professional Ethics (Applied Ethics)	Reading source material and review	Recommended resources
10	Scientific Professional Ethical Standards	Reading source material and review	Recommended resources
11	Principles of Engineering Ethics, Code of Ethics of the World Federation of Engineers	Reading source material and review	Recommended resources
12	Principles of Ethical Conduct for Public Officials	Reading source material and review	Recommended resources
13	Principles of Ethical Conduct for Public Officials, Academic Ethics	Reading source material and review	Recommended resources
14	What is engineering, what problems does it deal with, its duties and responsibilities	Reading source material and review	Recommended resources
15	Electrical-Electronics Engineer work areas, ethics in Electrical-Electronics Engineering	Reading source material and review	Recommended resources
16	FINAL EXAM		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the concepts of ethics and morality through their historical development.
C02	Can find answers to the question of why ethics is necessary and interpret the relationship between ethics and morality.
C03	Be able to learn and interpret Scientific Professional Ethics standards and Business and Professional ethics.
C04	Learn and interpret the principles of engineering ethics and the principles of ethical behavior for public officials.
C05	Gains the ability to define engineering, its basic features and related concepts. Has special field knowledge related to Electrical-Electronics engineering.
C06	Evaluates the societal, environmental, and safety-related consequences of engineering decisions.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	1,5	21
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	6	6
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	6	6
Total Work Load			**61**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	2	1	1	1	1	2	3	4	2	3
C01	1	1	1	1	1	1	1	2	4	1	2
C02	1	2	1	1	1	1	2	2	4	1	3
C03	1	3	1	1	1	1	2	2	5	2	4
C04	1	2	1	1	1	1	2	2	5	2	4
C05	1	2	1	1	1	1	1	3	5	1	2
C06	2	3	2	1	1	1	2	2	5	3	5

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM108-2024	Fundamentals of EEE II				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
2	EEM108-2024	Fundamentals of EEE II	5	4	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
Recognition of the basic concepts of AC circuit, circuit elements, circuit laws and circuit analysis methods.
Teaching Methods and Techniques:
Why is Alternating Current (AA) used? production of AA. Dimensions that define our AC network. Straightening AA. Average value and effective value. Phasor concept. Behaviors of RLC elements in AA. AA. Solution of circuits in graphical way, trigonometric operations and phasor diagram method. Behaviors of circuits consisting of RLC elements in AC. Circuit solution with complex computation. Series and parallel resonant circuits. Power and power compensation in AC circuits. Three-phase mains and load. Power in three-phase systems.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Deniz KORKMAZ
Assistants:

Recommended or Required Reading

Resources	Electric Circuits, Sanem Series, Translated by: Murat AŞKAR and Sevig AYTER, Güven Bookstore, 1980. Alternating Current Circuits and Problem Solutions, Mustafa YAĞIM Fundamentals of Electrical and Electronics Engineering - II Lecture Notes Ders Notları, Yardımcı Kitaplar Ders Notları ve Ders Kitabı Ara ve Final Sınavı

Course Category

Mathmatics and Basic Sciences	:	40	**Education**	:	
Engineering	:	60	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Why Alternative Current (AA) is used. Production of AA.		Fundamentals of Electrical and Electroni
2	Sizes that define our AA network.		Fundamentals of Electrical and Electroni
3	Straightening AA.		Fundamentals of Electrical and Electroni
4	Average value and effective value.		Fundamentals of Electrical and Electroni
5	Phasor concept. Behavior of RLC elements in AA.		Fundamentals of Electrical and Electroni
6	Solution of AA circuits graphically, with trigonometric operations.		Fundamentals of Electrical and Electroni
7	Solution of AA circuits by phasor diagram method.		Fundamentals of Electrical and Electroni
8	Midterm Exam		
9	The behavior of circuits composed of RLC elements in AA.		Fundamentals of Electrical and Electroni
10	Circuit solution using impedance method using complex calculations.		Fundamentals of Electrical and Electroni
11	Series and parallel resonance circuits.		Fundamentals of Electrical and Electroni
12	Power and power compensation in AA circuits.		Fundamentals of Electrical and Electroni
13	Circuit solution with power triangle method.		Fundamentals of Electrical and Electroni
14	Three-phase network and load.		Fundamentals of Electrical and Electroni
15	Power in three-phase systems.		Fundamentals of Electrical and Electroni
16	Final Exam		Fundamentals of Electrical and Electroni

Course Learning Outcomes

No	Learning Outcomes
C01	Defines the basic concepts of Electrical and Electronics Engineering.
C02	Analyze and design simple electrical and electronic circuits to solve a specific problem.
C03	Applies the laws of electrical and electronic engineering.
C04	Apply mathematics, science and engineering theorems to Electrical and Electronics Engineering.
C05	Models and solves engineering problems.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	3	42
Assignments	5	4	20
Presentation	0	0	0
Mid-terms	1	2	2
Practice	0	0	0
Laboratory	8	2	16
Project	0	0	0
Final examination	1	2	2
Total Work Load			**110**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	2	1	2	1	1	2	1	1	1
C01	4	4	2	1	2	1	1	2	1	1	1
C02	4	4	2	1	3	1	1	2	1	1	1
C03	4	4	2	3	3	1	1	2	1	1	1
C04	4	3	2	3	3	2	2	2	1	1	1
C05	3	4	3	3	2	2	2	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TBF002-2020	General Physics II				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
2	TBF002-2020	General Physics II	4	4	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To teach the basic concepts and principles of the mechanics branch of fundamental physics in detail to the student. To ensure their comprehensibility with real-world applications and to form the basis for the courses they will take later.
Teaching Methods and Techniques:
Physics and Measurement, Vectors, Motion in One Dimension, Motion in Two Dimensions, Laws of Motion, Circular Motion and Other Applications of Newton's Laws, Energy of a System, Conservation of Energy, Linear Momentum and Collisions, Rotation of a Rigid Body About a Fixed Axis, Angular Momentum, Static Equilibrium, Oscillatory Motion.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Prof. Dr. BAYRAM GÜNDÜZ
Assistants:

Recommended or Required Reading

Resources	Fen ve Mühendislik için Fizik, Raymond A. Serway-John W. Jewett, Jr., Palme Yayınevi, 9.Baskıdan Çeviri, 2022 Fiziğin Temelleri, David Halliday-Robert Resnick, Çeviri: Ce Fizik, 1.Cilt, Frederick J.Keller, W.Edward Gettys, Malcolm J. Skove, Çeviri, Literatür Yayıncılık

Course Category

Mathmatics and Basic Sciences	:	30	**Education**	:	
Engineering	:	40	**Science**	:	30
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Series Expansion, Differential Calculus, Integral Calculus, Physics and Measurement, Dimensional Analysis, Conversion of U	Annex-B (B.5-7), Textbook Ch1: PHYSIC	
2	Unit Vectors, Scalar (Inner) Product, Vector Product, Position, Velocity and Speed, Instantaneous Velocity and Speed, Parti	Textbook Ch3: VECTORS, Textbook Ch2	
3	Position, Velocity and Acceleration Vectors, Motion with Constant Acceleration in Two Dimensions, Projectile Motion, Particl	Textbook Ch2: MOTION IN ONE DIMEN	
4	Concept of Force, Newton's First Law and Inertial Frames, Mass, Newton's Second Law, Gravitational Force and Weight, Ne	Ders Kitabı Blm5: HAREKET YASALARI, I	
5	Extension of the Particle Model in Uniform Circular Motion, Non-Uniform Circular Motion, Motion in Accelerating Reference I	Textbook Ch6: CIRCULAR MOTION AND	
6	Systems and Environments, Work Done by a Constant Force, Work Done by a Variable Force, Kinetic Energy and the Work	Textbook Ch7: ENERGY OF A SYSTEM, I	
7	Non-isolated System (Energy), Isolated System Energy, Situations Involving Kinetic Friction, Changes in Mechanical Energy	Textbook Ch8: CONSERVATION OF ENE	
8	Ara Sınav 1		
9	Linear Momentum, Isolated System(Momentum), Non-Isolated System(Momentum), Collisions in One Dimension, Collisions	Textbook Ch9: LINEAR MOMENTUM ANI	
10	Collisions in Two Dimensions, Center of Mass, Many-Particle Systems, Experiment 3: Conservation of Momentum	Textbook Ch9: LINEAR MOMENTUM ANI	
11	Açısal Konum, Açısal Hız, Açısal İvme, Sabit Açısal İvme Altında Rijit Cisim, Açısal ve Öteleme Nicelikleri, Tork, Net Bir Tork	Textbook Ch10:ROTATION OF A RIGID	
12	Parallel Axis Theorem, Rotational Kinetic Energy, Energy in Rotational Motion, Rotational Motion of a Rigid Body, Experimer	Textbook Ch10:ROTATION OF A RIGID	
13	Torque, Angular Momentum of a Non-Isolated System, Angular Momentum of a Rotating Rigid Body, Angular Momentum c	Textbook Ch11: ANGULAR MOMENTUM,	
14	Conditions of Balance, Center of Gravity, Rigid Body Balance Problems, Amplitude, Period, Frequency and Angular Frequen	Textbook Ch12: STATIC BALANCE Textb	
15	BHH Energy, BHH Applications, Simple Pendulum, Physics Pendulum, Torsion Pendulum, Compensation Experiment	Textbook Ch15: OSCILLATORY MOTION	
16	Final		

Course Learning Outcomes

No	Learning Outcomes
C01	Uses appropriate dimensions and units in solving mechanical problems.
C02	Lists the definitions necessary to analyze mechanical systems.
C03	Identifies the type of motion and calculates the basic quantities related to the motion.
C04	Establishes appropriate mathematical models to analyze structures with continuous mass distribution and provides solutions appropriate to the distribution geometry.
C05	Measures basic quantities experimentally, draws graphs, collects data, tabulates collected data, compares experimental and theoretical results.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	2	28
Assignments	14	1	14
Presentation	0	0	0
Mid-terms	1	20	20
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	40	40
Total Work Load			**144**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	3	5	4	4	5	5	4	3	4
C01	5	4	4	5	3	5	4	5	4	4	3
C02	3	4	3	5	4	2	5	5	4	2	1
C03	4	5	2	4	4	4	5	5	3	3	3
C04	4	3	3	5	4	5	5	4	5	4	2
C05	4	4	3	5	3	5	5	5	4	2	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TBF004-2020	General Physics Laboratory II				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
2	TBF004-2020	General Physics Laboratory II	0	1	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To reinforce the knowledge of students with experiments suitable for the subjects in General Physics II course
Teaching Methods and Techniques:
Introducing test systems, Resistance reading and measurement (color codes and tolerances), Ohm's law, Electric current and transmission, Resistor circuits connected in series and parallel, Kirchoff's laws, Calculation of internal resistance, Alternating current and signal examination with oscilloscope, Capacitors and their properties, Energy stored in a capacitor, RC circuits, Magnet and its properties, Magnetic field of the earth and compass, magnetic field created by current passing through a linear wire
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Tankut ATEŞ
Assistants:

Recommended or Required Reading

Resources	General Physics Laboratory-II (Electricity) Experiment guide. General Physics Laboratory II (Mechanics) Experiment Manual

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:	30	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction of test systems		
2	Resistance reading and measurement (color codes and tolerances)		
3	Ohm`s law		
4	Electric current and transmission		
5	Series and parallel connected resistance circuits		
6	Make-up Experiments		
7	Kirchoff laws		
8	Signal analysis with alternating current and oscilloscope		
9	Capacitors and their properties		
10	Energy stored in the capacitor		
11	RC circuits		
12	Make-up Experiments		
13	Earth`s magnetic field and compass		
14	Magnetic field created by the current passing through a linear wire		

Course Learning Outcomes

No	Learning Outcomes
C01	1. Recognizes and uses measurement systems and tools.
C02	2. Prove Ohm`s law experimentally.
C03	3. By connecting the batteries in series and in parallel, it observes the effect of the bulb on brightness.
C04	4. It connects the resistors in series and in parallel to obtain new resistors.
C05	5. It recognizes capacitors, accumulates loads and stores energy.
C06	6. Utilizes magnetic effect to obtain induction current

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	1	14
Assignments	14	1	14
Presentation	0	0	0
Mid-terms	1	4	4
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	6	6
Total Work Load			**66**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	4	4	4	5	4	2	4	5	3	5
C01	4	3	5	5	5	5	3	2	3	4	3
C02	4	4	4	4	3	4	2	2	4	3	4
C03	3	4	4	4	5	5	4	4	3	5	3
C04	4	3	4	5	3	5	2	2	3	3	3
C05	4	4	4	3	5	4	4	3	2	4	2
C06	4	4	4	4	5	5	2	2	3	3	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TBK001-2020 **General Chemistry**

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
2	TBK001-2020	General Chemistry	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
Students learn general chemistry subjects and use them in their own fields.
Teaching Methods and Techniques:
Matter, atom and atomic theory; chemical compounds, chemical reactions; gases; thermochemistry; periodic table and atomic properties, electronic structures of atoms; chemical bonds; intermolecular forces, liquids and solids; solutions and their properties, concentration units; chemical balance; acids and bases; electrochemistry, nuclear chemistry; organic chemistry and chemistry of living things
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Prof. Dr. Neslihan ŞAHİN
Assistants:

Recommended or Required Reading

Resources

P. Atkins, L. Jones, Temel Kimya Moleküller, Maddeler ve Değişimleri (çeviri: E. Kılıç, F. köseoğlu H. Yılmaz)
1. R.H. Petrucci, W.S. Harwood, F.G. Herring, J.D. Madura, C. Bissonette, Genel Kimya İlkeler ve Modern Uygulamalar (1, 2), (çeviri: T. Uyar, S. Aksoy, R. İnam)
2. C.E. Mortimer, Modern Üniversite Kimyası (çeviri)

Course Category

Mathmatics and Basic Sciences	:	90	**Education**	:	
Engineering	:	10	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Matter and its properties, atom and atomic theory		
2	Chemical compounds, chemical reactions		
3	Solutions and their properties, concentration units		
4	Gases, thermochemistry		
5	Periodic table and atomic properties, electronic structures of atoms,		
6	Chemical bonds		
7	Intermolecular forces, liquids and solids		
8	Chemical kinetics, chemical equilibrium, entropy and free energy		
9	Midterm exam		
10	Acids and bases, solubility balance		
11	Electrochemistry		
12	Transition elements and coordination compounds		
13	Organic chemistry and chemistry of living creatures		
14	Nuclear chemistry		
16	Final exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explain the basic concepts of chemistry.
C02	Relates the chemistry subjects learned in the course with engineering subjects.
C03	Draws the simple structures of molecules and explains the basic information about the structure of the atom.
C04	Write simple chemical reactions.
C05	Evaluates the energy state of a reaction.
C06	It creates a foundation for the lessons to be taken in the next semesters.
C07	Establishes a relationship between chemistry and other disciplines.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	2	28
Assignments	1	12	12
Presentation	0	0	0
Mid-terms	1	18	18
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	20	20
Total Work Load			**120**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	3	2	2	3	2	2	1	3	4	3
C01	3	3	2	2	3	2	2	1	3	4	3
C02	3	3	2	2	3	2	2	1	2	4	3
C03	3	3	2	2	3	2	2	1	3	4	2
C04	3	3	2	2	3	2	2	1	3	4	3
C05	3	3	2	2	3	2	2	1	3	4	3
C06	3	3	2	2	3	2	2	1	2	4	3
C07	3	3	2	2	3	2	2	1	2	4	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TBK002-2020	General Chemistry Laboratory				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
2	TBK002-2020	General Chemistry Laboratory	0	1	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To make experiments on general chemistry subjects, to get an idea about the application areas of the subjects and to gain experience in working in the chemistry laboratory.
Teaching Methods and Techniques:
Properties and identification of substances, cytochiometric calculations, resolution, quantification, synthesis.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. İdil KARACA AÇARI
Assistants:

Recommended or Required Reading

Resources

General Chemistry: Principles, Patterns, and Applications, Bruce Averill, Strategic Energy Security Solutions
1. Deney Föyü,
2. H. Güler, D. Saraydın, U. Ulusoy, Genel Kimya Laboratuvarı,
3. R.H. Petrucci, W.S. Harwood, F.G. Herring, J.D. Madura, C. Bissonette, Genel Kimya İlkeler ve Modern Uygulamalar (1, 2), (Çeviri: T. Uyar, S. Aksoy, R. İnam)
4. C.E. Mortimer, Modern Üniversite Kimyası

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	10	**Science**	:	80
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Laboratory general information and rules.		
2	Separation and purification methods, crystallization application		
3	Determination of distillation and boiling point		
4	Determination of the solubility of a solid substance		
5	Stoichiometry and percentage yield calculation		
6	Solution preparation and concentration units		
7	Compensation		
8	Graham's diffusion law and its application		
9	Midterm exam		
10	Determination of metal activities, water content analysis of hydrates		
12	pH measurement, indicators		
13	Acid-base titration		
14	Soap synthesis		
15	Compensation		
16	Final exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Recognizes the application areas of general chemistry subjects
C02	Explains the rules of working with chemicals.
C03	Explains the rules of working with laboratory materials.
C04	Explains the necessary rules to work in the chemistry laboratory.
C05	Makes experiments related to course topics in the laboratory.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	1	14
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	14	14
Total Work Load			**66**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	2	2	3	3	2	4	3	4	4	4	2
C01	2	2	3	3	2	4	3	4	4	4	2
C02	2	2	3	3	2	4	3	4	4	4	2
C03	2	2	3	3	2	4	3	4	4	4	2
C04	2	2	3	3	2	4	3	4	4	4	2
C05	2	2	3	3	2	4	3	4	4	4	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

İNG102-2020 English II

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
2	İNG102-2020	English II	3	3	3

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is for students to acquire basic English speaking, writing, reading and listening comprehension skills.
Teaching Methods and Techniques:
This course includes basic English reading, comprehension, writing and listening skills. Verb to be /countries & Nationalities Possessive adjectives & Personal information a/an, plurals, this / that /these / those & Classroom language Present simple tense, regular/ irregular plurals & Writing practice a/an + jobs Possessive 's' & Family Review & Midterm Adjectives, quite/ very Telling the time, Present simple & Daily routine Adverbs of frequency & Time words and expressions Prepositions of time & The date Can/ can't & Verb phrases Object pronouns: me, you, him, etc.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Instructor Emre AK
Assistants:

Recommended or Required Reading

Resources Captain 1 – Starter Level, English SB/WB, Blackswan Publishing House, 2021.
Worksheets, videos, slides

Course Category

Mathmatics and Basic Sciences	:	**Education**	:	100
Engineering	:	**Science**	:	
Engineering Design	:	**Health**	:	
Social Sciences	:	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Have got-has got, positive and negative forms		course book, workbook, videos
2	have got- has got, question forms		course book, work book, videos
3	can-can't		course book, work book, videos
4	There is, there are, ordinal numbers		course book, work book, videos
5	Present continous tense		course book, workbook, videos, pictures
6	Present continous tense- negative forms		course book, work book
7	present cfontinous tense- question forms		course book, workbook, videos
8	using future time expressions to express plans in present continous tense.		course book, workbook, videos.
9	Mid-term Exam		
10	simple past tense- was,were		course book, workbook, videos
11	simple past tense, regular verbs, positive forms		course book, workbook, videos
12	simple past tense, negative forms		course book, workbook, videos
13	Simple past tense, irregular verbs		Coursebook, Wrokbook, Videos
14	simple past tense, yes/no questions		coursebook, workbook, videos
15	Simple past tense, wh- questions		Coursebook, Wrokbook, Videos
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	At the end of this course, students express themselves, his/her families, places he/she lives, hobbies, ability, likes and dislikes.
C02	At the end of this course, students expresses his/her past actions and ask questions.
C03	At the end of this course students summarize an English reading text .
C04	At the end of this course students comment on speeches at a basic level.
C05	At the end of this course, students select relevant information and use correct grammatical structures at a basic level when writing.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	3	3
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	3	3
Total Work Load			**90**
ECTS Credit of the Course			**3**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	3	5	1	1
C01	1	1	1	1	1	1	1	3	5	1	1
C02	1	1	1	1	1	1	1	3	5	1	1
C03	1	1	1	1	1	1	1	3	5	1	1
C04	1	1	1	1	1	1	1	3	5	1	1
C05	1	1	1	1	1	1	1	3	5	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TBM002-2020 Mathematics II

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
2	TBM002-2020	Mathematics II	4	4	6

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To provide basic mathematics knowledge and analytical thinking skills.
Teaching Methods and Techniques:
Infinite Sequences, Convergence and Divergence of Sequences, Sandwich Theory for Sequences, Infinite Series, Divergent Series n. Term Test, Convergence Tests for Positive Term Series, Alternating Series, Absolute and Conditional Convergence, Force Series, Taylor and Maclaurin Series, Parametric Equations and Polar Coordinates, Graphs with Polar Coordinates, Vectors, Three Dimensional Coordinate Systems, Lines and Planes in Space, Vector Valuable Functions, Multivariable Functions, Limit in Two Variable Functions, Continuity, Double Path Test for No Limit, Functions of More than Two Variables, Partial Derivatives, Mixed Derivative Theorem, Higher Order Partial Derivatives, Differentiable Planes, Directional Derivatives, and Gradient Planes Differentials, Extreme Values, Multiple Integrals, Calculation of Double Integrals, Fubini' s Theorem.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Sezer ERDEM
Assistants:

Recommended or Required Reading

Resources 1. Thomas' Calculus, 12th Edition, G.B Thomas, M.D.Weir, J.Hass and F.R.Giordano, Addison-Wesley, 2012.,2.Calculus: A Complete Course, Robert A. Adams, C Essex 7th
Mustafa Balcı Genel Matematik II

Course Category

Mathmatics and Basic Sciences	:	100	**Education**	:	
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Infinite Sequences: Convergence and Divergence, Convergence and Divergence of Sequences, Calculation of the Limits of S		
2	Infinite Series: Geometric Series, Divergent Series n. Term Test, Combining Series, Adding Term or Deleting Term, Conver		
3	Comparison Test, Limit Comparison Test, Ratio Test, Root Test. Alternating Series: Alternating Harmonic Series, Alternating		
4	Force Series: Convergence Radius of a Force Series, Operations in Force Series, Series Product Theorem for Force Series, T		
5	Applications of Taylor Series: Calculation of Non-Elementary Integrals, Calculating Limits in Uncertainty. Parametric Equatic		
6	Polar Coordinates: Polar Equations, Relationship Between Polar and Cartesian Coordinates, Graphical Drawing with Polar Co		
7	Vectors: Three Dimensional Coordinate Systems, Vectors, Dot Product, Angle Between Two Vectors, Perpendicular Vectors,		
8	Functions of Several Variables: Definition and Value Sets, Functions of Two Variables, Graphs and Level Curves of Function		
9	Partial Derivatives: Partial Derivatives of Functions with Two Variables, Partial Derivatives and Continuity, Second Order Pa		
10	Review of the Closed Derivative. Directional Derivatives and Gradient Vector: Directional Derivatives in the Plane, Interpret		
11	Linearizing a Two-Variable Function, Differentials, Extreme Values: Local Extreme Values, Required Conditions for Local Ext		
12	Storey Integrals: Two Storey Integrals on Rectangles, Two Storey Integrals as Volume, Calculation of Two Storey Integrals		
13	Finding the Limits of Integration: Using Vertical Sections, Using Horizontal Sections, Properties of Double Integrals, Field Ca		
14	Volume Calculation with the Use of Polar Coordinates (Volume Between Two Surfaces), Variable Transformation in Double		

Course Learning Outcomes

No	Learning Outcomes
C01	Finds the convergence of sequences and series and the range of convergence of power series.
C02	Uses vector algebra in three dimensional space and plane. Writes plane and line equations.
C03	Explains limit and continuity in multivariable functions, calculation of partial derivatives, tangent plane, directional derivative and finding gradient.
C04	Solves the extremum problems with the second derivative test.
C05	Explains double integrals and their application areas.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	4	56
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	30	30
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	30	30
Total Work Load			**172**
ECTS Credit of the Course			**6**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	5	3	4	3	3	2	3	3	3	3
C01	3	4	4	4	3	3	3	2	2	2	4
C02	4	5	3	3	4	3	2	3	2	4	3
C03	5	4	3	4	3	4	2	4	2	3	3
C04	4	5	3	4	3	3	2	3	3	3	3
C05	4	5	3	4	3	3	2	3	3	3	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

TDB102-2020 Turkish Language II

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
2	TDB102-2020	Turkish Language II	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The main objective of this course, which is given to the freshmen of the departments two hours in a week is to teach the youngs the structural features, methodology and richness of language and enable them to arouse the love of Turkish language which is fundamental principle of our national unity.
Teaching Methods and Techniques:
Punctuation and Composition (Punctuation Marks, Other Marks) marks of abbreviations, Spelling Rules (The spelling of capital letters, The writing of quotations. numbers, The Composition the purpose of composition, method in composition writing, planning, introduction, development and result in composition the features of telling (purity in telling, simplicity in telling, clarity and sincerity in telling mistakes in telling (the use of synonymous words in the sentence) The use of synonymous wordsin teh sentence, The misuse of phrases, Explanation, story, description, criticism, portray, speaking, provingThe kinds of verbal telling, (daily and unprepared speaking- prepared speaking, debate, panel) The kinds of written telling (letter, telegraph, celebration, invitation, literary letterJob letters, formal letter, petition, report, decision, announcement, advertisement) Talking, criticism, memoir, travel, writing, interview, survey Autobiography biography novel- story, fabl- theatr tragedy, drama- senario, poetry and its kinds.
Prerequisites and co-requisities:

Course Coordinator:
Asist Prof. Dr. Yılmaz İNCE
Name of Lecturers:
Instructor Mustafa Selçuk DİLSİZ
Assistants:

Recommended or Required Reading

Resources
TDK Spelling Dictionary- Dictionary
Instructor's lecture notes
Türk Dili ve Kompozisyon Bilgileri, Celebler Matbaacilik, Trabzon

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	:	**Science**	:
Engineering Design	:	**Health**	:
Social Sciences	: 100	**Field**	:

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Marks of punctution. (inverted commas, paranthesis)		
2	Marks of punctution. (inverted commas, paranthesis)		
3	The rules of orthography. (Writing of capitals and numbers and compounds)		
4	The rules of orthography. (writing of idioms, dieresis, quotation words andforeign proper nouns)		
5	The rules of orthography. (The writing of abbreviation and some additions.)		
6	Composition (its definition, purpose, and methods for being successful in composition)		
7	The methods of composition. (The constitutetion of assistant reflection and main reflection.)		
8	The methods of composition. (The constitutetion of paragraph,the methods of progress of reflection in paragraph)		
9	mid-term exam		
10	The properties of expression.		
11	Failure to expression properly.		
12	The forms of expression. (collecting homeworks)		
13	varieties of expression. (oral expression)		
14	Types of expression (written expression – letter, petition)		
15	varieties of expression.(written expression- story, fiction, theatre, verse)		
16	final exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Learns the rules of spelling and applies them in written expression.
C02	Applies the punctuation marks used in Turkish to their written expression.
C03	Learns the requirements for using written and oral expression correctly and effectively.
C04	Learns the causes of expression errors encountered in written and oral communication and designs their written and oral discourse accordingly.
C05	Recognizes various written and oral expression types and utilizes them when necessary.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	15	2	30
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	1	1
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	1	1
Total Work Load			**60**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	2	2	2	2	2	2	2	2	2	2	2
C01	1	1	1	1	2	3	4	2	1	1	1
C02	1	1	1	1	2	3	4	2	1	1	1
C03	1	1	1	1	2	3	4	2	1	1	1
C04	1	1	1	1	2	3	4	2	1	1	1
C05	1	1	1	1	2	3	4	2	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

AİİT201-2020	Principles of Atatürk and History of Revolution I				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
3	AİİT201-2020	Principles of Atatürk and History of Revolution I	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim is to teach students the fundamental concepts related to Atatürk's Principles and the History of the Revolution, the process of the collapse of the Ottoman Empire, the intellectual movements of the 19th century, the causes and consequences of the events that emerged in the first quarter of the 20th century, and the organizational stages of the National Struggle.
Teaching Methods and Techniques:
The Ottoman Empire's efforts to modernize during its decline, political developments at the beginning of the 20th century, World War I and its consequences, the preparatory period of the National Struggle.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Personal Mehmet KOCA
Assistants:

Recommended or Required Reading

Resources

Hamza Eroğlu, Türk İnkılap Tarihi, Savaş Yayınları, Ankara 1990.,Bernard Lewis, Modern Türkiye'nin Doğuşu, Türk Tarih Kurumu Yayınları, Ankara 1993.
Lecturer's course notes.
Atatürk İlkeleri ve İnkılap Tarihi-I, Atatürk Üniversitesi Açıköğretim Fakültesi Yayını, Erzurum 2012; Tuncer Baykara, Türk İnkılap Tarihi ve Atatürk İlkeleri, IQ Kültür Sanat

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:	100	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Objectives and Concepts		
2	The Decline of the Ottoman Empire		
3	Innovation Movements in the Ottoman Empire		
4	Constitutional Monarchy Period and Intellectual Movements		
5	Tripoli - Balkan Wars and Subsequent Developments		
6	World War I and the Ottoman Empire		
7	The End of World War I		
8	National Struggle Period		
9	Midterm Exam.		
10	Mondros Armistice		
11	Mustafa Kemal Pasha's Movement to Anatolia		
12	Erzurum Congress and Local Congresses		
13	Sivas Congress and Subsequent Developments		
14	Activities of the Delegation in Ankara and the Declaration of the Misak-ı Milli		
15	Opening, Structure and Work of the Grand National Assembly of Turkey		
16	Final Exam.		

Recommended Optional Programme Components

AİİT202-2020 Principles of Atatürk and History of Revolution- II

Course Learning Outcomes

No	Learning Outcomes
C01	Defines the basic concepts related to Atatürk's Principles and the History of the Revolution.
C02	It explains the Ottoman Empire's decline, its attempts at reform, and its intellectual movements.
C03	It connects the political events that occurred at the beginning of the 20th century.
C04	It chronologically lists the events of the preparatory period of the National Struggle.
C05	It evaluates institutional continuity and differences during the transition from the Empire to the Republic.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	2	28
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	1	1
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**59**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	2	1	1	1	1
C02	1	1	1	1	1	1	1	1	1	1	1
C03	1	1	1	1	1	1	1	1	1	1	1
C04	1	1	1	1	1	1	2	1	1	1	1
C05	1	1	1	1	1	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM201-2024	Circuit Theory				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
3	EEM201-2024	Circuit Theory	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is to provide students with a fundamental understanding of electrical circuits, their components, and analysis techniques. Through theoretical knowledge and practical applications, students will learn the essential principles governing current, voltage, resistance, and power, as well as the use of Kirchhoff's laws, network theorems, and circuit analysis methods. The course also aims to develop students' ability to analyze and design AC and DC circuits, understand the behavior of reactive elements, and apply these principles to solve real-world electrical engineering problems systematically and effectively.
Teaching Methods and Techniques:
This course provides an introduction to circuit theory, which forms the foundation of electrical and electronics engineering. The content covers fundamental electrical quantities such as current, voltage, resistance, and power, along with the concepts of open and short circuits. Ohm's law and Kirchhoff's current and voltage laws are studied in detail, followed by basic circuit analysis techniques. The course explores series and parallel resistor connections, modeling of dependent and independent current and voltage sources, and key measurement concepts such as nominal value, tolerance, and accuracy. Core network theorems, including superposition, Thevenin, Norton, and maximum power transfer, are explained through practical examples. In the latter part of the course, the behavior of reactive components such as capacitors and inductors, impedance and admittance concepts, average and RMS values, and the analysis of RC, RL, and RLC circuits are thoroughly covered. By the end of the course, students will have the knowledge and skills to analyze both DC and AC circuits and solve complex circuit problems systematically.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Ali YÜCE
Assistants:

Recommended or Required Reading

Resources

Irwin, J. D., & Nelms, R. M. (2015). Basic engineering circuit analysis (T. Aydemir, Ed.; H. Dağ & S. Sünter, Trans.) [in Turkish]. Nobel Publishing.,Ünal, A., & Özenç, S. (r
Lecture's notes, Alexander, C. K., & Sadiku, M. N. O. (2017). Fundamentals of electric circuits (U. S. Selamoğulları, Trans.) [in Turkish]. Palme Publishing.

Vize ve Final Sınavları

Course Category

Mathmatics and Basic Sciences	:	40	**Education**	:	
Engineering	:	45	**Science**	:	
Engineering Design	:	15	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Fundamental Concepts in Electricity		
2	Electric Circuits, Open and Short Circuit Concepts		
3	Resistors and Ohm's Law		
4	Kirchhoff's Laws (KCL and KVL)		
5	Nominal Value, Measured Value, Accuracy and Tolerance		
6	Series and Parallel Connections		
7	Dependent and Independent Current and Voltage Sources		
8	Midterm Exam		
9	Circuit Analysis Methods		
10	Superposition Theorem		
11	Thevenin and Norton Equivalent Circuits		
12	Maximum Power Transfer Theorem		
13	Capacitance and Inductance		
14	Impedance and Admittance, Average and RMS Values		
15	RC, RL, and RLC Circuit Analysis		
16	Final Exam		

Recommended Optional Programme Components

EEM109-2024 Fundamentals of EEE I
EEM108-2024 Fundamentals of EEE II

Course Learning Outcomes

No	Learning Outcomes
C01	Gains knowledge about the basic concepts in electrical circuits.
C02	Gains knowledge about basic circuit elements (resistor, inductance and capacitor).
C03	Have knowledge about Ohm's Law, Kirchhoff's Laws and Circuit Theorems.
C04	Learns to systematically solve a given DC/AC circuit by using the learned fundamental laws and fundamental circuit theorems.
C05	Gains application skills by making circuit solution applications.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%30
Quizzes	0	%0
Assignment	1	%10
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	6	84
Assignments	1	8	8
Presentation	0	0	0
Mid-terms	1	6	6
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	10	10
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	4	2	4	5	4	2	3	3	3	3
C01	4	2	4	4	5	4	2	3	3	3	3
C02	4	4	3	4	5	4	2	3	3	3	4
C03	4	4	4	4	5	4	2	3	3	3	4
C04	4	4	4	4	5	4	2	3	3	3	4
C05	4	4	4	4	5	4	2	3	3	3	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM211-2024	Differential Equations				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
3	EEM211-2024	Differential Equations	4	4	6

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of the course is to provide information about analytical solution methods of ordinary differential equations.
Teaching Methods and Techniques:
First-order ordinary differential equations, Differential equations that can be divided into variables, Homogenous differential equations, Functions of linear but non-homogeneous equations, Exact differential equations, Linear equations, First order and high order differential equations, Higher order differential equations, n. order linear equations, Equations with constant coefficients, Special solution of non-homogeneous linear equations, Linear differential equation set.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Burçin DOĞAN
Assistants:

Recommended or Required Reading

Resources Bronson, R., 1993, (Turkish: Hilmi Hacısalihoğlu), Differential Equations, Schaum´s Outlines, Nobel Bookstore, Ankara.
Ordinary Differential Equations, Mehmet ÇAĞLIYAN, Dora publications, 2012.

Course Category

Mathmatics and Basic Sciences	:	90	**Education**	:	
Engineering	:	10	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Preliminary information, concepts.	-	-
2	Ordinary differential equations, first order and first order equations, equations with separable variables.	-	-
3	Differential equations that can convert into homogeneous and homogeneous types.	-	-
4	Exact differential equations, integral multiplier.	-	-
5	Linear and Bernoulli differential equations.	-	-
6	Riccati differential equations, solution with variable replacement.	-	-
7	First order higher order equations. Clairaut, Lagrange equations.	-	-
8	Midterm exam		
9	Applications of differential equations.	-	-
10	Applications of differential equations.	-	-
11	n. Order linear equations, linear equations with constant coefficients.	-	-
12	Inhomogeneous dif. Finding a special solution in equations.	-	-
13	Second order linear equations with variable coefficients.	-	-
14	Equations that can be reduced to constant coefficient equations, Cauchy-Euler equation.	-	-
15	Linear differential equation systems.	-	-
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Recognize the terminology related to differential equations.
C02	Explain whether a function is a solution to a differential equation.
C03	Solve some types of first order differential equations.
C04	Solves some higher order differential equations.
C05	Obtains the differential equation representing system behavior by applying the laws of physics to engineering problems and solves these equations
C06	Solves ordinary systems of differential equations.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	4	56
Hours for off-the-c.r.stud	14	3	42
Assignments	10	3	30
Presentation	0	0	0
Mid-terms	1	3	3
Practice	4	4	16
Laboratory	0	0	0
Project	0	0	0
Final examination	1	3	3
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	4	3	3	2	2	2	1	2	1
C01	5	5	4	3	3	2	2	2	1	2	1
C02	5	5	4	3	3	2	2	2	1	2	1
C03	5	5	4	3	3	2	2	2	1	2	1
C04	5	5	4	3	3	2	2	2	1	2	1
C05	5	5	4	3	3	2	2	2	1	2	1
C06	5	5	4	3	3	2	2	2	1	2	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

PDF251-2023	Introduction to Education				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
3	PDF251-2023	Introduction to Education	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The overall objective of this course is to provide students with fundamental concepts related to education, teaching, and learning, and to explain the functions of the school as an educational institution, the social, philosophical, psychological, and economic foundations of education, and its relationship with other sciences. This course also aims to explain and equip students with the general structure, purpose, principles, relevant laws, and characteristics of the teaching profession within Turkish National Education.
Teaching Methods and Techniques:
Fundamental concepts related to education and teaching; the purposes and functions of education; the relationship of education with other fields and sciences; the legal, social, cultural, historical, political, economic, philosophical and psychological foundations of education; methods in educational sciences; the school and classroom as an educational and learning environment; the teaching profession and current developments in teacher training; trends in education in the twenty-first century.
Prerequisites and co-requisities:

Course Coordinator:
Associate Prof. Dr. Öznur ATAŞ AKDEMİR
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources Erden, Münire (2008). Eğitim Bilimlerine Giriş. Arkadaş Yayınevi, Ankara. ,Yavuz, Mustafa (2018). Eğitim Bilimine Giriş. Anı Yayıncılık, Ankara.,Çelikkaya, Hasan (2009). Eğ

Demirel, Özcan; Kaya, Zeki (2018). Eğitim Bilimine Giriş.Pegem Akademi, Ankara.

Course Category

Mathmatics and Basic Sciences	:	**Education**	:	100
Engineering	:	**Science**	:	
Engineering Design	:	**Health**	:	
Social Sciences	:	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Education-Teaching and Learning Concepts, Types of Education		
2	Functions of Educational Institutions, Fundamentals of Education, Teaching as a Profession		
3	Foundations of Education as a Science, Social and Economic Foundations of Education		
4	Psychological Foundations of Education		
5	Philosophy and Education		
6	Educational Philosophy Movements		
7	Education and Law		
8	Mid-term Exam		
9	Education and Economy		
10	Characteristics of School and Classroom		
11	Political Foundations of Education		
12	Historical Development of Turkish Education		
13	History of Turkish Education		
14	Education and Science		
15	Problems of the Turkish Education System and Solution Suggestions		
16	Fianl Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the relationship between education and other branches of science.
C02	Explains the basic concepts of education.
C03	Explains the characteristics of the teaching profession.
C04	Lists the qualities of an effective teacher.
C05	Explains the social, psychological, philosophical and legal foundations of education.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	15	15
Total Work Load			**109**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	1	1	1	1	1
C02	1	1	1	1	1	1	1	1	1	1	1
C03	1	1	1	1	1	1	1	1	1	1	1
C04	1	1	1	1	1	1	1	1	1	1	1
C05	1	1	1	1	1	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM207-2024 Electromagnetic Field Theory

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
3	EEM207-2024	Electromagnetic Field Theory	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The objective of this course is to introduce students to the fundamental principles of electromagnetic field theory, explain the physical nature of electric and magnetic fields, and apply these concepts to engineering problems. The course provides a mathematical foundation based on vector analysis and systematically examines fundamental electromagnetic laws. The interactions between electric and magnetic fields, along with Maxwell's equations that define these interactions, are discussed within a theoretical framework. Students will analyze the effects of various materials and environments on electromagnetic fields. This will provide both a theoretical understanding of electromagnetic field theory and the ability to interpret this knowledge in engineering and technological applications.
Teaching Methods and Techniques:
Coordinate Systems and Basic Concepts, Vector Analysis, Electric Force and Coulomb's Law, Electric Fields, Electric Flux Density and Divergence Theorem, Gauss's Law and Its Applications, Electrical Potential and Energy, Electrical Susceptibility, Concepts of Conductivity and Permeability, Steady Magnetic Fields, Biot-Savart and Ampère's Laws, Magnetic Flux, Magnetic Flux Density and Stokes' Theorem, Magnetic Forces, Magnetic Materials and Inductance, Magnetization and Permeability, Boundary Conditions, Inductance, Mutual Inductance and Magnetic Circuits, Time-Varying Fields and Introduction to Maxwell's Equations, Faraday's Law
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Kadir DOĞANŞAHİN
Assistants:

Recommended or Required Reading

Resources
Mühendislik Elektromanyetiğinin Temelleri David K. Cheng, Palme Yayınevi Elektromanyetik Alan Teorisi, Osman Gürdal, Bursa Orhangazi Üniversitesi Yayınları, 2017
Fundamentals of Engineering Electromagnetics, David K. Cheng
Elektromanyetik Alan Teorisi, Osman Gürdal, Bursa Orhangazi Üniversitesi Yayınları, 2017

Course Category

Mathmatics and Basic Sciences	:	50	**Education**	:	
Engineering	:	50	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Coordinate systems, Basic concepts		
2	Vector Analysis		
3	Electrical Force and Coloumb Law		
4	Electric field, electric flux density and Divergent Theorem		
5	Gauss Law and applications		
6	Elektrical potential and energy		
7	Concepts of Electrical Susceptibility, Conductivity and Permeability		
8	Midterm Exam		
9	Steady Magnetic Fields, Biot-Savart and Ampère's Laws		
10	Magnetic Flux, Magnetic Flux Density and Stokes' Theorem		
11	Magnetic forces, Magnetic materials and Inductance		
12	Magnetization and Permeability, Boundary Conditions		
13	Inductance, Mutual Inductance and Magnetic Circuits		
14	Time-Varying Fields and an Introduction to Maxwell's Equations		
15	Faraday's Law		
16	Final Exam		

Recommended Optional Programme Components

TBM001-2020 Mathematics I
TBM003-2020 Linear Algebra
TBF002-2020 General Physics II
TBM002-2020 Mathematics II
EEM211-2024 Differential Equations

Course Learning Outcomes

No	Learning Outcomes
C01	Defines the coordinate systems used in electromagnetic field theory and explains the basic concepts in terms of vector quantities.
C02	Performs electric field and potential calculations; applies Coulomb's law, Gauss's law and related mathematical methods to physical problems.
C03	Analyze magnetic fields and perform calculations for stable magnetic fields using the Biot-Savart and Ampère laws.
C04	Analyze magnetic fields and perform calculations for stable magnetic fields using the Biot-Savart and Ampère laws.
C05	Analyzes the relationship between time-varying fields and Maxwell's equations and evaluates the behavior of electromagnetic fields through the fundamental equations.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%30
Quizzes	0	%0
Assignment	5	%10
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	5	70
Assignments	5	6	30
Presentation	0	0	0
Mid-terms	1	2	2
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**146**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	4	3	4	3	2	2	3	2	2	3
C01	5	4	3	3	2	2	2	3	2	2	3
C02	5	5	3	4	3	2	2	3	2	2	3
C03	5	5	3	4	3	2	2	3	2	2	3
C04	5	4	3	3	2	2	2	3	3	2	3
C05	5	5	3	4	3	2	2	3	2	2	4

Program Learning Outcomes	
No	**Learning Outcome**
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%0
Total		**%0**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	0	0	0
Hours for off-the-c.r.stud	0	0	0
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**0**
ECTS Credit of the Course			**0**

Contribution of Learning Outcomes to Programme Outcomes



Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM203-2024	Occupational Health and Safety				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
3	EEM203-2024	Occupational Health and Safety	2	2	3

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim is to develop the competence to identify hazards, assess risks, and justify protective measures within the framework of legal responsibilities in electrical and electronic engineering work environments.
Teaching Methods and Techniques:
Occupational health and safety culture; rights and obligations under Law No. 6331; OHS services and responsible parties, hazard and risk assessment, ISO 45001 management system; safety signs; occupational diseases, electrical hazards, emergencies, and the order of priority for protective measures.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Mehmet ÜSTÜNDAĞ
Assistants:

Recommended or Required Reading

Resources The Main Text of the Occupational Health and Safety Law No. 6331 and regulations
Workplace Medicine and Occupational Safety Specialist Lecture Notes

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	20
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	20
Social Sciences	:	60	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Occupational Health and Safety Guidelines and the concept of occupational health and safety in the world and Turkey, Turl	Reading source material and review	Recommended resources
2	Occupational health and safety culture, Lifelong learning in the field of occupational health and safety, Holistic approach to	Reading source material and review	Recommended resources
3	The place of occupational health and safety in business management, the culture of risk prevention in the workplace, the ir	Reading source material and review	Recommended resources
4	Constitutional law, statutes, regulations, communiqués, circulars and directives. Occupational Health and Safety Law No. 6	Reading source material and review	Recommended resources
5	Defines Occupational Health and Safety Law No. 6331 and general concepts, hazard, risk, risk assessment proactive appro	Reading source material and review	Recommended resources
6	Occupational Health and Safety services, Occupational safety specialist, occupational physician, occupational health and sa	Reading source material and review	Recommended resources
7	Contemporary approaches in ensuring occupational health and safety, occupational safety specialist, workplace doctor, oth	Reading source material and review	Recommended resources
8	MIDTERM EXAM		
9	TS 18001 Occupational Health and Safety Management System, Management system elements, Occupational health and s	Reading source material and review	Recommended resources
10	Health and Safety Signs, Prohibition signs, warning signs, mandatory signs, emergency and first aid signs, Uses of health a	Reading source material and review	Recommended resources
11	Health Surveillance and Occupational Diseases, Health surveillance concept and its application, Occupational disease conce	Reading source material and review	Recommended resources
12	Occupational health and safety board, occupational health and safety council	Reading source material and review	Recommended resources
13	Health Surveillance and Occupational Diseases, Concept and application of health surveillance, Concept of occupational dis	Reading source material and review	Recommended resources
14	Principles of risk protection, Priority ranking in occupational health and safety, Prevention practices at source, Protection pr	Reading source material and review	Recommended resources
15	Occupational health and safety and professional training of employees, Basic concepts related to an effective communicati	Reading source material and review	Recommended resources
16	FINAL EXAM		

Recommended Optional Programme Components

USD128-2021 Self-improvement

Course Learning Outcomes

No	Learning Outcomes
C01	It explains the preventive approach of the occupational health and safety culture.
C02	It explains the fundamental rights and obligations of employers and employees within the framework of Law No. 6331.
C03	Distinguishes the responsibilities of those involved in OHS services.
C04	Analyzes the hazards and risks in a given workplace scenario.
C05	Justifies protective measures against risks in order of priority.
C06	Explains preventive approaches regarding occupational diseases and emergency situations.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	8	8
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	12	12
Total Work Load			**90**
ECTS Credit of the Course			**3**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	2	1	1	1	1	1	2	4	3	5
C01	1	1	1	1	1	1	1	3	3	2	4
C02	1	2	1	1	1	1	1	2	5	3	5
C03	1	1	1	1	1	2	1	2	4	3	4
C04	2	4	2	1	1	1	1	2	3	3	5
C05	2	3	2	1	1	1	1	2	4	5	5
C06	1	2	1	1	1	1	1	2	3	4	5

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM209-2024	Engineering Software				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
3	EEM209-2024	Engineering Software	4	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is to teach the effective use of MATLAB and Simulink software for solving engineering problems. The course aims to develop students' competencies in numerical analysis, algorithmic thinking, and system modeling. Students will gain practical experience in MATLAB programming structures, functions, solving differential equations (ODE), data visualization techniques, and dynamic system modeling using Simulink.
Teaching Methods and Techniques:
Introduction to MATLAB environment; basic commands, variable definitions, matrix and vector operations; conditional statements, loops, and function creation. Input/output operations, numerical solution techniques, differential equation (ODE)-based circuit solutions. MATLAB plotting, data analysis, and visualization. Introduction to Simulink interface, block diagram structure, modeling of electrical and dynamic systems. MATLAB code-based solution and Simulink modeling of switched circuits. Simulink applications including subsystems, control systems, feedback structures, data acquisition, and evaluation of simulation results.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources	Arifoğlu, U., & Kubat, C. (n.d.). MATLAB and Engineering Applications. ALFA Publishing.,Ural, A. B. (2022). Fundamentals of MATLAB and Applications of Engineering Matl Instructor lecture notes are shared with students during the relevant course period.

Course Category

Mathmatics and Basic Sciences	:	20	**Education**	:	
Engineering	:	80	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to MATLAB, Interface, Command Window, and Workspace	-	-
2	Basic Commands (clc, clear, who, whos, help) and Variable Definition	-	-
3	Matrix and Vector Operations, Arithmetic and Logical Operators	-	-
4	M-Files (Scripts and Functions), Using the MATLAB Editor	-	-
5	Input/Output Commands, Format Settings, Complex Numbers	-	-
6	Conditional Statements (if, elseif, else, switch-case) and Loops (for, while)	-	-
7	Common MATLAB Functions (ones, zeros, rand, size, sum, mean) and Basic Plotting	-	-
8	Midterm Exam	-	-
9	Solving Switched Circuits via ODE-Based MATLAB Coding (RC, RL, RLC)	-	-
10	Modeling Switched Circuits in Simulink and Comparison with ODE Solutions	-	-
11	Dynamic System Modeling in Simulink: Subsystems, Scope, Data Flow	-	-
12	Simulink Applications: Control Systems, Feedback, Real-Time Simulation	-	-
13	Simulink Project Studies: Complex System Modeling, Data Analysis	-	-
14	Verification and Reporting in Simulink: Simulation–Code Comparison	-	-
15	Project Presentations and General Review	-	-
16	Final Exam	-	-

Course Learning Outcomes

No	Learning Outcomes
C01	Identifies and applies the MATLAB interface, basic commands, and variable structures in engineering problems.
C02	Develops algorithmic solutions using conditional statements, loops, and function structures in MATLAB.
C03	Solves engineering equations numerically using MATLAB functions (e.g., ode45, polyfit, roots) and interprets the results graphically.
C04	Models dynamic systems, electrical circuits, and control structures in Simulink and analyzes their responses.
C05	Evaluates system performance by comparing MATLAB code-based solutions with Simulink models and presents findings in a technical report.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	1	%10
Assignment	1	%10
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	3	42
Assignments	1	14	14
Presentation	0	0	0
Mid-terms	1	15	15
Practice	0	0	0
Laboratory	14	2	28
Project	0	0	0
Final examination	1	15	15
Total Work Load			**142**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
C01	4	3	2	4	2	1	2	3	2	2	1
C02	4	4	3	4	3	2	2	3	2	2	1
C03	4	5	3	4	4	2	2	3	2	3	2
C04	4	4	5	5	4	2	2	3	2	3	2
C05	3	4	4	5	3	3	4	3	3	4	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM205-2024	Measurement Techniques and Sensors				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
3	EEM205-2024	Measurement Techniques and Sensors	4	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is to enable students to understand, analyze, and interpret concepts related to measurement techniques and the design and use of measuring instruments. Students will develop skills in designing and implementing measurement systems and circuits, identifying and minimizing measurement errors, understanding the concept of accuracy, using various measuring instruments and techniques, and measuring physical quantities through different transducers and sensors.
Teaching Methods and Techniques:
Basic measurement principles. Measurement errors and combinations. Numerical measuring instruments, their structures and working principles. Deviation (Analog) measuring instruments, structure, principles of operation, equations and solutions. Structure, usage and types of oscilloscope. Measurement of electrical quantities. Measurements with the equation method. Measuring electrical size with bridges. Measurement of circuit elements by different methods. Electric measurement of non-electrical quantities.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Yağmur ÖLMEZ
Assistants:
Research Assist. Buğracan ÖZKÜÇÜK

Recommended or Required Reading

Resources	Electric and Electronic Measurements, Assoc. Dr. Halit PASTACI, YTU Publication, 2003.,Electric Measurement Problems, Assoc. Dr. Enise ERİMEZ, ITU Publication, 1981. Measuring Technique, Prof. Dr. Sefa AKPINAR, KTÜ Publication, 1992. Measurement Technique, Hasan ÖNAL, ITU Publication, 1993

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	60	**Science**	:	20
Engineering Design	:	10	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Principles of Measurement and Instruments, Fundamental Measurement Principles		
2	Measurement errors and combinations.		
3	Elements of a Measurement System, Device Design Criteria.		
4	Comparison of Analog and Digital Measuring Instruments, Structure of Analog Display Measuring Instruments, Moving Coil		
5	Galvanometer and DC Ammeter, Extension of the Measuring Ranges of Voltmeter and Ammeter		
6	Resistance Measurement Methods: Design of Series and Parallel Ohmmeters. Voltmeter-Ammeter Method (and connection		
7	Midterm Exam		
8	Earth Resistance Measurement, Wheatstone Bridge and Its Applications, Cable Fault Location, Potentiometer Circuits, Calib		
9	Signal Types, Alternating Current. Instantaneous, Maximum, Average, and Effective (RMS) Values. Phase Difference. Oscill		
10	Moving Magnet Measuring Instruments, Moving Plate Measuring Instruments, Thermal Measuring Instruments, Electrostati		
11	Definitions of Active, Reactive, and Apparent Power (Power Triangle) and Power Measurements. Power Measurement in 3-I		
12	Energy Meter: Structure, Connection, and Energy Measurement. R, L, C Circuit Elements: Structure and Measurement. Imp		
13	Current, Voltage, and Power Measurement with Impedance Calculation. AC Bridge (Wheatstone etc.) Applications.		
14	Types, Characteristics, and Applications of Sensors and Transducers. Strain Gauge, Temperature Transducers.		
15	Optical Sensors and Transducers, Displacement Sensors, Magnetic Sensors and Transducers, Piezoelectric and Acoustic Tra		
16	Yarıyıl Sonu Sınavı		Final Exam

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the fundamental concepts of measurement (error, accuracy, sensitivity, measurement, etc.).
C02	Performs error analysis of a measurement system.
C03	Applies basic measurement procedures in electronic circuits.
C04	Interprets and evaluates measurable quantities of electrical signals.
C05	Explains the characteristics of sensors. Analyzes the basic electronic circuit structures used together with sensors.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%30
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%10
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	4	56
Assignments	2	3	6
Presentation	0	0	0
Mid-terms	1	2	2
Practice	14	2	28
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**122**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	3	3	4	4	3	2	3	2	3	3
C01	4	3	3	4	4	3	2	3	2	3	3
C02	4	3	3	4	4	3	2	3	2	3	3
C03	4	3	3	4	4	3	2	3	2	3	3
C04	4	3	3	4	4	3	2	2	2	2	2
C05	4	4	4	3	3	3	3	3	2	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

AİİT202-2020 Principles of Atatürk and History of Revolution- II

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
4	AİİT202-2020	Principles of Atatürk and History of Revolution- II	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is to examine the conditions that necessitated the opening of the Grand National Assembly, the military phases of the National Struggle, and the political, social, legal, cultural, and educational reforms that followed. It also evaluates the developments in domestic and foreign policy during the period 1923-1960.
Teaching Methods and Techniques:
The fronts in the National Struggle, revolutionary movements, fundamental and complementary principles, efforts to transition to a multi-party system, and developments in domestic and foreign policy.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Personal Mehmet Koca
Assistants:

Recommended or Required Reading

Resources

Bernard Lewis, Modern Türkiye'nin Doğuşu, Türk Tarih Kurumu Yayınları, Ankara 1993.,Hamza Eroğlu, Türk İnkılap Tarihi, Savaş Yayınları, Ankara 1990.
Lecturer's course notes.
Atatürk İlkeleri ve İnkılap Tarihi-II, Atatürk Üniversitesi Açıköğretim Fakültesi Yayını, Erzurum 2012; Tuncer Baykara, Türk İnkılap Tarihi ve Atatürk İlkeleri, IQ Kültür Sana

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:	100	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Developments Since the Opening of the Grand National Assembly of Turkey		
2	Military and Political Developments from Sakarya to Lausanne		
3	Developments in Turkish Political Life after the War of Independence		
4	Efforts to Transition to Multi-Party Life after the Proclamation of the Republic		
5	Turkish Legal Revolution		
6	Regulations in Education and Culture		
7	Revolutions in the Social Field		
8	Revolutions in the Economic Field		
9	Midterm Exam.		
10	Foreign Policy in the Era of Mustafa Kemal Atatürk		
11	Turkey after Atatürk's Death		
12	World War II Process		
13	Transition to Multi-Party Life and the Establishment of the Democratic Party		
14	Principles of Atatürk		
15	Complementary Principles		
16	Final Exam.		

Recommended Optional Programme Components

AİİT201-2020 Principles of Atatürk and History of Revolution I

Course Learning Outcomes

No	Learning Outcomes
C01	It chronologically lists the military phases of the National Struggle.
C02	It evaluates the reforms carried out between 1922 and 1938 within the context of Turkish modernization.
C03	It relates revolutionary movements to fundamental and complementary principles.
C04	Explains foreign policy developments during the Atatürk era.
C05	World War II and its effects on Turkey, the transition to a multi-party system, and the actions of the Democratic Party government.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	2	28
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	1	1
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**59**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	1	1	1	1	1
C02	1	1	1	1	1	1	1	1	1	1	1
C03	1	1	1	1	1	1	1	1	1	1	1
C04	1	1	1	1	1	1	1	1	1	1	1
C05	1	1	1	1	1	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM206-2024	Computer Aided Technical Drawing				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
4	EEM206-2024	Computer Aided Technical Drawing	4	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To gain the ability to draw Technical Drawings of any part To gain the ability to draw perspective pictures with the help of Cad program. To gain the ability to read the picture of any previously drawn part.
Teaching Methods and Techniques:
Introduction to computer aided drawing. Introducing CAD drawing program. Two dimensional basic drawing commands. Layers. Projection methods. Appearance pictures. dimensioning. Sectional views. 3D models
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:

Assistants:
Asist Prof. Dr. Emrullah AYDIN

Recommended or Required Reading

Resources

Murat Öğütlü and Gökalp Baykal „AUTOCAD 2014" Pusula publishing, Ankara, 2014,T.E. French, C.J. Vierck and R.J. Foster, "Engineering Drawing and Graphics Technolo
İ.Z.Şen and N. Özçilingir, "Technical Drawing Basic Information", Deha Publishing, Istanbul, 2012.
K.Gök and A.Gök "AUTOCAD 2015" Seçkin Publishing, Istanbul, 2014

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:	30	**Science**	:	
Engineering Design	:	70	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to computer aided drawing. Introducing CAD drawing program		
2	Two dimensional basic drawing commands		
3	Two dimensional basic drawing commands		
4	Layers, Two-dimensional drawings		
5	Projection methods		
6	Appearance pictures		
7	Appearance picture drawings in CAD program		
8	MIDTERM		
9	Sizing		
10	Sectional views		
11	Sectional views		
12	Perspective pictures		
13	Isometric perspective drawing in CAD program		
14	3D modeling		
15	3D modeling		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Have the ability to draw Technical Drawings in International Standards with the help of CAD program.
C02	Have the ability to draw a perspective picture of any part.
C03	Have the ability to read and understand the drawn technical drawings.
C04	Gains the ability to draw electrical engineering basic projects using AutoCad program.
C05	Learns dimensioning and definition of two-dimensional technical drawings.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	3	%20
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	2	28
Assignments	3	10	30
Presentation	0	0	0
Mid-terms	1	2	2
Practice	0	0	0
Laboratory	14	2	28
Project	0	0	0
Final examination	1	2	2
Total Work Load			**118**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	2	3	5	4	4	2	3	3	5	3
C01	2	2	3	5	4	4	2	3	3	5	3
C02	2	2	3	5	4	4	2	3	3	5	3
C03	2	2	3	5	4	4	2	3	3	5	3
C04	2	2	3	5	4	4	2	3	3	5	3
C05	2	2	2	3	5	5	4	4	3	3	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM202-2024	Circuit Analysis				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
4	EEM202-2024	Circuit Analysis	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To teach the classification and properties of electrical circuits. To obtain the state equations of electrical circuits by giving the concept of the state variable. To teach to find the essence, forced and complete solutions of the state equation. Using the S-domain to analyze the linear electrical circuits with constant coefficients (by using the differential equation solution, the environment and the node equation in the S-domain) and analyzing the linear time-changing circuits by Laplace transform. To examine the electrical circuits stimulated by periodic inputs by using the Fourier series.
Teaching Methods and Techniques:
Classification and properties of electrical circuits. State equations and their acquisition. Solution method of Fixed Coefficient Linear Circuits (SKLD); self solution, special solution, forced solution and full solution. Solution method of Fixed Coefficient Linear Circuits (SKLD); self solution, special solution, forced solution and full solution. Laplace transform and its properties. Inverse laplace transform. Laplace transform and its properties. Inverse laplace transform. Definition of electrical circuit elements in s-domain and solutions of electrical circuits Solutions of electrical circuits using s-domain Solution of state equations in s-domain. Finding the state transition matrix using the s-domain and self solution. Solving switched circuits by using t-domain and s-domain. Zero-pole distribution and response relationship in s-plane Transfer functions. Analysis of electrical circuits applied periodically by Fourier series.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Ali YÜCE
Assistants:

Recommended or Required Reading

Resources

Tokad, Y. (1987 or 1996). Circuit analysis lectures: Parts 1–4 [in Turkish]. Çağlayan Publishing.,Chua, O. L., Doser, C. A., & Kuh, E. S. (1987). Linear and nonlinear circuit
Dervişoğlu, A. (n.d.). Lecture notes on introduction to electric circuits [in Turkish]. Istanbul Technical University.
Acar, C. (1995). Analysis of electric circuits [in Turkish]. ITU Publishing.

Vize ve Final Sınavları

Course Category

Mathmatics and Basic Sciences	:	30	**Education**	:	
Engineering	:	70	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Classification and properties of electrical circuits		
2	State equations and their acquisition.		
3	Solution method of Fixed Coefficient Linear Circuits (SKLD); self solution, special solution, forced solution and full solution.		
4	Solution method of Fixed Coefficient Linear Circuits (SKLD); self solution, special solution, forced solution and full solution.		
5	Laplace transform and its properties.		
6	Inverse laplace transform.		
7	Definition of electrical circuit elements in s-domain and solutions of electrical circuits		
8	Midterm Exam		
9	Solution of state equations in s-domain		
10	Solution of State Equations in the s-Domain		
11	Determination of the State Transition Matrix from the s-Domain and Homogeneous Solution		
12	Analysis of Switched Circuits in Time and s-Domain		
13	Pole-Zero Distribution in the s-Plane and Response Relationship		
14	Transfer Functions		
15	Fourier Series Analysis of Circuits with Periodic Inputs		
16	Final Exam		

Recommended Optional Programme Components

EEM211-2024 Differential Equations

Course Learning Outcomes

No	Learning Outcomes
C01	Learns modelling, solution and analysis of electrical problems.
C02	Learns the derivation and solution of state equations.
C03	Learns the definitions of electrical circuit elements in the s-domain and the solution of electrical circuits.
C04	Gains skills about circuit applications.
C05	Performs Complete Solutions for Commonly Used Welding Functions of Circuits Consisting of R, L, C and Magnetic Coupled Elements.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%30
Quizzes	0	%0
Assignment	1	%10
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	6	84
Assignments	1	8	8
Presentation	0	0	0
Mid-terms	1	6	6
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	10	10
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	5	5	4	3	3	2	3	4	4	3
C01	4	4	5	4	3	3	2	3	4	4	3
C02	4	4	4	4	3	3	2	3	4	4	3
C03	5	5	5	5	3	3	2	3	4	4	3
C04	5	5	5	5	3	3	2	3	4	4	3
C05	5	4	4	4	4	3	3	2	2	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

PDF252-2023	Education psychology				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
4	PDF252-2023	Education psychology	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To make prospective teachers comprehend the relationship between education and psychology, to provide them with the ability to organize educational activities appropriate to the developmental characteristics of individuals, and to provide them with the knowledge and skills to explain the factors affecting learning with examples.
Teaching Methods and Techniques:
Education-Psychology relationship, definition and functions of educational psychology, basic concepts related to learning and development, developmental characteristics (physical, cognitive, emotional, social and moral development), factors affecting learning, learning theories, reflections of learning theories on teaching processes, effective learning, factors affecting learning (motivation, individual factors, group dynamics and the effect of these factors on the classroom teaching process).
Prerequisites and co-requisities:

Course Coordinator:
Associate Prof. Dr. Öznur ATAŞ AKDEMİR
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources Bacanlı, H. (2011). Eğitim psikolojisi. Pegem Akademi.,Özbay, Y., & Erkan, S. (2008). Eğitim psikolojisi. Ankara: Pegem Akademi.

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	70
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:	30	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction, introduction of basic concepts		
2	Basic concepts/principles of developmental psychology; Physical development; Cognitive development		
3	Basic Theories in Developmental Psychology Research Methods in Developmental Psychology		
4	Prenatal Development Period and Factors Affecting Development		
5	Physical Development and Affecting Factors		
6	Cognitive Development		
7	Language Development		
8	Mid-Term Exam		
9	Personality Development		
10	Moral Development		
11	Mental Disorders in Children and Adolescents		
12	The Nature and Basic Concepts of Learning		
13	Behaviorist Theories I		
14	Behaviorist Theories II		
15	Cognitive Theories		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the basic principles and concepts of developmental psychology.
C02	Discusses protective and risk factors affecting human development
C03	Explains hereditary and genetic factors affecting development
C04	Discusses theories related to major developmental areas
C05	Evaluates the educational implications of developmental psychology knowledge.
C06	Explains basic concepts in learning psychology
C07	Evaluates the educational implications of learning psychology knowledge

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	15	15
Total Work Load			**109**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	1	1	1	1	1
C02	1	1	1	1	1	1	1	1	1	1	1
C03	1	1	1	1	1	1	1	1	1	1	1
C04	1	1	1	1	1	1	1	1	1	1	1
C05	1	1	1	1	1	1	1	1	1	1	1
C06	1	1	1	1	1	1	1	1	1	1	1
C07	1	1	1	1	1	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM210-2024	Electronics I				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
4	EEM210-2024	Electronics I	5	4	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
General information about the structure of the atom, the movements of the particles of the atom and the contribution of these movements to electrical transmission, Semiconductor materials, doped semiconductors, PN junctions, BJT transistors, MOS transistors, explanation of the working principles of JFETs.
Teaching Methods and Techniques:
Basic semiconductor concept. Conduction in P-N doped semiconductors. Types of semiconductor diodes and their characteristics. Rectifiers. Clippers and clamps. Junction transistors: current components and characteristic curves. Investigation of common- base, common- emitter and common-collector circuits as an amplifier. Obtaining ß current gain and analytical expression of transistor characteristics. Transistor bias circuits. stability factor. DC analysis of transistor circuits. Structure and characteristics of FETs and MOSFETs, biasing circuits and DC analysis of these circuits.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Mehmet ÜSTÜNDAĞ
Assistants:

Recommended or Required Reading

Resources

MICROELECTRONICS: Digital and Analog Circuits and Systems, Jacob MILLMAN, McGraw-Hill.,Electronic Devices and Circuit Theory, Prentice Hall,.
M.Sait Türköz, "Electronics", Birsen Publishing, 2009
Duran Leblebici, "Electronic Elements", Seç Publications, 2007

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	50	**Science**	:	
Engineering Design	:	30	**Health**	:	
Social Sciences	:		**Field**	:	10

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Atomic Structure and Energy Bands, Movement of Electrons, Semiconductors	Reading source material and review	Recommended resources
2	Semiconductors, Covalent bonding and pure materials, n-type and P-type materials	Reading source material and review	Recommended resources
3	Semiconductor Diode, Biasing States and Diode Characteristics	Reading source material and review	Recommended resources
4	Diode Characteristics and Shockley Equation, Ideal and Practical cases in Diodes, Resistance levels	Reading source material and review	Recommended resources
5	Diode equivalent circuit models, Transition and spreading capacitance, Recovery time, Zener Diodes	Reading source material and review	Recommended resources
6	Zener Diodes, LED Diodes, Load Line Analysis, Series Diode Structure	Reading source material and review	Recommended resources
7	Parallel and Series-Parallel Structures, Rectifier Circuits	Reading source material and review	Recommended resources
8	MIDTERM EXAM		
9	Bipolar Junction Transistors (BJT), BJT Structure and Operation	Reading source material and review	Recommended resources
10	Transistor Structures (Common Base, Common Emitter, Common Collector)	Reading source material and review	Recommended resources
11	DC Biasing, Fixed Biasing, Emitter Biasing Structures in BJTs	Reading source material and review	Recommended resources
12	BJT Collector bias Structure and Stability difference between Structures, Examples and Repetitions	Reading source material and review	Recommended resources
13	Mirror current circuits, Current Source Circuits, Transistor switching circuit examples	Reading source material and review	Recommended resources
14	BJT AC Analysis, Boost in AC Region, Modeling of BJT Transistor, re Transistor Model	Reading source material and review	Recommended resources
15	Clippers, Clampers, Zener Regulator Circuits and Voltage Multipliers	Reading source material and review	Recommended resources
16	FINAL EXAM		

Recommended Optional Programme Components

EEM109-2024 Fundamentals of EEE I
EEM108-2024 Fundamentals of EEE II

Course Learning Outcomes

No	Learning Outcomes
C01	It explains electrical conduction in intrinsic and extrinsic semiconductors using energy bands.
C02	It explains the biasing states of the PN junction using the current-voltage characteristic.
C03	Calculates the currents and voltages of diode circuits using equivalent models.
C04	It analyzes the outputs of rectifier and wave-shaping circuits.
C05	Calculates the DC operating point of BJT circuits.
C06	It compares BJT biasing circuits in terms of operating point stability.
C07	Calculates the small-signal gains of BJT amplifiers.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	14	%20
Project	0	%0
Final examination	1	%40
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	14	2	28
Laboratory	0	0	0
Project	0	0	0
Final examination	1	14	14
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	4	2	1	1	1	1	2	1	1	1
C01	4	2	1	1	1	1	1	2	1	1	1
C02	4	3	1	1	1	1	1	2	1	1	1
C03	5	4	2	1	4	1	1	3	1	1	1
C04	5	4	2	1	1	1	1	2	1	1	1
C05	5	4	2	1	1	1	1	2	1	1	1
C06	4	4	2	1	1	1	1	2	1	1	1
C07	5	4	2	1	1	1	1	2	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM258-2020 Intellectual and Industrial Property

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
4	EEM258-2020	Intellectual and Industrial Property	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To examine the principles and principles of Intellectual Property Law, intellectual and industrial rights and the related regulations in detail and to comprehend the students.
Teaching Methods and Techniques:
Introduction to Intellectual Property Law and general information, Intellectual and artistic Works, Types of work, Work and rights of, Neighboring rights, In case of rape claims and lawsuits that can be claimed, Brands, brand varieties, registration of; on the rights and protection of trademark, Patents, patent types, Registration of patents, protection, Utility models, integrated circuit topographies, Designs, Geographical indications, International Regulations on Intellectual Property Rights.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:

Assistants:
Research Assist. -

Recommended or Required Reading

Resources -

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:	100	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Intellectual Property Rights	-	-
2	Functioning of the Intellectual Property System	-	-
3	Copyrights and Works	-	-
4	Software Registration	-	-
5	Industrial Property Rights	-	-
6	Operation of Industrial Property System	-	-
7	International Agreements	-	-
8	Patent Registration	-	-
9	Utility Model Registration	-	-
10	Brand registration	-	-
11	Design Registration	-	-
12	Integrated Circuit Registration	-	-
13	Geographical Sign Registration	-	-
14	Intellectual and Industrial Property Incentives	-	-

Course Learning Outcomes

No	Learning Outcomes
C01	Understands the intellectual property system and manages the software registration processes.
C02	Understands the industrial property system and manages the patent, trademark and design registration process.
C03	It manages the incentive processes related to intellectual and industrial property rights.
C04	The patent application has information about the scope and expiration of patent protection.
C05	Learns design, design registration and protection issues.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	1	14
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	8	8
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	10	10
Total Work Load			**60**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	2	2	2	2	3	2	5	3	3	3	3
C01	2	2	2	2	3	2	5	3	3	3	3
C02	2	2	2	2	3	2	5	3	3	3	3
C03	2	2	2	2	3	2	5	3	3	3	3

Program Learning Outcomes	
No	**Learning Outcome**
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%0
Total		**%0**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	0	0	0
Hours for off-the-c.r.stud	0	0	0
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**0**
ECTS Credit of the Course			**0**

Contribution of Learning Outcomes to Programme Outcomes



Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM254-2020	Entrepreneurship				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
4	EEM254-2020	Entrepreneurship	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
Discussing entrepreneurship and small business management issues that create a competitive advantage in today's conditions and establish a new perspective for students.
Teaching Methods and Techniques:
The pre-installation researches and how to start the business, the decisions to be taken after the establishment and the things to be done about how to get an institutional structure in terms of management are explained. To ensure that the entrepreneur knows about the steps of the establishment of the workplace. In general, the continuity of businesses without a business plan is very difficult. Therefore, detailed work plan and workshop.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. -
Assistants:

Recommended or Required Reading

Resources Orhan Küçük, Entrepreneurship and Small Business Management, Seçkin Kitabevi, 2010.
Rıdvan Yurtseven, Entrepreneurship, Detay Publishing, 2007.

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:	100	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Entrepreneurship and Entrepreneurship Concepts	-	-
2	Properties of the Entrepreneur	-	-
3	Formation of Entrepreneurial Personality	-	-
4	Entrepreneurship in the World and Turkey	-	-
5	Innovation and Creativity	-	-
6	Encouragement of Entrepreneurship	-	-
7	Small Business Concept, Features	-	-
8	Types of Small Businesses, Advantages and Disadvantages	-	-
9	Midterm Exam.	-	-
10	Starting a New Business / Buying an Existing Business	-	-
11	Choice of Business Location, Establishment Problems	-	-
12	Supply, Production, Marketing Functions in Small Businesses	-	-
13	Finance and Management Functions in Small Businesses	-	-
14	Causes of Success and Failure in Small Businesses	-	-
15	Small Business Aid Organizations	-	-
16	Final Exam.	-	-

Course Learning Outcomes

No	Learning Outcomes
C01	Students know the basic concepts of entrepreneurship and managerial problems in small businesses.
C02	Students know the institutionalization processes of small businesses.
C03	Students know how to set up a business.
C04	Students gain the ability to discover entrepreneurial aspects.
C05	Explain the basic concepts of entrepreneurship.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	1	14
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	8	8
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	10	10
Total Work Load			**60**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	2	2	2	2	2	4	5	4	5	3	4
C01	2	2	2	2	2	4	5	4	5	3	4
C02	2	2	2	2	2	4	5	4	5	3	4
C03	2	2	2	2	2	4	5	4	5	3	4
C04	2	2	2	2	2	4	5	4	5	3	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM260-2024	Labor Law				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
4	EEM260-2024	Labor Law	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To provide an understanding of Labor Law, which examines the relations between employee, employer, and the state, within the framework of the provisions of the Labor Law
Teaching Methods and Techniques:
Basic concepts, employment contract, its establishment, obligations of the parties, termination, regulation of work
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. -
Assistants:

Recommended or Required Reading

Resources

Müjdat ŞAKAR, İş Kanunu Yorumu, Yaklaşım Yayınları Ankara 2009.,Nuri ÇELİK, İş Hukuku Dersleri, Beta Yayınları İstanbul 2009.,Sarper SÜZEK,İş Hukuku, Beta Yayınları

Şakar, M. (2009). Commentary on the Labor Law. Ankara: Yaklaşım Publications.

Çelik, N. (2009). Labor Law Lectures. İstanbul: Beta Publications.

Süzek, S. (2008). Labor Law. İstanbul: Beta Publications.

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:	90	**Field**	:	10

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	İş Hukukunun konusu		
2	İş Hukukunun kaynakları		
3	İş Hukukunun Tarihsel Gelişimi		
4	İş Kanununun Kapsamı		
5	İş Sözleşmesi Türleri		
6	İş Sözleşmesinin Yapılması ve Şekli		
7	İşçinin Borçları		
8	İşverenin borçları		
9	Çalışma süreleri		
10	Fazla Çalışma		
11	Yıllık Ücretli İzin		
12	İş Sözleşmesinin Feshi		
13	İş Güvencesi		
14	Severance Pay	-	-

Course Learning Outcomes

No	Learning Outcomes
C01	Çalışma hukuku hakkında bilgi sahibidir
C02	4857 sayılı iş kanunu hakkında bilgi sahibidir
C03	İşçi - işveren ilişkilerinde yaşanan sorunları tanımlar
C04	Söz konusu durumlarda yasal kuralları işletir
C05	İş hukukunun gelişimini analiz eder

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	1	14
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	2	2
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**46**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

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	P07	P09	P10
All	3	5	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM208-2024	Technical English				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
4	EEM208-2024	Technical English	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
This course aims to teach the students necessary language skills (reading, listening, writing and speaking) that they will use in their professional lives.
Teaching Methods and Techniques:
In this course, the first week introduces the objectives and scope, and students become familiar with basic technical terms. In the second week, English equivalents and units of electrical quantities like voltage, current, and resistance are covered. The third week focuses on circuit elements such as resistors, capacitors, and inductors. In the fourth week, students learn the English usage of measuring devices like multimeters and oscilloscopes. The fifth week covers symbols used in circuit diagrams and their corresponding technical terms. In the sixth week, concepts related to power systems such as generation, transmission, and distribution are introduced in English. The seventh week presents electronic components including diodes, transistors, and operational amplifiers. In the eighth week, a midterm exam is held. The ninth week explores key English terms in PLC and automation systems. The tenth week introduces microcontrollers and embedded system terminology. In the eleventh week, students learn to prepare and deliver technical presentations in English. The twelfth week is devoted to writing CVs, project abstracts, and technical reports in English. In the thirteenth week, the focus is on how to read and analyze academic and technical articles. In the final week, students give their own technical presentations and receive feedback.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Emrullah AYDIN
Assistants:

Recommended or Required Reading

Resources	Technical English 1-2-3 (Pearson Longman Series) Author: David Bonamy,ENGLISH IN ELECTRICAL ENGINEERING AND ELECTRONICS ERIC H. GLENDINNING Instructor's Lecture Notes

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:	80	**Field**	:	20

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction and Basic Technical Terms		
2	Electrical Quantities and Units		
3	Circuit Elements and Symbols		
4	Measuring Instruments and Their Use		
5	Technical Reading: Circuit Diagrams		
6	Power Systems Terminology		
7	Electronic Components: Diode, Transistor, OP-AMP		
8	Midterm Exam		
9	Industrial Automation and PLC Terminology		
10	Microcontroller and Embedded System Terminology		
11	Preparing and Delivering Technical Presentations		
12	Preparing and Delivering Technical Presentations		
13	Technical Writing: CV, Project Abstract, Report		
14	Technical Writing: CV, Project Abstract, Report		
15	Academic Sources and Article Analysis		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Recognize and is able to identify English technical terms and concepts specific to electrical and electronics engineering.
C02	Understand and interpret engineering articles, standards, and technical documents written in English.
C03	Prepare project reports, laboratory reports, and technical documentation in English.
C04	Follow technical presentations, seminars, and professional discussions in English and can communicate effectively.
C05	Contribute to teamwork and problem-solving processes in international projects through English communication skills.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	5	70
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	3	3
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	3	3
Total Work Load			**118**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
C01	3	2	1	2	1	1	5	3	2	2	1
C02	3	3	2	3	3	2	5	4	3	2	2
C03	2	3	2	3	3	2	5	4	3	3	2
C04	2	2	1	2	1	3	5	4	2	3	2
C05	2	3	2	3	2	5	5	4	3	4	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM252-2024	Engineering Economics				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
4	EEM252-2024	Engineering Economics	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The aim of the Engineering Economy course is to enable engineering students to understand the necessary criteria for evaluating alternative options in engineering decisions from a financial perspective and to develop the skills to calculate these criteria.
Teaching Methods and Techniques:
This course aims to teach the economic analysis methods necessary for evaluating engineering decisions from a financial perspective. The content covers topics such as the time value of money, interest calculations, inflation, return on investment, cost, cash flow, net present value, internal rate of return, break-even analysis, and benefit/cost ratio. In addition, decision-making criteria, risk and uncertainty analysis, depreciation, taxes, and feasibility applications are addressed to enhance students' ability to evaluate engineering projects economically.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. -
Assistants:

Recommended or Required Reading

Resources

C. S. Park , Contemporary Engineering Economics, Prentice Hall, Third Edition http://www.eng.auburn.edu/~park/cee.html, W. J. Fabrycky , G. J. Thuesen, Economic Dec
Kahya, E. (2006). Mühendislik Ekonomisi. Eskişehir: Eskişehir Osmangazi Üniversitesi.

Park, C. S. (n.d.). Contemporary Engineering Economics (3rd ed.). Upper Saddle River, NJ: Prentice Hall. Retrieved from http://www.eng.auburn.edu/~park/cee.html

Fabrycky, W. J., & Thuesen, G. J. (n.d.). Economic Decision Analysis (2nd ed.). Upper Saddle River, NJ: Prentice Hall.

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:	80	**Field**	:	20

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to engineering economics and relations with engineering decisions	-	-
2	Time value of money and interest rates	-	-
3	Inflation, nominal and real interest rates	-	-
4	The return on investment, Costs, cash flow analysis	-	-
5	Net present value analysis	-	-
6	Break even point analysis	-	-
7	Internal rate of return analysis Benefit/Cost analysisi	-	-
8	Midterm Exam		
9	Course review and midterm exam	-	-
10	Choosing among investment alternatives, decision criteria, decision process	-	-
11	Sensivity (risk and uncertainty) analysis	-	-
12	Impact of inflation on decision process	-	-
13	Replacement analysisi	-	-
14	Depreciation and taxes	-	-
15	Feasibility practices	-	-
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	In depth comprehension of basic concepts in engineering economics and their importance in engineering decisions
C02	Ability to carry out financial and economical evaluation of alternative engineering projects and investments through use of engineering economics criteria
C03	Ability to arrange economic feasibility reports for engineering projects
C04	Ability to contribute to efficient and productive use of production factors by applying engineering economics principles to engineering decisions
C05	Having an advantage for managerial positions by possessing basic engineering economics knowledge together with technical engineering background

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	1	14
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	2	2
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**46**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	4	3	3	2	3	4	3	4	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM204-2024 Probability and Statistics

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
4	EEM204-2024	Probability and Statistics	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of the course is to understand and explain statistics and its basic concepts and subject.
Teaching Methods and Techniques:
Basic concepts, data collection, summarization, data organization, frequencies, proportions, graphs, mean and variability measures, hypothesis testing, chi-square, variance, regression, correlation and time series analysis
Prerequisites and co-requisities:

Course Coordinator:
Asist Prof. Dr. Burçin DOĞAN
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources

Neill A. WEISS (2002), Elementary Statistics, Pearson Education, USA.
Necmi GÜRSAKAL (2012), Minitab and SPSS Applied Inferential Statistics, Dora Press Release Distribution, BURSA.
Kemal POYRAZ (2013), Statistics, First edition, 3rd March printing house, KÜTAHYA.
Nevin UZGÖREN (2012), Basic Statistical Methods Used in Scientific Research and SPSS Applications, Extended Second Edition, Ekin Press Release, BURSA.
Neill A. WEISS (2002), Elementary Statistics, Pearson Education, USA.

Course Category

Mathmatics and Basic Sciences	:	90	**Education**	:	
Engineering	:	10	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Basic concepts of statistics		
2	Functions of statistics		
3	Compiling and organizing data		
4	Frequencies, ratios, percentages		
5	Central trend measures: averages		
6	Central trend measures: averages		
7	Calculation of measures of variability		
8	Midterm Exam		
9	Hypothesis testing and confidence intervals for large samples		
10	Hypothesis testing and confidence intervals for large samples		
11	Hypothesis testing and confidence intervals for large samples		
12	Hypothesis testing and confidence intervals for small samples		
13	Hypothesis testing and confidence intervals for small samples		
14	Chi-square Analysis		
15	Regression Analysis		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Uses statistical methodology and tools in the engineering problem-solving process.
C02	Understands the basic concepts of random variables, probability distributions, and joint probability distributions.
C03	Calculates point estimation parameters, explains sampling distributions, and understands the central limit theorem.
C04	Creates confidence intervals on parameters for one and two samples.
C05	Understands basic statistical concepts such as statistical inference, classical estimation methods, single and two samples, statistical hypothesis, testing a statistical hypothesis, single sample, two sa

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	10	2	20
Presentation	0	0	0
Mid-terms	1	2	2
Practice	3	3	9
Laboratory	0	0	0
Project	1	3	3
Final examination	1	2	2
Total Work Load			**120**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	5	5	5	2	3	2	1	1	1
C01	5	5	5	5	5	2	3	2	1	1	1
C02	5	5	5	5	5	2	3	2	1	1	1
C03	5	5	5	5	5	2	3	2	1	1	1
C04	5	5	5	5	5	2	3	2	1	1	1
C05	5	5	5	5	5	2	3	2	1	1	1

Program Learning Outcomes	
No	**Learning Outcome**
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
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P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%0
Total		**%0**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	0	0	0
Hours for off-the-c.r.stud	0	0	0
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**0**
ECTS Credit of the Course			**0**

Contribution of Learning Outcomes to Programme Outcomes



Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM212-2024	Signals and Systems				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
4	EEM212-2024	Signals and Systems	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is to teach the fundamental concepts of signals and systems required to mathematically model, analyze, and interpret physical systems encountered in engineering. Students will gain the ability to understand the basic properties of continuous-time and discrete-time systems, analyze them in both time and frequency domains, and apply Fourier, Laplace, and Z-transform techniques to real engineering problems.
Teaching Methods and Techniques:
Introduction to signals and systems; classification of continuous-time and discrete-time signals; basic signal operations; properties of linear time-invariant (LTI) systems; impulse response and convolution; differential and difference equations; Fourier series and Fourier transform; frequency response and filtering; Laplace transform and system stability; Z-transform and discrete-time system analysis; sampling theorem, aliasing, and reconstruction processes; MATLAB/Simulink-based applications for signal generation and system analysis.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources	Schaum's Outline of Signals and Systems, Hwei Hsu, 3rd Edition
	Schaum's Outline of Signals and Systems, Hwei Hsu, 3rd Edition

Course Category

Mathmatics and Basic Sciences	:	40	**Education**	:	
Engineering	:	60	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Definition of signals and systems, continuous-time and discrete-time signals, basic notations.	-	-
2	Unit step, unit impulse, sinusoidal, exponential, linear, and periodic signals energy and power signals.	-	-
3	Time shifting, scaling, folding, addition, multiplication, and combination of signals.	-	-
4	Linearity, time invariance, causality, stability, and memory concepts.	-	-
5	Impulse response, superposition principle, and determination of system response.	-	-
6	Continuous-time and discrete-time convolution graphical and analytical methods.	-	-
7	Differential equations of continuous-time systems and difference equations of discrete-time systems.	-	-
8	Midterm Exam.	-	-
9	Representation of periodic signals by Fourier series amplitude and phase spectra.	-	-
10	Fourier transform of aperiodic signals amplitude-phase spectra and properties.	-	-
11	Frequency response of systems, amplitude-phase analysis, and filtering applications.	-	-
12	Analysis of continuous-time systems using Laplace transform, pole-zero diagram, and stability investigation.	-	-
13	Analysis of discrete-time systems using Z-transform, region of convergence, and system stability.	-	-
14	Sampling of continuous-time signals, reconstruction, and aliasing problem.	-	-
15	Signal generation, system response, and frequency analysis applications using MATLAB/Simulink.	-	-
16	Final Exam.	-	-

Course Learning Outcomes

No	Learning Outcomes
C01	Defines signal and system concepts classifies basic signal types and represents physical systems using these models.
C02	Explains the concepts of impulse response and convolution in linear time-invariant (LTI) systems computes the system output using convolution.
C03	Represents periodic signals using the Fourier series and aperiodic signals using the Fourier transform analyzes the spectral content of the signal.
C04	Relates the frequency-domain representations of signals and systems to their time-domain characteristics and converts between the two.
C05	Analyzes the input-output relationships of LTI systems evaluates system characteristics in the frequency domain and applies them in system design.
C06	Explains the sampling theorem defines the conditions for sampling and reconstructing a continuous-time signal and analyzes the aliasing problem.
C07	Uses the Laplace transform to analyze differential equation–based systems evaluates transient and steady-state behaviors.
C08	Applies the Z-transform to solve discrete-time systems analyzes system stability and frequency response.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	1	%20
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	1	10	10
Presentation	0	0	0
Mid-terms	1	5	5
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	7	7
Total Work Load			**106**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
C01	5	4	3	3	2	1	1	2	1	1	1
C02	5	5	3	4	2	1	1	2	1	1	1
C03	5	5	3	4	3	1	1	2	1	1	1
C04	5	5	3	4	3	1	1	2	1	1	1
C05	5	5	4	4	3	1	1	2	1	1	1
C06	5	5	3	4	3	1	1	2	1	1	1
C07	5	5	3	4	3	1	1	2	1	1	1
C08	5	5	3	4	3	1	1	2	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM256-2020	Production Management				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
4	EEM256-2020	Production Management	2	2	2

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To give students the importance of planning, production plan, production schedule, detailed material plan and ability to prepare capacity plan.
Teaching Methods and Techniques:
Production concepts, relations between production economy and production management, basic objectives and fields of production management, long and medium term production planning, long and medium term major decision subjects. Production concepts; relations between production economy and production management; objectives of production management, their main interests and interests. Production factors system; production system; Examples of production systems in the production of goods and services. Production planning; long, medium and short term decision problems; strategic design problems. Design of the production system; typological overview of production systems; continuous and discrete production systems; flexible production systems; lean manufacturing system. Foundation location selection; in-factory layout. Decisions regarding the establishment and operation of the logistics system; contemporary developments in supply and production logistics; MRP, MRP II; JIT, Kanban etc. Facility capacity, capacity types and factors affecting capacity; material requirement planning-capacity planning relationships. Relationships between long-medium and short-term production plans; Total production plan-main production plan relationships-short term production program; preparatory work in production and rationalization measures. The main decision topics in short-term operation planning are; Bottleneck factor in production / operations management, causes and consequences. Determination and harmonization of labor and machine capacities; operation-processing capacity; Material purchase instructions-Determining the net material requirement. Possible scenarios and criteria used in determining the optimum production program; Linear programming model and applications. Ranking problem and ranking criteria; Tail problem - Line balancing problem. Job loading (assignment) problem; Scheduling and scheduling techniques.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:

Assistants:
Research Assist. -

Recommended or Required Reading

Resources -

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:		**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:	100	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	The importance of planning with management and functions	-	-
2	Aims and cost components in production planning	-	-
3	Demand forecast	-	-
4	Demand forecast (cont.)	-	-
5	Preparation of the production plan	-	-
6	Production plan preparation methods	-	-
7	Production plan preparation methods (continued)	-	-
8	Midterm Exam		
9	Preparation of the production program	-	-
10	Preparation of the production program	-	-
11	Draft capacity planning	-	-
12	Material requirement planning (MRP)	-	-
13	Capacity requirement planning	-	-
14	Methods for determining lot size in MRP	-	-
15	Input / output analysis	-	-
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Prepares production plan and production schedule.
C02	Makes detailed material planning.
C03	Makes capacity analysis.
C04	Suggests appropriate solution approaches to production planning problems encountered in the production environment.
C05	Understands the function of production in business, production system, production factors systems.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	1	14
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	8	8
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	10	10
Total Work Load			**60**
ECTS Credit of the Course			**2**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	3	3	3	2	2	4	3	3	2	4
C01	3	3	3	3	2	2	4	3	3	2	4
C02	3	3	3	3	2	2	4	3	3	2	4
C03	3	3	3	3	2	2	4	3	3	2	4
C04	3	3	3	3	2	2	4	3	3	2	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM307-2024 Electrical Machines I

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
5	EEM307-2024	Electrical Machines I	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To learn the basic operating principles, characteristics, starting and speed setting methods of DA and AA electrical machines. To be able to analyze the system consisting of an electric motor and a construction machine. To come to the level of knowledge that can produce solutions to the basic problems of electrical machines with wide application area.
Teaching Methods and Techniques:
Circuit model of a dc generator, DC motors induction and excitation circuit model, DA series motor model, Moment and speed characteristics for a DA series motor, starting of DA motors, Moment-speed characteristics of DA shunt and compunt motors, motor and load compatibility, speed of DA motors control, changing the direction of rotation of a DA engine. Rotating magnetic field and MMF waves in AA machines. Equivalent circuit of a three-phase asynchronous motor, moment-speed characteristic of asynchronous motors. starting induction motors, speed control methods in asynchronous motors, single phase induction motors. Round and salient pole synchronous machines, equivalent circuit of synchronous generator, continuous operation characteristic, power-load angular characteristic of a synchronous generator connected to infinite busbar. Power-load angle characteristic of the round and salient pole synchronous machine.
Prerequisites and co-requisities:

Course Coordinator:
Asist Prof. Dr. Emrullah AYDIN
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources Theory and Problems of Electric Machines and Electromechanic, Syed A. NASAR. Electric Machinery Fundamentals, Stephan J. CHAPMAN, McGraw-Hill, 2004.,Analysis of E
Fundamentals of Electric Machines, Yrd.Doç.Dr. Ahmet ORHAN, Çağlayan Bookstore, 2007.3

Course Category

Mathmatics and Basic Sciences	:	30	**Education**	:	
Engineering	:	40	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	30

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to electrical machines. Structure of DA machines		
2	Armature reaction and commutation and equivalent circuit in DC machines		
3	Characteristic curve of DA motors		
4	Characteristic curve of DC current generators		
5	Introduction to AA Machines		
6	Obtaining the rotating magnetic field		
7	Moment, power flow and losses in AA machines		
8	Midterm Exam		
9	Asynchronous motors, equivalent circuit, moment and power. Moment-speed characteristic.		
10	Starting methods of asynchronous motors		
11	Speed control methods in asynchronous motors		
12	Single phase induction motors		
13	Introduction to synchronous machines		
14	Equivalent circuit and equations of synchronous generators		
15	Parallel operation of synchronous generators		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Have the ability to apply mathematics, science and engineering knowledge to electrical machine problems and applications.
C02	Have the skills of defining, modeling and solving electrical machine problems.
C03	Have general information about the equivalent circuit of transformers and drawing of phasor diagrams.
C04	Have general information about DC and Alternating Current Machines equivalent circuit and drawing of phasor diagrams.
C05	Learns the basic working principles of rotating electrical machines.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	5	%20
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	5	10	50
Presentation	0	0	0
Mid-terms	1	2	2
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**152**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	5	4	4	4	3	2	3	3	2	2
C01	4	5	4	4	4	3	2	3	3	2	2
C02	4	5	4	4	4	3	2	3	3	2	2
C03	4	4	4	5	4	4	4	3	2	2	2
C04	4	4	3	2	3	4	2	2	4	1	1
C05	4	4	3	2	2	1	1	2	2	4	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM305-2024 Electronics II

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
5	EEM305-2024	Electronics II	5	4	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim is to develop the competence to analyze the operating conditions and electrical performance of operational amplifier, active filter, voltage regulator, FET amplifier, and oscillator circuits.
Teaching Methods and Techniques:
Operational amplifiers and instrumentation, active filters; voltage regulators, JFET and MOSFET biasing and amplifier analysis, feedback and oscillators.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Mehmet ÜSTÜNDAĞ
Assistants:

Recommended or Required Reading

Resources
M.Sait Türköz, "Electronics", Birsen Publishing, 2009,Duran Leblebici, "Electronic Elements", Seç Publications, 2007,Electronic Devices and Circuit Theory / Robert L. BOYL
M.Sait Türköz, "Electronics", Birsen Publishing, 2009
Duran Leblebici, "Electronic Elements", Seç Publications, 2007

Course Category

Mathmatics and Basic Sciences	: 20		**Education**	:	
Engineering	: 40		**Science**	:	
Engineering Design	: 30		**Health**	:	
Social Sciences	:		**Field**	: 10	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to operational amplifiers (OPAMP) and their equivalent circuits.	Reading source material and review	Recommended resources
2	Practical op-amp circuits, their parameters and operation in differential and common modes.	Reading source material and review	Recommended resources
3	Op-Amp Applications (Voltage Summing, Voltage Buffer, Controlled Sources, Instrumentation Circuits)	Reading source material and review	Recommended resources
4	Filter Concept, Active Filters and Active Filters with Op-Amps.	Reading source material and review	Recommended resources
5	Input to Power Supplies (Voltage regulators) and capacitor filters, RC filters.	Reading source material and review	Recommended resources
6	Discrete Transistor Voltage Regulators and examples	Reading source material and review	Recommended resources
7	TD Voltage Regulators and practical applications	Reading source material and review	Recommended resources
8	Midterm EXAM		
9	Introduction to Field Effect Transistors. Structure and characteristics of JFETs.	Reading source material and review	Recommended resources
10	Structure and characteristics of step-down type MOSFETs and step-up type MOSFETs.	Reading source material and review	Recommended resources
11	FET Biasing and FET Amplifier circuits with example circuits.	Reading source material and review	Recommended resources
12	Practical application circuits and example solutions related to Field Effect Transistors (Repetitions)	Reading source material and review	Recommended resources
13	Introduction to Feedback and Oscillator Circuits, Feedback connection types and Practical Feedback Circuits	Reading source material and review	Recommended resources
14	Working of Oscillators (Phase shift oscillator, Wien bridge Oscillator and Crystal oscillator)	Reading source material and review	Recommended resources
15	Practical Practice Circuits and General Repetitions	Reading source material and review	Recommended resources
16	FINAL EXAM		

Recommended Optional Programme Components

EEM210-2024 Electronics I

Course Learning Outcomes

No	Learning Outcomes
C01	Calculates the output of operational amplifier circuits using ideal and practical models.
C02	It analyzes the frequency response of active filters using circuit parameters.
C03	It compares voltage regulator circuits in terms of output stability.
C04	Calculates the direct current operating point of JFET and MOSFET circuits.
C05	It analyzes the effect of feedback on amplifier gain and operating characteristics.
C06	Calculates the oscillation conditions of oscillator circuits.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	14	%20
Project	0	%0
Final examination	1	%40
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	14	2	28
Laboratory	0	0	0
Project	0	0	0
Final examination	1	14	14
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	4	2	1	1	1	1	2	1	1	1
C01	5	4	2	1	1	1	1	2	1	1	1
C02	5	5	3	1	1	1	1	2	1	1	1
C03	4	4	2	1	1	1	1	2	1	1	1
C04	5	4	2	1	1	1	1	2	1	1	1
C05	5	4	2	1	1	1	1	2	1	1	1
C06	5	5	3	1	1	1	1	2	1	1	1

Program Learning Outcomes	
No	**Learning Outcome**
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%0
Total		**%0**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	0	0	0
Hours for off-the-c.r.stud	0	0	0
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**0**
ECTS Credit of the Course			**0**

Contribution of Learning Outcomes to Programme Outcomes



Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM301-2024	Professional Practice I				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
5	EEM301-2024	Professional Practice I	0	0	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
It is aimed that students of the department have knowledge about the basic issues such as factory arrangement, production planning, work flow control, quality control scheme, job security, maintenance and assembly.
Teaching Methods and Techniques:
In the internship course that takes place in a real business environment, it is aimed to develop the decision-making and implementation skills of the students by taking responsibility. Internship students also have the opportunity to compare their theory and practical knowledge. The internship book, where the students regularly record their observations during the internship, is then evaluated by the relevant instructor.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. -
Assistants:

Recommended or Required Reading

Resources The student will provide the resources according to the work subjects in the workplace where he / she does Summer Internship.
The student will provide the resources according to the work subjects in the workplace where he / she does Summer Internship.

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:	100	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Professional Practice-1 course, "Eng. Fac. Practical Work (Internship) Directive "and" In-Department Student Internship Dir		
2	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
3	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
4	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
5	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
6	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
7	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
8	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
9	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
10	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
11	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
12	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
13	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
14	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		

Course Learning Outcomes

No	Learning Outcomes
C01	In order to adapt to innovations and developing technology, it gains the awareness of constantly renewing itself and developing its researcher skills.
C02	Gains entrepreneurial skills.
C03	Develops theoretical skills.
C04	Implementation skills develop.
C05	View of business life develops.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	1	%100
Project	0	%0
Final examination	0	%0
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	0	0	0
Hours for off-the-c.r.stud	20	8	160
Assignments	0	0	0
Presentation	1	2	2
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**162**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	3	3	3	3	4	2	3	4	5	5
C01	3	3	3	3	3	4	2	3	4	5	5
C02	3	3	3	3	3	4	2	3	4	5	5
C03	3	3	3	3	3	4	2	3	4	5	5
C04	3	3	3	3	3	4	2	3	4	5	5
C05	3	3	3	4	4	3	3	4	4	5	5

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM309-2024	Automatic Control Systems				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
5	EEM309-2024	Automatic Control Systems	5	4	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
Introducing continuous time control system units and their applications in practice. Modeling of continuous-time control systems. Time response analysis of continuous-time control systems and determination of system behavior types and performance criteria. Giving and using stability methods in control systems. Changing roots of characteristic equations in s-plane and examining their effects on system performance. Investigation of frequency responses of control systems and determination of system performance criteria.
Teaching Methods and Techniques:
System and control concepts, classification of physical systems. Obtaining mathematical models of physical systems. Analogy principle and applications for modeling systems in different energy modes. Open and closed loop systems and their properties General control problems. Transfer functions Block diagrams, signal flow diagrams. State variables analysis. Stability of linear control systems. Time response analysis of control systems. Geometric location curve of roots. Frequency domain analysis of control systems. PID controller design with Ziegler-Nichols method.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Deniz KORKMAZ
Assistants:

Recommended or Required Reading

Resources	Automatic Control Lecture Notes- Dr. Mustafa POYRAZ Automatic control systems / Benjamin C. Kuo Ders Kitabı, Ders Notları, Ödevler Ders Notları ve Ders Kitabı Ara ve Final Sınavı

Course Category

Mathmatics and Basic Sciences	:	30	**Education**	:	
Engineering	:	50	**Science**	:	
Engineering Design	:	20	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	System and control concepts, classification of physical systems.		
2	Obtaining mathematical models of physical systems.		
3	Analogy principle and applications for modeling systems in different energy modes.		
4	Open and closed loop systems and their properties		
5	Open and closed loop systems and their properties		
6	General control problems.		
7	Transfer functions		
8	Midterm Exam		
9	Block diagrams, signal flow diagrams.		
10	State variables analysis.		
11	Stability of linear control systems.		
12	Time response analysis of control systems.		
13	Geometric location curve of roots.		
14	Frequency domain analysis of control systems		
15	PID controller design with Ziegler-Nichols method.		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Learns the modeling and analysis of control systems.
C02	Learns frequency domain analysis of control systems.
C03	Understands basic mathematics, science and electrical-electronics engineering subjects.
C04	Designs, Performs, Analyzes and Interprets a Desired Experiment.
C05	Identify, Define and Solve an Electrical-Electronics Engineering Problem.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	2	28
Assignments	12	5	60
Presentation	0	0	0
Mid-terms	0	0	0
Practice	6	4	24
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**156**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	4	3	3	3	2	3	3	2	2
C01	4	5	4	3	3	3	2	3	3	2	2
C02	4	4	4	3	3	3	2	3	3	2	2
C03	3	4	4	4	3	3	2	3	3	2	2
C04	4	4	4	3	3	3	2	3	3	3	3
C05	4	3	4	4	3	3	3	2	2	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

PDF351-2023	Teaching Principles and Methods				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
5	PDF351-2023	Teaching Principles and Methods	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
It explains how to apply principles, strategies, methods and techniques in the teaching process and how to handle the planning of the teaching process and program.
Teaching Methods and Techniques:
Basic concepts related to general education; elements of the curriculum and the relationships between them; teaching strategies, methods and techniques to increase the quality of teaching service; planning of the teaching process; higher-order thinking skills and the responsibilities of the teacher.
Prerequisites and co-requisities:

Course Coordinator:
Associate Prof. Dr. Öznur ATAŞ AKDEMİR
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources Duman, T., Peker Ünal, D. (2019). Öğretim ilke ve yöntemleri (1.Baskı). Ankara: Pegem Akademi Yay.,Gözütok, F.D. (2019). Öğretim ilke ve yöntemleri (5. Baskı). Ankara

Ocak, G. (2020). Öğretim ilke ve yöntemleri (12. Baskı). Ankara: Pegem Akademi.

Course Category

Mathmatics and Basic Sciences	:	**Education**	:	100
Engineering	:	**Science**	:	
Engineering Design	:	**Health**	:	
Social Sciences	:	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to the course and basic concepts related to education and training (Teaching, learning, etc.)		
2	The structure of the concept of "program", which includes teaching principles and methods		
3	The foundations of the program and the program development process		
4	Examining program elements (objectives, content, educational situations, evaluation)		
5	Basic concepts in the learning-teaching process (principle, approach, strategy, method, technique, etc.)		
6	Learning-teaching approaches and models: Constructivism, Multiple Intelligences Theory		
7	Learning-teaching approaches and models: Mastery learning, Cooperative learning		
8	Mid-term Exam		
9	Learning strategies: Meaning, Organization, Repetition; Teaching strategies: Presentation-based teaching strategy, Discove		
10	Major teaching methods and techniques-1: Lecture, question-answer, demonstration, demonstration		
11	Major teaching methods and techniques-2: Role playing, observation trip, problem solving, case study		
12	Major teaching methods and techniques-3: Brainstorming, six thinking hats, analogy, micro teaching		
13	Major teaching methods and techniques-4: Group discussion method, project/laboratory, station, fishbone, opinion develop		
14	Higher-order thinking skills and planning in instruction		
15	Higher-order thinking skills and planning in instruction		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains basic concepts related to curriculum and instruction
C02	Explains the place and importance of teaching principles and methods in the program.
C03	Explains the principles of learning and teaching
C04	Relates the concepts of approach, model, strategy, method and technique in learning and teaching.
C05	Gains the ability to apply various teaching strategies, methods and techniques.
C06	Gains knowledge and skills to make lesson plans
C07	Becomes aware of the duties and responsibilities of a teacher in teaching lessons.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	15	15
Total Work Load			**109**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	1	1	1	1	1
C02	1	1	1	1	1	1	1	1	1	1	1
C03	1	1	1	1	1	1	1	1	1	1	1
C04	1	1	1	1	1	1	1	1	1	1	1
C05	1	1	1	1	1	1	1	1	1	1	1
C06	1	1	1	1	1	1	1	1	1	1	1
C07	1	1	1	1	1	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

PDF353-2023	Teaching Technologies				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
5	PDF353-2023	Teaching Technologies	2	2	3

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The aim of this course is to teach students the fundamental concepts, historical development, and theoretical approaches of instructional technologies; to demonstrate the effective use of digital educational content design and gamification tools; to foster an understanding of the role of AI-powered tools in education and to raise awareness of future educational technologies. In this context, students will develop their skills in integrating technology into pedagogical processes, creating digital materials, and gamifying teaching processes. They will also explore personalized learning experiences with AI-based applications.
Teaching Methods and Techniques:
Information technologies in education; the teaching process and classification of educational technologies; theoretical approaches to educational technologies; new trends in learning approaches; current literacies; educational technologies as tools and materials; design of educational materials; designing thematic educational materials; creating a field-specific object warehouse, educational material evaluation criteria.
Prerequisites and co-requisities:

Course Coordinator:
Associate Prof. Dr. Öznur ATAŞ AKDEMİR
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources Yanpar-Yelken, T. (2019). Öğretim teknolojileri. Anı Yayıncılık,Dinçer. S. (2020). Öğretim teknolojileri. Pegem Akademi.

Course Category

Mathmatics and Basic Sciences	:	**Education**	: 70
Engineering	: 30	**Science**	:
Engineering Design	:	**Health**	:
Social Sciences	:	**Field**	:

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Basic Concepts of Educational Technologies		
2	The Historical Process of the Concept of Instructional Technology		
3	Instructional Design Models		
4	Teaching Materials		
5	Presentation Preparation Tools and Course Presentation Design		
6	Visual Design Tools and Infographic Design		
7	Animation Design Tools and 2D / 3D Animation Design		
8	Mid-term Exam		
9	Digital Stories and the Digital Storytelling Process		
10	Augmented Reality, Virtual Reality and Mixed Reality Technologies		
11	Augmented Reality-Based Content Design		
12	Content Design Based on Artificial Intelligence Technologies		
13	Flipped Classroom Model and Video Lesson Design		
14	Measurement and Evaluation with Online Exam Tools		
15	General Review and Course Evaluation		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Knows the basic concepts of educational technologies.
C02	Understands the historical development of educational technologies.
C03	Knows the names of different instructional design models and their application steps.
C04	Knows the principles of design and preparation of teaching materials.
C05	Designs video content using artificial intelligence technologies.
C06	Designs video lessons based on the flipped classroom model.
C07	Prepares an online exam on a topic of his/her choosing using Web 2.0 tools.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	2	28
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	15	15
Total Work Load			**81**
ECTS Credit of the Course			**3**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	1	1	1	1	1
C02	1	1	1	1	1	1	1	1	1	1	1
C03	1	1	1	1	1	1	1	1	1	1	1
C04	1	1	1	1	1	1	1	1	1	1	1
C05	1	1	1	1	1	1	1	1	1	1	1
C06	1	1	1	1	1	1	1	1	1	1	1
C07	1	1	1	1	1	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM303-2024 Numerical Analysis

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
5	EEM303-2024	Numerical Analysis	3	3	3

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
Teaching numerical solution methods and algorithms that will enable the solution of engineering problems in computer environment, teaching the theory of functions with complex variables
Teaching Methods and Techniques:
The importance of algorithm in numerical methods. Sub units that form algorithms. Matrices and matrix operations. Solution methods of linear equation systems. Solution methods of nonlinear equation systems. Curve fitting, intermediate and external value finding methods. Numerical derivative and Numerical integral methods, Solution methods of differential equations. Complex number sequences, complex number trigonometric operations, root finding, Cauchy- Riemann equations, complex numbers continuity, convergence, divergence, limit, derivative and integration, residual operations.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources
MATLAB 7.04-simulink and engineering applications, Arifoğlu Uğur, Alfa Publications, 2005,Practical numerical analysis, Gwyne Evans, John Wiley&Sons, 1995.
Complex functions theory, Chairman Turgut, Uludağ University. printing, 1986
Numerical methods for engineers, S.C.C, R.P.C (translation) -H.Heperkan, U. Keskin Literature, 2003
Computer applied numerical analysis methods, E. Sabri Türker, Engin Can, Exchange publications.

Course Category

Mathmatics and Basic Sciences	:	70	**Education**	:	
Engineering	:	10	**Science**	:	
Engineering Design	:	20	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to numerical analysis and algorithm logic		
2	Nonlinear equations and root concept		
3	Iterative methods, convergence and divergence		
4	Fixed-point (simple iteration) method		
5	Applications of fixed-point iteration		
6	Bisection method		
7	Applications of bisection method		
8	Midterm Exam		
9	Newton–Raphson method		
10	Applications of Newton–Raphson method		
11	Secant and Regula Falsi methods		
12	Linear systems of equations		
13	Gauss and Gauss–Jordan methods		
14	Numerical differentiation methods		
15	Numerical integration methods		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains fundamental concepts, error types and algorithmic approaches in numerical analysis.
C02	Selects and applies appropriate numerical solution methods for linear and nonlinear equations.
C03	Analyzes convergence, divergence and the effect of initial guesses in iterative methods.
C04	Solves systems of linear equations numerically using matrix-based methods.
C05	Produces approximate solutions to engineering problems using numerical differentiation and integration methods.
C06	Compares different numerical methods in terms of accuracy, computational cost and efficiency.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	1	%20
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	2	28
Assignments	1	5	5
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	10	10
Total Work Load			**95**
ECTS Credit of the Course			**3**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	4	4	3	3	5	4	3	5	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM311-2024	Digital Circuits				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
5	EEM311-2024	Digital Circuits	5	4	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is to gain competence in analyzing boolean algebra, logic design circuits and digital circuits with or without memory used in digital system design.
Teaching Methods and Techniques:
Number systems, Boolean algebra and Karnaugh maps, combinational and sequential circuits; flip-flops, counters and registers, analog-to-digital and digital-to-analog converters.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Mehmet ÜSTÜNDAĞ
Assistants:

Recommended or Required Reading

Resources Introduction to Switching Theory and Logical Design, Frederick J. HILL and Gerald R. PETERSON, John Wiley & Sons, USA,.
Fundamentals of Logic Design, H. CHARLES and Jr. ROTH, West Publishing Company, USA,
Digital Design, Morris MANO Prentice Hall, USA.

Course Category

Mathmatics and Basic Sciences	: 10		**Education**	:	
Engineering	: 30		**Science**	: 10	
Engineering Design	: 40		**Health**	:	
Social Sciences	:		**Field**	: 10	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to Digital Systems	Reading source material and review	Recommended resources
2	Transformation between number bases, different arithmetic from ten bases, negative numbers, double code decimal numb	Reading source material and review	Recommended resources
3	Boolean algebra.	Reading source material and review	Recommended resources
4	Logic Gates (And, AndNot,Or, AndNot, Exclusive or Exclusive or Not)	Reading source material and review	Recommended resources
5	Simplification of Boolean functions. Representation of Boolean functions on Karnaugh maps.	Reading source material and review	Recommended resources
6	Simplifying functions in the Karnough maps	Reading source material and review	Recommended resources
7	Combinatorial Logic Circuit Design	Reading source material and review	Recommended resources
8	MIDTERM EXAM		
9	Adders, Subtractors, Magnitude Comparators	Reading source material and review	Recommended resources
10	Decoders and Encoders	Reading source material and review	Recommended resources
11	Multiplexers and demultiplexers	Reading source material and review	Recommended resources
12	Sequential Logic Circuits	Reading source material and review	Recommended resources
13	D Flip-Flop, JK Flip-Flop, T (Toggle) Flip-Flop	Reading source material and review	Recommended resources
14	Timer Circuits, Crystal Oscillators, and Storage and Counter Circuits	Reading source material and review	Recommended resources
15	Analog/Digital and Digital/Analog Converters	Reading source material and review	Recommended resources
16	FINAL EXAM		

Recommended Optional Programme Components

EEM305-2024 Electronics II
EEM210-2024 Electronics I

Course Learning Outcomes

No	Learning Outcomes
C01	It performs conversions between number systems and codes.
C02	Simplifies Boolean functions using algebra and Karnaugh maps.
C03	Calculates the outputs of combinational logic circuits.
C04	It compares the functions of encoder, decoder, and multiplexer circuits.
C05	It analyzes the state transitions of flip-flop-based sequential circuits.
C06	Analyzes counter and storage circuits using timing diagrams.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	14	%20
Project	0	%0
Final examination	1	%40
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	14	2	28
Laboratory	0	0	0
Project	0	0	0
Final examination	1	14	14
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	4	2	1	1	1	1	2	1	1	1
C01	4	3	1	1	1	1	1	2	1	1	1
C02	5	5	3	1	1	1	1	2	1	1	1
C03	5	4	2	1	1	1	1	2	1	1	1
C04	4	3	2	1	1	1	1	2	1	1	1
C05	5	5	3	1	1	1	1	2	1	1	1
C06	5	5	3	1	1	1	1	2	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM310-2024	Analog Communication				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
6	EEM310-2024	Analog Communication	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is to enable students to understand the fundamental principles of analog communication systems and to analyze signal transmission using various modulation and demodulation techniques.
Teaching Methods and Techniques:
This course provides a fundamental understanding of analog communication systems. It starts with essential topics such as continuous-time signals, spectrum, and harmonic analysis. The course then explores amplitude modulation (AM), frequency modulation (FM), and phase modulation (PM) in detail, including signal generation methods, spectral characteristics, power calculations, and demodulation techniques. Additional subjects covered include double sideband (DSB), single sideband (SSB), suppressed carrier transmission, and the use of phase-locked loops (PLLs). The effects of noise on analog signals and signal-to-noise ratio (SNR) analysis are also discussed. Through both theoretical instruction and practical examples, students gain the skills needed to analyze and design analog communication systems.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Ali YÜCE
Assistants:

Recommended or Required Reading

Resources

Derin, H., & Aşkar, M. (n.d.). Communication theory [in Turkish]. METU Publishing.
Proakis, J. G., & Salehi, M. (2010). Fundamentals of communication systems (H. Altun, E. Öztürk, & Y. E. Yenice, Trans.) [in Turkish]. Nobel Publishing.

Vize ve Final Sınavları

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	: 70	**Science**	:
Engineering Design	: 30	**Health**	:
Social Sciences	:	**Field**	:

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to the course, fundamentals of analog communication		
2	Continuous-time signals, harmonic analysis, concept of spectrum		
3	Amplitude Modulation (AM): Basic principles and mathematical representations		
4	AM spectrum and power calculations		
5	AM generation techniques: Linear and nonlinear modulators		
6	AM demodulation techniques: Diode and envelope detectors		
7	DSB, SSB, and suppressed carrier modulation techniques		
8	Midterm Exam		
9	Overmodulation, distortion, and bandwidth analysis		
10	Frequency Modulation (FM): Basic principles		
11	FM spectrum, narrowband and wideband FM		
12	FM generation: Direct and indirect methods		
13	FM demodulation: Frequency discriminator, PLL		
14	Phase Modulation (PM) and FM-PM relationship		
15	Noise effects and Signal-to-Noise Ratio (SNR) analysis		
16	Final Exam		

Recommended Optional Programme Components

EEM458-2024 Digital Communication

Course Learning Outcomes

No	Learning Outcomes
C01	Recognize the basic elements of a communication system.
C02	It forms the mathematical infrastructure of communication systems.
C03	Learns the modulator and demodulator structures in analog and digital communication systems.
C04	Gains the ability to calculate the performance of a simple analog and digital communication system.
C05	Defines the problems that may occur in analog and digital communication systems, formulates the problem and gains the ability to solve it.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	8	8
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	14	14
Total Work Load			**120**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	5	3	3	2	2	3	2	2	3
C01	4	4	5	3	3	2	2	3	2	2	3
C02	4	4	5	3	3	2	2	3	2	2	3
C03	4	4	5	3	3	2	2	3	2	2	3
C04	4	4	5	3	3	2	2	3	2	3	3
C05	4	4	5	3	3	2	2	3	2	2	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

PDF352-2023	Measurement and Evaluation in Education				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
6	PDF352-2023	Measurement and Evaluation in Education	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To provide teacher candidates with the necessary knowledge and skills to apply measurement and evaluation processes in a valid and reliable manner in education in general and in their own fields in particular.
Teaching Methods and Techniques:
The place and importance of measurement and evaluation in education; basic concepts related to measurement and evaluation; psychometric (validity, reliability, usability) properties of measurement tools; development and application of achievement tests; interpretation of test results and giving feedback; analysis of test and item scores; evaluation and grading.
Prerequisites and co-requisities:

Course Coordinator:
Associate Prof. Dr. Öznur ATAŞ AKDEMİR
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources Tekin, H. (2000). Eğitimde Ölçme ve Değerlendirme. Ankara:Yargı Yayınları.,Tekindal, S. (Edt.) (2010). Eğitimde Ölçme ve Değerlendirme. Ankara: Pegem A Yay.,Turgut,

Course Category

Mathmatics and Basic Sciences	:	**Education**	:	100
Engineering	:	**Science**	:	
Engineering Design	:	**Health**	:	
Social Sciences	:	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	The place and importance of measurement and evaluation in education		
2	Basic concepts related to measurement and evaluation: Measurement, evaluation, measurement process, types of measure		
3	Basic concepts related to measurement and evaluation: Scale, types and features of scales, types of errors in measuremen		
4	Psychometric properties of measurement tools (reliability, factors affecting reliability, reliability coefficient and standard err		
5	Psychometric properties of measurement tools (validity, types of validity, factors affecting validity, relationship between rel		
6	Test development and implementation process: Test development process and classification of tests		
7	Traditional measurement and evaluation tools: Written-oral exams, short-answer tests, true-false tests, multiple-choice tes		
8	Mid-term Exam		
9	Traditional measurement and evaluation tools: Written-oral exams, short-answer tests, true-false tests, multiple-choice tes		
10	Complementary (contemporary, process-based) measurement and evaluation tools: project, performance evaluation, produ		
11	Complementary (contemporary, process-based) measurement and evaluation tools: project, performance evaluation, produ		
12	Interpreting test results and providing feedback: Test and item statistics: difficulty index, discrimination power, distractors)		
13	Statistical operations on measurement results: measures of central tendency (arithmetic mean, weighted mean, median-m		
14	Statistical operations on measurement results: measures of central change (range, variance, standard deviation), normal a		
15	Statistical operations on measurement results: standard scores (z score and t score)		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the basic concepts of measurement and evaluation.
C02	Evaluates the importance of measurement and evaluation in education.
C03	Explains the qualities of measurement tools.
C04	Analyze the properties of measurement tools.
C05	Interpret the results of statistical operations related to measurement results.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	15	15
Total Work Load			**109**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	1	1	1	1	1
C02	1	1	1	1	1	1	1	1	1	1	1
C03	1	1	1	1	1	1	1	1	1	1	1
C04	1	1	1	1	1	1	1	1	1	1	1
C05	1	1	1	1	1	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM360-2024	Generation of Electrical Energy				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
6	EEM360-2024	Generation of Electrical Energy	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
Principles of electrical energy production; learn the types of power plants, their structural features and operation. To calculate the amount of electrical energy that can be produced from energy sources. To learn the design calculations of the elements that make up the plants.
Teaching Methods and Techniques:
Traditional and renewable energy sources. Water intake structure in hydroelectric power plants and hydroelectric power plants. Hydraulic turbines and hydraulic turbine types. Frequency and voltage stability in power plants. Thermal power plants. Electricity generation from solar energy. Wind energy and wind turbine types. Diesel power plant. Production of electricity by fuel cell and hydrogen energy. Nuclear power plants. Energy production and statistics in power plants. Daily load and energy curves.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Kadir DOĞANŞAHİN
Assistants:

Recommended or Required Reading

Resources Powerplant Technology, M. M. EL-WAKIL, McGraw-Hill, 1984.,Power Plant Engineering, Lawrence F. DRBAL (Editor), Hardcover, 1995.
Hydroelectric Power Plants. Account Principles and Project Design, Kadir YILDIZ, DSİ Foundation,
1992. Electric Power Generation Plants, Behçet KOCAMAN, Birsen Publishing House, 2003.
Steam Power Plants, Yaver HEPER, TEK Education Department Publications, 1983

Course Category

Mathmatics and Basic Sciences	:	30	**Education**	:	
Engineering	:	40	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	30

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Traditional, New and Renewable energy sources.		
2	Classification in Hydroelectric Power Plants. Power calculation in HES		
3	Water intake structure in HES: Grid, cap, valve, balance shaft, force tunnel, penstock.		
4	Hydraulic turbine types: Kaplan, Francis and Pelton turbines. Structural features.		
5	Cavitation and vortex events in water turbines.		
6	Frequency and voltage stability (speed and voltage regulation) in HES		
7	Thermal power plants; Stoves, boilers, pressurized steam systems, condensers and cooling towers.		
8	Midterm Exam		
9	Structure and working properties of nuclear power plants.		
10	Reactor types. Moderator and control sticks.		
11	Generating electricity from solar energy. Solar cell systems and solar solar power plants.		
12	Wind power plants. Wind turbines and their types. Wind power plant elements.		
13	Force (Diesel) Power Plants. Study and features.		
14	Fuel Cells, hydrogen production and storage.		
15	Energy production and statistics in power plants. Daily load and energy curves.		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Knows energy types, classifications and energy transformations
C02	Knows the basic components and operating principles of electrical energy production plants
C03	Evaluates the relationship between energy source input and the amount of energy produced in power plants and analyzes system efficiency.
C04	Knows the characteristic behavior of power plants and their place in production.
C05	Calculates energy and fuel costs.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	20	20
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	30	30
Total Work Load			**148**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	3	3	3	2	2	2	3	2	2	3
C02	4	3	3	3	2	2	2	3	2	2	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM308-2024	Electrical Machines II				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
6	EEM308-2024	Electrical Machines II	5	4	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To understand the operating principles of alternating current electrical machines based on the law of induction, and to identify their equivalent circuits and mathematical models
Teaching Methods and Techniques:
Three-phase power transformers and connection groups. Obtaining the single-phase equivalent circuit of a three-phase transformer. Determination of equivalent circuit parameters. Three-phase induction motors: introduction, structure, and operating principles of induction motors. Rotating magnetic field; representation of the rotating magnetic field. Slip and rotor speed. Slip–speed characteristic of a three-phase induction motor. Induced voltage and frequency in the rotor. Rotor and stator equivalent circuits of a three-phase induction motor. Steady-state single-phase equivalent circuit of a three-phase induction motor. Approximate equivalent circuits used for induction motors. Starting current and starting torque. Pull-out torque. Speed–torque characteristics of induction machines. Power flow in induction motors. Determination of equivalent circuit parameters of an induction motor: determination of stator winding resistance, no-load and short-circuit tests. Applications, structure, and operating principles of synchronous generators. Induced three-phase voltage and frequency in synchronous generators. Equivalent circuit and phasor diagrams of synchronous generators. Voltage regulation and armature reaction. Synchronous reactance and impedance. Generated power and torque. Open-circuit and short-circuit tests. Losses and efficiency calculation. Operating principles of synchronous motors. Loading of synchronous motors and torque angle. Adjustment of power factor in synchronous motors by field excitation. Starting of synchronous motors and damper windings. Characteristics of generated power and torque angle. Phasor diagrams of synchronous motors. Efficiency calculation of synchronous motors, V and inverted V curves
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. EMRULLAH
Assistants:

Recommended or Required Reading

Resources

Ryff, Peter F., Electric Machinery, Prentice Hall, 1988.,Şenol, İ., Bekiroğlu, N. ve Aybar, O., Elektrik Makineleri-I, Birsen Yayınevi, 2005.,Slemon, G.R., Straughen, A., Elect
Slemon, G.R., Straughen, A., Electric Machines, Addison-Wesley Publishing Company, Inc., 1982.
Ryff, Peter F., Electric Machinery, Prentice Hall, 1988.
Şenol, İ., Bekiroğlu, N. ve Aybar, O., Elektrik Makineleri-I, Birsen Yayınevi, 2005.
Stephen J. Chapman, Çeviri: Erhan Akın, Ahmet Orhan, Elektrik Makinalarıın Temelleri, Çağlayan Kitabevi, Beyoğlu-İstanbul, 2007

Course Category

Mathmatics and Basic Sciences	:	40	**Education**	:	
Engineering	:	60	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Determination of steady-state equivalent circuit parameters of the transformer determination of winding resistances with D	-	-
2	Operation of three-phase transformers, three-phase connections, and obtaining the single-phase equivalent circuit of a thr	-	-
3	Three-phase induction motors: input, structure, and operating principles of three-phase induction motors. Rotating magnet	-	-
4	Slip and rotor speed. Slip–speed characteristic of three-phase induction motors. Induced voltage and frequency in the roto	-	-
5	Steady-state single-phase equivalent circuit of a three-phase induction motor referred to the stator. Approximate steady-st	-	-
6	Starting current and starting torque. Pull-out torque. Slip–torque and speed–torque characteristics of induction machines.	-	-
7	Determination of equivalent circuit parameters of the induction motor determination of stator winding resistance with DC c	-	-
8	Midterm Exam		
9	Applications, structure, and operating principles of synchronous generators. Induced three-phase voltage and frequency in	-	-
10	Magnitude of generated voltage, voltage regulation, voltage drop, and armature reaction in synchronous generators.	-	-
11	Equivalent circuit and general phasor diagrams of synchronous generators. Synchronous reactance and impedance.	-	-
12	Generated power and torque. Open-circuit and short-circuit tests. Losses and efficiency calculation.	-	-
13	Operating principles of synchronous motors. Loading of synchronous motors and torque angle.	-	-
14	Adjustment of power factor in synchronous motors by field excitation. Starting of synchronous motors, damper windings. C	-	-
15	General phasor diagrams of synchronous motors. Efficiency calculation of synchronous motors, V and inverted V curves.	-	-
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Determines the steady-state equivalent circuit parameters of transformers and analyzes the results by performing DC resistance, no-load, and short-circuit tests.
C02	Defines the structure, operating principles, and equivalent circuits of three-phase transformers and induction motors expresses the rotating magnetic field both graphically and analytically.
C03	Examines the slip, speed, torque, and power flow characteristics of induction motors and determines motor parameters through experimental methods.
C04	Explains the structure, operating principles, and equivalent circuits of synchronous generators analyzes voltage regulation, armature reaction, reactance, and impedance concepts.
C05	Evaluates the operating principles of synchronous motors, torque angle, power factor adjustments, and V and inverted V curves, and performs efficiency calculations.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	2	28
Assignments	3	5	15
Presentation	0	0	0
Mid-terms	1	3	3
Practice	5	4	20
Laboratory	14	2	28
Project	0	0	0
Final examination	1	3	3
Total Work Load			**139**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05
All	4	3	3	2	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM352-2024	Electromechanical Energy Conversion				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
6	EEM352-2024	Electromechanical Energy Conversion	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To recognize electromechanical systems that convert electromechanical energy. To learn the structure and magnetic equivalent circuits of electromechanical systems and to calculate the force or moment of an electromagnetic system from a magnetic equivalent circuit. To be able to analyze permanent magnetic circuits. As an example of the electromechanical system, to analyze the rotor-wound reluctance motor and obtain the moment expression. To be able to analyze transformers.
Teaching Methods and Techniques:
The place and importance of electromechanical energy conversion in Electrical Engineering. Basic laws on electromagnetics. Magnetic circuits. Magnetic air circuits. Magnetization curve. Behavior of magnetic circuits at alternative voltage. Hysteresis and eddy current losses. Voltage and magnetic energy in multi-excitation magnetic circuits. Developments in permanent magnet magnetic circuits and analysis of these circuits. Inductance and common inductance concept. Voltage and force induced in magnetic circuits. Energy and Co-energy concept. The concept of force and moment in an electromechanical system. Analysis of reluctance motor without winding rotor. Transformer; analysis of single and three phase transformers; obtaining equivalent circuit, calculation of equivalent circuit parameters; autotransformer, three-phase transformer connections; voltage regulation; measurement transformers.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Yağmur ÖLMEZ
Assistants:

Recommended or Required Reading

Resources	Performance and Control of Electrical Machines, Denis O'KELLY, 1991,Electromechanics and Electric Machines, S. A. NASAR and L. E. UNNEWEHR, 1976.,Principles of Elec Fundamentals of Electric Machines, Prof. Dr. M. Kemal SARIOĞLU, ITU, 1990 Fundamentals of Energy Transformation, Prof. Dr. Cemil GÜRÜNLÜ, KTÜ, 1989

Course Category

Mathmatics and Basic Sciences	:	25	**Education**	:	0
Engineering	:	25	**Science**	:	0
Engineering Design	:	50	**Health**	:	0
Social Sciences	:	0	**Field**	:	0

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introducing electrical engineering and its current problems.		
2	Basic laws regarding electromagnetic systems.		
3	Solution of electromagnetic circuit problems.		
4	The development of permanent magnet materials.		
5	Magnetic circuits with coils and permanent magnets.		
6	Solution of magnetic circuit problems with coils and permanent magnets.		
7	Giving the energy balance equation for an electromechanical system.		
8	Midterm exam		
9	The relation between energy, co-energy and moment.		
10	The relation between energy, co-energy and moment.		
11	Energy, essence and opposite inductances, moment in a linear electromechanical system.		
12	Solution of sample problems related to electromechanical systems.		
13	Analysis of reluctance motor.		
14	Single and three phase transformers		
15	Auto and measurement transformers		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Describe the basic concepts such as magnetic circuit, flux, inductance, energy, power, force, moment, magnetic saturation and losses.
C02	Analyzes and designs an electromechanical system (such as relay, electrical machine)
C03	Describe the basic principles of how Electrical Machines work.
C04	Describe the self and common inductance structure of an electromechanical system.
C05	Makes the analysis and design of a transformer.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	5	%0
Attendance	1	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	5	70
Assignments	5	5	25
Presentation	0	0	0
Mid-terms	1	2	2
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**141**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	4	4	4	3	2	3	3	3	3
C01	4	3	4	4	4	5	5	4	3	2	2
C02	5	5	4	4	4	3	2	3	3	3	3
C03	5	5	5	5	4	4	4		3	3	2
C04	5	5	4	4	4	3	2	3	3	3	3
C05	5	5	4	4	4	3	2	3	3	3	3

Program Learning Outcomes	
No	**Learning Outcome**
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%0
Total		**%0**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	0	0	0
Hours for off-the-c.r.stud	0	0	0
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**0**
ECTS Credit of the Course			**0**

Contribution of Learning Outcomes to Programme Outcomes



Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM306-2024 Power Electronics

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
6	EEM306-2024	Power Electronics	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
The aim of this course is to provide students with fundamental knowledge of power electronics, including the characteristics of semiconductor power devices and their applications. Students will learn to analyze power converter circuits (AC-DC, DC-DC, AC-AC, DC-AC), understand control and protection methods in power electronic systems, and evaluate their applications in modern power systems.
Teaching Methods and Techniques:
The course begins with the basic concepts of power electronics, followed by the definitions, current-voltage and switching characteristics, and applications of semiconductor devices such as diodes, thyristors, BJTs, MOSFETs, and IGBTs. The comparison of semiconductor devices and the design of power modules using these devices are also covered. Subsequently, the focus shifts to power converters, including AC-DC, AC-AC, DC-DC, and DC-AC converters. In the later weeks, control methods and protection techniques in power electronic systems are introduced and discussed.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Emrullah
Assistants:

Recommended or Required Reading

Resources

Bimal K. Bose, Modern Power Electronics and Drivers, Prentice Hall PTR.,N. Mohan,T.M. Undeland, W.P. Robbins, Güç Elektroniği, Çeviri: Nejat Tuncay, Metin Gökaşan, Se
Bodur, H. (2012). Güç elektroniği (Güncelleştirilmiş baskı). Birsen Yayınevi.
Rashid, M. H. (2014). Power electronics. Pearson.

Course Category

Mathmatics and Basic Sciences	:	20	**Education**	:	
Engineering	:	60	**Science**	:	
Engineering Design	:	20	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Basic Concepts in power electronics		
2	Semiconductor power elements - DiodeDefinition and Current - Voltage CharacteristicsSwitching characteristicsApplication a		
3	Semiconductor power elements - ThyristorsDefinition and Current - Voltage CharacteristicsSwitching characteristicsApplicat		
4	Semiconductor power elements - Bipolar Junction TransitorsDefinition and Current - Voltage CharacteristicsSwitching chara		
5	Semiconductor power elements - Insulated gate field effect transistors (IGBT, MOSFET)Definition and Current - Voltage Ch		
6	Semiconductor power elements -Other semiconductor power elementsDefinition and Current - Voltage CharacteristicsSwitc		
7	Comparison of semiconductor power elements, Power modules that can be created with semiconductor power elements		
8	Midterm Exam		
9	AC-DC Converters		
10	AC-AC Converters		
11	DC-DC Converters		
12	DC-AC Converters		
13	Control methods in power electronic systems		
14	Control methods in power electronic systems		
15	Protection in power electronic systems		
16	Final Exam		

Recommended Optional Programme Components

EEM305-2024 Electronics II
EEM210-2024 Electronics I
EEM109-2024 Fundamentals of EEE I
EEM108-2024 Fundamentals of EEE II
EEM201-2024 Circuit Theory

Course Learning Outcomes

No	Learning Outcomes
C01	Knows the electrical and switching characteristics of semiconductor power elements (diode, thyristor, BJT, MOSFET, IGBT, etc.).
C02	Compares pure conductor power elements, selects appropriate elements and designs power modules.
C03	Analyzes the basic operating principles of AC-DC, AC-AC, DC-DC and DC-AC converters and makes circuit solutions.
C04	Explains the basic control methods used in power electronic systems and applies them at a basic level.
C05	Evaluates fault conditions and protection methods encountered in power electronics systems and develops solution suggestions.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	20	20
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	30	30
Total Work Load			**134**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	4	4	3	2	2	3	3	3	3
C01	5	4	3	3	2	2	2	3	3	2	3
C02	5	5	4	4	3	2	2	3	3	3	3
C03	5	5	4	4	3	2	2	3	3	3	3
C04	5	5	4	5	3	3	3	3	3	3	3
C05	5	4	4	4	3	3	3	3	3	3	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM302-2024 Power Systems

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
6	EEM302-2024	Power Systems	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
Learning the basic concepts of power systems, studying power calculations in single-phase and three-phase systems, creating single-line representation of power system components and system single-line diagram, studying per unit calculation, creating bus admittance and impedance matrices, creating mathematical models of power systems, performing power flow analysis and fault analysis in power systems.
Teaching Methods and Techniques:
Introduction to Power Systems. Basic concepts. Power calculation and phasor quantities in single phase and three phase systems Model of power system components and creation of single line system diagram Per unit calculation Busbar admittance matrix Busbar impedance matrix Node removal methods Power flow analysis Fault conditions in power systemsGeneral structure, units and features of an energy production facility. Nominal?, Nominal T and equivalent circuits of short and medium length transmission lines. Mechanical structure of transmission lines. Conductors and their properties. Braided and bundle conductors. Cables and their properties. Resistance, inductance and capacity calculation in conductors and cables. Insulators; structure, types and properties. Potential distribution in insulators. AG, OG, YG and ÇYG poles. Peak forces. Selection criteria of poles. Direct calculation and selection of LV distribution lines. Power switches; separator types and properties. Cutter types, properties and cutting techniques. Busbars and busbar systems. Short circuit current and its properties. Breaker calculation and selection according to short circuit current. Sizing of busbars and cables according to short circuit current.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Kadir DOĞANŞAHİN
Assistants:

Recommended or Required Reading

Resources
Saadat, H. (2009). Power system analysis,(2nd). McGraw-Hill Higher Education.
Glover, J. D., Sarma, M. S., & Overbye, T. J. (2017). Güç sistemleri çözümlemesi ve tasarımı (S. Dinçer, Ed.; B. Ercan & H. Dağ, Çev., 5. baskıdan çeviri). Nobel Akademik

Course Category

Mathmatics and Basic Sciences	:	30	**Education**	:	
Engineering	:	50	**Science**	:	
Engineering Design	:	20	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to Power Systems. Production, Basic Concepts.		
2	Calculations of electrical quantities in single-phase and three-phase systems.		
3	Equivalent circuit models of power system components and power system single line diagram		
4	Equivalent circuit models of power system components and power system single line diagram		
5	Per unit quantities		
6	Practice - Creating single line diagrams of the power systems and sample question solutions regarding per unit calculations		
7	Bus Admittance matrices		
8	Midterm Exam		
9	Bus Impedance Matrices		
10	Bus admittance impedance matrices, node removal method, applications of thevenin and norton theorems		
11	Power flow analysis		
12	Power flow analysis		
13	Practice - sample questions for Power flow analysis		
14	Fault conditions in power systems		
15	Investigation of fault conditions in power systems		
16	Final Exam		

Recommended Optional Programme Components

TBM001-2020 Mathematics I
TBM003-2020 Linear Algebra
EEM109-2024 Fundamentals of EEE I
TBM002-2020 Mathematics II
EEM108-2024 Fundamentals of EEE II
EEM211-2024 Differential Equations
EEM201-2024 Circuit Theory

Course Learning Outcomes

No	Learning Outcomes
C01	Knows the basic concepts of power systems. Calculates related to basic electrical quantities.
C02	Knows the equivalent circuit models of power system components and creates a single line model of power systems.
C03	Performs mathematical modeling of power systems and performs simple analyses on these models.
C04	Performs basic power flow analysis
C05	Performs basic level analyses of fault conditions in power systems and produces solution suggestions.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.

P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	20	20
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	30	30
Total Work Load			**148**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	4	4	3	2	2	3	2	2	3
C01	5	4	3	3	2	2	2	3	2	2	3
C02	5	5	3	4	3	2	2	3	2	2	3
C03	5	5	4	4	3	2	2	3	2	2	3
C04	5	5	4	4	3	2	2	3	2	2	3
C05	4	4	4	3	3	2	2	3	2	2	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM356-2024	Material Science				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
6	EEM356-2024	Material Science	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To be able to choose the materials in the study area more consciously by knowing the basic issues about material knowledge.
Teaching Methods and Techniques:
Introduction to materials science. Material classification. Solid solutions, phases, compounds in metallic materials. Crystallographic structure in the material. Hardness measurement methods. Mechanical properties of materials and methods of determining these properties. Material selection according to application areas. Corrosion and its applications. Electrical conductivity. Thermal conductivity. Effect of material microstructure on electrical conductivity. Effect of material microstructure on thermal conductivity. Semiconductors. The importance of material microstructure in semiconductor. Magnetic materials and applications.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. -
Assistants:

Recommended or Required Reading

Resources	Material Information for Designer Engineers, Ahmet Çetin Can, Birsen Publishing House, 2006. Materials Science and Engineering, William F. Smith, Literatür Publishing, 2006.

Course Category

Mathmatics and Basic Sciences	:	20	**Education**	:	
Engineering	:	50	**Science**	:	
Engineering Design	:	30	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Atomic structure in atomic structure and solids, crystal geometry, conductive and insulating materials,	Review and update course notes	Lecture Notes
2	Production and structural properties of Metals, Nonmetals, Organics, Plastics, Ceramics, Polymers and Composite materials	Review and update course notes	Lecture Notes
3	Heat treatments (smelting, tempering etc.), rolling, piozoelectric, photoelectric, ferromagnetism, corrosion and oxidation, c	Review and update course notes	Lecture Notes
4	Resistance (resistivity, conductivity, self-conductivity, superwedding), coil and capacitor	Review and update course notes	Lecture Notes
5	Basic electronic materials (Diode, transistor, tristor, thermocouple, varistor etc.)	Review and update course notes	Lecture Notes
6	HV materials 1 (Overhead conductors, sleeper, cue, hanger hooks, insulators, etc.)	Review and update course notes	Lecture Notes
7	HV materials 2 (Cells, breaker, disconnector, busbars, surge arrester, poles etc.)	Review and update course notes	Lecture Notes
8	HV materials 2 (Cells, breaker, disconnector, busbars, surge arrester, poles etc.)	Review and update course notes	Lecture Notes
9	Midterm exam	Preparation of exam material	-
10	AG, HV cables 2 (Technical characteristics: strength, current carrying capacity, etc.)	Review and update course notes	Lecture Notes
11	AG, HV cables 2 (Technical characteristics: strength, current carrying capacity, etc.)	Review and update course notes	Lecture Notes
12	Lighting materials (Lamps, luminaires, switches, fiber optic, led, dimmer, luxmeter, gyanometer etc.)	Review and update course notes	Lecture Notes
13	Counters and Insurance	Review and update course notes	Lecture Notes
14	Basic Electrical Hardware Materials (Control pen, chisel, cable peeler, etc.)	Review and update course notes	Lecture Notes
15	Panel Materials (Panel sheet, switch, signal lamp etc.)	Review and update course notes	Lecture Notes
16	Final Exam	Preparation of exam material	-

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the properties of engineering materials.
C02	Selects proper material during design.
C03	Uses different prooerties of materials in practice.
C04	Proposes suggestions to solve material-related problems.
C05	Explains the importance of electrical and optical properties.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%30
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	1	%30
Final examination	1	%40
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	1	30	30
Final examination	1	12	12
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	3	3	4	4	5	3	2	2	2	2
C01	3	3	3	4	4	5	3	2	2	2	2
C02	3	3	3	4	4	5	3	2	2	2	2
C03	3	3	3	4	4	5	3	2	2	2	2
C04	3	3	3	4	4	5	3	2	2	2	2
C05	3	3	3	4	3	3	3	4	4	3	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM358-2024 Mechatronics Systems

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
6	EEM358-2024	Mechatronics Systems	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
This course aims to help students understand the fundamental concepts of mechatronic systems and develop practical skills. Students will become familiar with mechatronic systems through industrial application examples, learn about system components, and enhance their innovative and analytical thinking skills in machine and system design.
Teaching Methods and Techniques:
Definition of Mechatronics, History of Mechatronics, Mechatronics System, Application and Interests of Mechatronics, Examples of Mechatronics Systems, System Modeling and Simulation, Control Systems, Motors (AC, DC, Servo, Step), Electronic Circuit Elements, Sensors, Actuators, Mechanical and Electro- Mechanical Systems (Robots), Hydraulic and Pneumatic Systems, Automatic Control Applications
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. YAĞMUR ÖLMEZ
Assistants:

Recommended or Required Reading

Resources

Mechatronics Sourcebook, N. C. Braga, Thomson, Delmar Learning, 2003.,Mechatronics, D. Necsulescu, Prentce Hall, 2002.,Analytical Robotics and Mechatronics, W. Stad
Mekatronik, W. Bolton, Çevirmen B. Koray Tunçalp, Dahi Yayınları, 2009.
Mechatronik in Theorie und Praxis, Bosh Automation, 2. Baskı, 1999.
Mechatronik, B. Heimann, Carl Hanser Verlag, 1998.
Mechatronics System Design, Shetty D., Kolk R., PWS Publishing Co., 1997.
Maschinenelemente und Mechatronik II, Birkhofer, TU Darmstadt, 2001.
Mechatronic Systems, G. Pelz, Wiley, 2003.

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	0
Engineering	:	20	**Science**	:	0
Engineering Design	:	10	**Health**	:	0
Social Sciences	:	0	**Field**	:	60

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	What is Mechatronics? History of Mechatronics		
2	Mechatronics System, Application and Interests of Mechatronics,		
3	Mechatronic System Examples		
4	System Modeling and Simulation		
5	Control Systems		
6	Motors (AC, DC, Servo, Step)		
7	Electronic Circuit Elements		
8	Midterm exam		
9	Microprocessors		
10	actuators		
11	actuators		
12	Mechanical and Electro-mechanical Systems		
13	Hydraulic and Pneumatic Systems		
14	Automatic Control Applications		
15	General review, student presentations		
16	Final exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the basic components of mechatronic systems.
C02	Analyzes the interdisciplinary interaction in mechatronic systems. Integrates the principles of mechanical, electronic, software, and control engineering.
C03	Performs motion and force analysis of systems; develops mathematical models. Can simulate mechatronic systems and test them using virtual or physical prototypes.
C04	Designs basic control algorithms for mechatronic systems.
C05	Explains the operating principles of basic sensors and actuators and makes appropriate selections.
C06	Programs and implements microcontroller- or PLC-based control systems.
C07	Designs mechatronic systems and develops projects for real-world problems.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	1	%0
Assignment	2	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	5	70
Assignments	2	5	10
Presentation	0	0	0
Mid-terms	1	10	10
Practice	5	2	10
Laboratory	0	0	0
Project	0	0	0
Final examination	1	10	10
Total Work Load			**138**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	4	3	3	3	2	2	2	2	2
C01	5	4	3	3	3	2	2	1	2	2	2
C02	5	4	3	3	3	5	2	2	2	2	2
C03	5	5	4	3	5	4	2	2	2	2	2
C04	5	5	5	3	5	3	3	2	2	2	2
C05	5	4	5	5	3	4	2	4	2	2	2
C06	5	4	5	4	4	4	2	3	2	2	2
C07	5	5	5	5	5	5	5	3	2	3	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM304-2024	Microprocessors				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
6	EEM304-2024	Microprocessors	4	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
Introducing microprocessors and learning 8085 and 80286 architectures, gaining the ability to write programs in assembly language. Getting basic knowledge about microcontroller architecture.
Teaching Methods and Techniques:
Introduction to microprocessors. Memory organization and op-code concept. 80286 microprocessor architecture. Address path, register structure, segmented memory structure, addressing modes. Basic 80286 commands. Stack and subprograms, sequence comparison, program control commands, branching commands. Digital / analog conversion (DAC) and 80286 microprocessor software programming examples. Analog / digital conversion (ADC), Introduction to interrupts, software interrupts, hardware interrupts. Microcontroller families, PIC microcontroller hardware structure, commands applied on bytes and bits, data processing and control commands. Flash, RAM, addressing modes, bank switch concept, ports, special purpose recorders. Environmental interface concept, environmental interrupts. Timer concept, timer interrupts, counters, microcontroller programming examples.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Ali YÜCE
Assistants:

Recommended or Required Reading

Resources

Ibrahim, D. (2011). Advanced PIC microcontroller projects in C. Newnes.
Çiçek, S. (2021). PIC programming with CCS C [in Turkish]. Altaş Publishing.

Vize ve FİnaI Sınavları

Course Category

Mathmatics and Basic Sciences	:	60	**Education**	:	
Engineering	:		**Science**	:	
Engineering Design	:	40	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to microprocessors, basic concepts, microprocessor vs microcontroller		
2	Microprocessor architecture: ALU, registers, data and address buses		
3	Overview of PIC microcontrollers		
4	Architecture and features of PIC16F84		
5	Architecture and differences of PIC16F877		
6	Introduction to CCS C compiler and setup environment		
7	Basic PIC programming with C: I/O ports		
8	Midterm Exam		
9	Using Timers in C for PIC programming		
10	Interrupt structures and programming		
11	LCD, LED and 7-segment display applications		
12	Button and relay control		
13	Using ADC (Analog-to-Digital Converter) module		
14	Serial communication (USART) and communication applications		
15	Application project development, general review		
16	Final Exam		

Recommended Optional Programme Components

EEM311-2024 Digital Circuits
EEM452-2024 Internet of Things

Course Learning Outcomes

No	Learning Outcomes
C01	Gains the ability to design a system or process.
C02	Gains the ability to design experiments, conduct experiments, analyze and interpret experimental results.
C03	Gains the ability to use the techniques, methods and modern tools required for engineering applications.
C04	Gains the ability to comprehend computer and microprocessor architectures, choose the appropriate microprocessor platform, develop microprocessor software and learn by oneself.
C05	Effectively uses up-to-date technologies required for microprocessor-based system design and implementation.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	1	%20
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	5	70
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	4	4
Practice	14	2	28
Laboratory	0	0	0
Project	0	0	0
Final examination	1	6	6
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	2	2	4	3	3	3	2	4	2	2	2
C01	2	2	4	3	3	3	2	4	2	2	2
C02	2	2	4	3	3	3	2	4	2	2	2
C03	2	2	4	3	3	3	2	4	2	2	2
C04	2	2	4	3	3	3	2	4	2	2	2
C05	2	2	4	3	3	3	2	4	2	2	2

Program Learning Outcomes	
No	**Learning Outcome**
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%0
Total		**%0**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	0	0	0
Hours for off-the-c.r.stud	0	0	0
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**0**
ECTS Credit of the Course			**0**

Contribution of Learning Outcomes to Programme Outcomes



Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

PDF354-2023	Classroom Management				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
6	PDF354-2023	Classroom Management	2	2	3

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To provide knowledge, skills and competence regarding the basic concepts, models, rules and practices related to classroom management.
Teaching Methods and Techniques:
Basic concepts related to classroom management, communication and interaction within the classroom, the definition of classroom management, the aspects and characteristics of classroom management that differ from maintaining discipline in the classroom, classroom and non-classroom factors that affect the classroom environment, classroom management models, developing and implementing classroom rules, organizing the classroom physically, managing undesirable behavior in the classroom, time management in the classroom, classroom organization, creating a positive classroom environment suitable for learning (examples and suggestions).
Prerequisites and co-requisities:

Course Coordinator:
Associate Prof. Dr. Öznur ATAŞ AKDEMİR
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources Balay, R. (2017). 2000'li yıllarda sınıf yönetimi. Ankara: Pegem A Yayıncılık.,Küçükahmet, L. (2015). Sınıf Yönetimi. Pegem Yay.,Demirtaş, Z. (2017). Sınıf yönetimi. İstanb

Course Category

Mathmatics and Basic Sciences	:	**Education**	:	100
Engineering	:	**Science**	:	
Engineering Design	:	**Health**	:	
Social Sciences	:	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	The concept of management and classroom management		
2	Classroom organization		
3	Classroom environment and group communication		
4	Discipline and classroom rules		
5	Motivating students		
6	Social and psychological factors affecting students' behavior		
7	Unwanted student behaviors and approaches		
8	Mid-term Exam		
9	Time management in the classroom		
10	Conflict and its management		
11	Creating school-family collaboration		
12	Creating a positive learning environment		
13	Use of educational technology in classroom management		
14	Leadership		
15	General evaluation		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the concepts of management and classroom management.
C02	Discusses how communication will take place in the classroom.
C03	Apply time management in the classroom.
C04	Designs with students how to create classroom rules.
C05	Discusses how to create a positive learning environment.
C06	Relates instructional management and leadership.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	2	28
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	15	15
Total Work Load			**81**
ECTS Credit of the Course			**3**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	1	1	1	1	1
C02	1	1	1	1	1	1	1	1	1	1	1
C03	1	1	1	1	1	1	1	1	1	1	1
C04	1	1	1	1	1	1	1	1	1	1	1
C05	1	1	1	1	1	1	1	1	1	1	1
C06	1	1	1	1	1	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM354-2024	Statics and Strength				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
6	EEM354-2024	Statics and Strength	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To develop the ability to solve any problem in a simple and logical manner and apply a few well-understood basic principles to the solution of the problem.
Teaching Methods and Techniques:
Section Effects / Uniaxial Stress State / Bilateral and Triaxial Stress State / Shear Force / Inertia Moments of Planar Sections / Bending / Torsion / Vector Systems / Fundamental Principles of Static / Plane / Friction / Center of Mass / Structural Systems /
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Gürkan Kavuran
Assistants:

Recommended or Required Reading

Resources F.P.Beer and E.R. Johnston Jr. ; " Vector Mechanics for Engineers Statics." The Mc. Graw-Hill, Newyork. 1996,J.L.Meriam, "Static" Translators: E. Erdoğan, M. Savcı, T. To Inan, M "Strength of Objects", Prof.Dr. Mehmet H. Omurtag, "Strength (Volume 1)", Gere, J.M., Timoshenko, S.P., "Mechanics of Materials"

Course Category

Mathmatics and Basic Sciences	:	30	**Education**	:	
Engineering	:	50	**Science**	:	
Engineering Design	:	20	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Section Effects		
2	Uniaxial Stress State		
3	Biaxial Stress		
4	Triaxial Stress		
5	Inertia Moments of Planar Sections		
6	Shear Force		
7	Bending and Torsion		
8	Midterm		
9	Basic Principles of Static		
10	Plane Static		
11	Friction		
12	Center of Mass		
13	Carrier Systems		
14	Finale		

Course Learning Outcomes

No	Learning Outcomes
C01	Gains the ability to use mathematics, science and basic engineering knowledge.
C02	Learns the ability to design and perform experiments, analyze and interpret the results, use modern tools and equipment, and transfer corporate data into practice.
C03	Obtains information about force and moment balance of material point and solves related problems.
C04	Obtains information about force and moment balance of rigid body and solves related problems.
C05	Explains information about the basic aspects of statics.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%30
Quizzes	0	%0
Assignment	1	%10
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	1	30	30
Presentation	0	0	0
Mid-terms	1	15	15
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	20	20
Total Work Load			**163**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	4	4	5	5	5	3	2	2	2
C01	3	3	4	5	5	5	5	3	2	2	2
C02	3	4	4	4	4	4	5	3	2	2	2
C03	5	5	4	5	5	5	5	3	2	2	2
C04	4	4	4	4	5	4	5	3	2	2	2
C05	4	4	4	3	5	4	5	3	2	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM469-2024	Smart Grids				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
7	EEM469-2024	Smart Grids	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
Basic concepts and standards related to smart grids, network integration of renewable and distributed production, energy storage technologies, sensing, measurement, control and automation technologies in smart grids, demand side management and demand response, data management requirements for smart grids and IT technologies. and give experience.
Teaching Methods and Techniques:
Smart grid concept, differences between traditional power system and smart grids, detection and measurement technologies, demand side management and demand response, power quality management, interruption management system, renewable energy integration, micro grid, energy storage systems, communication technologies, cyber security
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Kadir DOĞANŞAHİN
Assistants:

Recommended or Required Reading

Resources
E. Kabalci, Y. Kabalci, "From Smart Grid to Internet of Energy", Elseiver Academic Press, 2019.
N. Ramesh Babu, "Smart Grid Systems: Modeling and Control", Apple Academic Press, 2019
J. A. Momoh, "Smart Grid: Fundamentals of Design and Analysis", Wiley-IEEE Press, 2012

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	50	**Science**	:	
Engineering Design	:	10	**Health**	:	
Social Sciences	:		**Field**	:	30

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Concept of Smart Grid, Basic Differences Between Traditional Grid and Smart Grids, Standards		
2	Detection and Measurement Technologies, Advanced Measurement Infrastructure		
3	Wide Area Measurement Systems, Internet of Energy		
4	Demand Side Management and Demand Response		
5	Power Quality Management Systems and Approaches		
6	Distribution Management Systems and Approaches		
7	Interruption Management Systems and Approaches		
8	Midterm Exam		
9	Distributed Production		
10	Renewable Energy Integration		
11	Micro Network		
12	Energy Storage Systems		
13	Electric Vehicles (PEV)		
14	Information Technologies (IT), Big Data in Smart Grids, Internet of Things Applications		
15	Cyber Security of Smart Grids		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	understand the concept of smart grid and know the differences between traditional power system and smart grids
C02	recognizes detection, measurement, control and automation technologies in smart networks
C03	know power quality management, interruption management, demand-side management and demand response
C04	know the network integration and energy storage technologies of renewable and distributed generation
C05	know data management requirements and cyber security issues for smart networks.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	20	20
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	20	20
Total Work Load			**138**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	4	3	4	3	2	3	3	3	3
C01	5	5	4	3	4	3	2	3	3	3	3
C02	5	5	4	4	3	3	2	3	3	3	3
C03	5	4	3	4	3	3	2	3	3	3	3
C04	5	4	3	3	4	3	2	3	3	3	3
C05	5	4	3	4	4	3	2	3	3	3	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM459-2024	Illumination Techniques and Indoor Installation				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
7	EEM459-2024	Illumination Techniques and Indoor Installation	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The aim of this course is to teach the fundamental principles and concepts of lighting technology required to design suitable, safe, and cost-effective lighting systems; to introduce the components used in interior electrical installations; and to provide the knowledge and skills necessary for reading, interpreting, and drafting interior installation plans.
Teaching Methods and Techniques:
Fundamental principles of light and vision; radiometric and photometric quantities, units, and basic photometric laws; principles of light generation and operating mechanisms of light sources; various light sources and their characteristics; auxiliary components used with light sources; structure, characteristics, and applications of lighting fixtures; components and classification of lighting systems; fundamental principles of lighting design and lighting calculations; design of appropriate and cost-effective lighting systems. Introduction to interior electrical installations; basic components and devices used in interior installations; determination of electrical loads and circuit configuration; conductor selection and cross-section calculations; voltage drop calculations; selection of protection and control devices; reading, interpreting, and drafting principles for interior electrical installation projects; preparation of interior installation projects in accordance with relevant regulations and standards; performing calculations—such as lighting, socket outlets, load analysis, conductor cross-sections, and voltage drops—within the scope of the project, and reviewing the completed project.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Kadir Doğanşahin
Assistants:

Recommended or Required Reading

Resources Doğru, A. (2006). Elektrik tesisat planları, sözleşme, keşif ve planlama. [Yayınevi bilgisi eksik, varsa eklenmeli]. Nacar, M. (2003). Elektrik şebeke ve tesisleri,Electricity In Özkaya, M. (1981). Aydınlatma tekniği. Uludağ Üniversitesi Yayınları

Course Category

Mathmatics and Basic Sciences	:	15	**Education**	:	
Engineering	:	50	**Science**	:	
Engineering Design	:	35	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to lighting, The subject and purpose of lighting		
2	Radiometric and photometric quantities		
3	Photometric laws, Solving sample problems related to photometric laws. Components of illumination, light and vision, funda		
4	Light sources: Incandescent, Metal Halide and Induction lamps		
5	Light sources: Discharge lamps - Low pressure mercury vapor lamps		
6	Light sources: Discharge lamps - high-pressure mercury vapor lamps, Sodium vapor lamps		
7	Lighting design		
8	Midterm Exam		
9	Electrical interior installation materials. Electrical accidents and precautions against them.		
10	Classification of electrical internal installation, realization of electrical internal installation of a building under construction. I		
11	Important articles of the Electricity Internal Facilities Regulation.		
12	Drawing of the electrical interior installation project of normal, ground and basement of a sample apartment.		
13	Project control: Drawing of open and single line diagrams.		
14	Project control: Drawing of strong current column diagram. Preparation of table loading ruler.		
15	Selection of fuse, selection of wire cross-section, calculation of voltage drop, voltage drop problems.		
16	Final Exam		

Recommended Optional Programme Components

EEM109-2024 Fundamentals of EEE I
TBF002-2020 General Physics II
EEM108-2024 Fundamentals of EEE II

Course Learning Outcomes

No	Learning Outcomes
C01	Explains illumination concepts, photometric quantities and photometric laws, and interprets basic light production principles.
C02	Compares the electrical and optical properties of different light sources (incandescent, metal halide, induction, mercury vapor, sodium vapor, etc.) and evaluates their application areas.
C03	He/she designs lighting and recognizes the electrical materials used in interior installation projects and makes selections in accordance with the standards.
C04	It carries out the classification of internal electrical installations, their project design and schematic drawings in accordance with the regulations.
C05	It performs critical calculations in terms of safety and efficiency in interior installation design, such as fuse, conductor cross-section, voltage drop, and develops solution suggestions.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%25
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	1	%15
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	4	56
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	20	20
Practice	0	0	0
Laboratory	0	0	0
Project	1	20	20
Final examination	1	20	20
Total Work Load			**158**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	4	4	3	3	3	3	3	3	4
C01	5	4	3	3	2	2	2	3	2	2	3
C02	5	4	4	3	3	2	2	3	2	2	3
C03	5	5	5	4	3	3	3	3	3	3	4
C04	5	5	5	4	3	3	3	3	3	3	4
C05	5	5	5	4	4	3	3	3	4	3	5

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM401-2024 Graduation Project

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
7	EEM401-2024	Graduation Project	2	1	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
To make a project work on a subject in the field of Electrical and Electronics Engineering, including the design components.
Teaching Methods and Techniques:
Determination of graduation project topics and distribution to student groups. Graduation project works; execution within the framework of determined principles. Supervision of the project work by the manager. Making explanations about project studies, experiments and laboratory rules. Preparation of the graduation project in accordance with the spelling rules. Presentation and delivery of the graduation project.
Prerequisites and co-requisities:

Course Coordinator:
Asist Prof. Dr. -
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources The relevant Instructor will recommend the necessary resources to the student of the Graduation Project.
The relevant Instructor will recommend the necessary resources to the student of the Graduation Project.

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	40	**Science**	:	
Engineering Design	:	30	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Determining the subject of the student with the advisor		
2	student working with the relevant subject		
3	student working with the relevant subject		
4	student working with the relevant subject		
5	student working with the relevant subject		
6	student working with the relevant subject		
7	student working with the relevant subject		
8	student submit interim report to the advisor		
9	student working with the relevant subject		
10	student working with the relevant subject		
11	student working with the relevant subject		
12	student working with the relevant subject		
13	student working with the relevant subject		
14	presentation of the graduation study		

Course Learning Outcomes

No	Learning Outcomes
C01	Learns the applicability of theoretical knowledge.
C02	Learns group work.
C03	Conceptually realizes Project Management and Engineering Design.
C04	Gains reporting and presentation skills.
C05	Learns resource research and literature review.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	1	%40
Project	1	%60
Final examination	0	%0
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	5	70
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	1	20	20
Laboratory	0	0	0
Project	1	20	20
Final examination	2	4	8
Total Work Load			**160**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	5	5	5	5	5	5	5	5	5
C01	5	5	5	5	5	5	5	5	5	5	5
C02	5	5	5	5	5	5	5	5	5	5	5
C03	5	5	5	5	5	5	5	5	5	5	5
C04	5	5	5	5	5	5	5	5	5	5	5
C05	5	5	5	5	5	5	5	5	5	5	5

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM455-2024 Nonlinear Control Systems

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
7	EEM455-2024	Nonlinear Control Systems	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To have the mathematical background to recognize the nonlinear system features, to analyze them mathematically and to design nonlinear control systems.
Teaching Methods and Techniques:
Linear and nonlinear systems, Second order systems, Periodic orbits and Limit cycles, Poincare-Bendixon theorem, Lyapunov stability analysis, Input-Output stability, Passivity, Small gain theorem.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Deniz KORKMAZ
Assistants:

Recommended or Required Reading

Resources
Slotine and Li, Applied Nonlinear Control, Prentice-Hall 1991
H.K. Khalil,"Nonlinear Systems", Prentice Hall Inc., 1996, NJ
Vidyasagar, Nonlinear System Analysis, Prentice Hall, 1993, 2nd Edition
Ders Kitabı, Ders Notları, Ödevler
Ders Notları ve Ders Kitabı
Ara ve Final Sınavı

Course Category

Mathmatics and Basic Sciences	:	20	**Education**	:	
Engineering	:	40	**Science**	:	
Engineering Design	:	40	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to Nonlinear Control Systems		
2	Second Degree Systems		
3	Second Degree Systems		
4	Mathematical Preliminary		
5	Stability of Autonomous Systems		
6	Stability of Autonomous Systems		
7	Linear Systems, Linearization and Comparison Functions		
8	Mıdterm		
9	Linear Systems, Linearization and Comparison Functions		
10	Stability of Non-Autonomous Systems		
11	Linear Time-Changing Systems and Linearization		
12	Absolute Boundness and Input-State Stability		
13	Input-Output Stability		
14	Passivity		
15	Finale		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the fundamental concepts, behavioral characteristics, and differences of nonlinear systems compared to linear ones.
C02	Constructs mathematical models of nonlinear dynamic systems and represents them in state-space form.
C03	Evaluates system stability using Lyapunov stability theory and phase-plane analysis.
C04	Understands the applications of input-output stability and nonlinear systems in stability problems.
C05	Understands the concept of passivity and its relation with determination.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	2	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	13	3	39
Hours for off-the-c.r.stud	13	2	26
Assignments	8	6	48
Presentation	0	0	0
Mid-terms	2	12	24
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	20	20
Total Work Load			**157**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	4	5	3	3	2	2	2	2	2
C01	5	4	4	5	3	3	2	2	2	2	2
C02	4	5	4	5	3	3	2	2	2	2	2
C03	4	4	4	5	3	3	2	2	2	2	2
C04	4	4	4	5	3	3	2	2	2	2	2
C05	4	4	4	5	3	3	2	2	2	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM451-2024	Industrial Electronics				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
7	EEM451-2024	Industrial Electronics	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The primary aim of this course is to give basic information about building blocks in industrial electronics, to guide students in this field and to open new horizons to the student.
Teaching Methods and Techniques:
Linear and Nonlinear Op-amp circuits, voltage regulators, sensors
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Ali YÜCE
Assistants:

Recommended or Required Reading

Resources

Rashid, M. H. (1993). Power electronics: Circuits, devices, and applications (2nd ed.). Prentice Hall.,Kissel, T. E. (2003). Industrial electronics. Prentice Hall.,Simpson, C. D Kuntman, H. (1998). Industrial electronics (3rd ed.) [in Turkish]. Birsen Publishing.

Vize ve Final Sınavları

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:	50	**Science**	:	
Engineering Design	:	50	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to Industrial Electronics		
2	Linear opamp applications		
3	Linear opamp applications		
4	Nonlinear opamp applications		
5	Nonlinear opamp applications		
6	AC-DC converters		
7	Mixers, schmitt trigger		
8	Midterm Exam		
9	Semiconductor power switches		
10	Transistor circuits		
11	Transistor circuits		
12	Circuits with FET		
13	Circuits with MOSFET		
14	sensors		
15	Circuits with 555		
16	Final Exam		

Recommended Optional Programme Components

EEM457-2024 Industrial Robotics
EEM462-2024 Electric Drive Systems

Course Learning Outcomes

No	Learning Outcomes
C01	Performs opamp amplifier design.
C02	Makes industrial circuit design.
C03	Explains information about industrial electronics.
C04	Students use the acquired electronic background in industrial systems.
C05	Students explain and design the operation of commonly used circuits in industrial electronics.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	7	98
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	4	4
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	6	6
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	3	4	4	4	3	2	2	2	3	2
C01	3	3	4	4	4	3	2	2	2	3	2
C02	3	3	4	4	4	3	2	2	3	3	2
C03	4	4	3	3	3	2	3	4	3	2	4
C04	5	5	5	5	4	3	2	4	3	3	3
C05	5	5	5	4	4	3	2	4	3	3	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM471-2024	Industrial Control Systems				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
7	EEM471-2024	Industrial Control Systems	4	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
Creating and Operating Classic Control Circuits and Providing Drawing and Reading of Their Schematics
Teaching Methods and Techniques:
Basic Concepts of Control Technique; Elements Used in Control Circuits; First Motion Systems in Engines; Rotational Methods of Engines; starting Methods of Engines; Braking Methods of Engines; Changing the Number of Poles; Control in Elevators; Control Scheme Examples
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources
Control Circuits (2), Yavuz TÜRKMEN, Ceyhan GEÇTAN, 1992.
Control Circuits (1), Yavuz TÜRKMEN, Ceyhan GEÇTAN, 1992

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:	60	**Science**	:	
Engineering Design	:	40	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Industry overview, the importance of electric motors in industry		
2	Elements used in electrical control circuits and their properties.		
3	Packet switches, buttons, signal lights, switches and limit switches.		
4	Time relays, contactors and relays.		
5	Motor Protection relays and fuses.		
6	Norms used in control circuits.		
7	Electrical control project and material selection		
8	Midterm Exam		
9	Current path diagrams and power circuits.		
10	Current path diagrams and power circuits.		
11	Starting methods of asynchronous motors.		
12	Braking in engines.		
13	Lighting and motor compensation.		
14	Automatic control systems created by using different control elements.		
15	Reactive power compensation.		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Recognizes the control elements and assembles them.
C02	Knows and applies the methods of starting the motors
C03	Designs and applies the control circuit for solving control problems.
C04	The introduction of the protection elements used in the protection of electrical installations and electric motors, the selection criteria of these elements and their use in the project.
C05	Reads, draws and applies the automation projects made with electric motors.
C06	Performs basic automation applications using PLC (Programmable Logic Controller).

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	5	%20
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	20	20
Practice	14	2	28
Laboratory	0	0	0
Project	0	0	0
Final examination	1	20	20
Total Work Load			**138**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	3	3	3	3	2	2	2	2	2
C01	4	4	3	3	3	3	2	2	2	2	2
C02	4	4	3	3	3	3	2	2	2	2	2
C03	4	4	3	3	3	3	2	2	2	2	2
C04	4	4	4	4	3	3	3	2	1	1	1
C05	4	4	4	5	4	4	3	2	2	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM457-2024 Industrial Robotics

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
7	EEM457-2024	Industrial Robotics	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
In this course, it is aimed to gain qualifications of Industrial robot programming and maintenance.
Teaching Methods and Techniques:
Robots Robot Components Robot Components Programming Commands Robot and Software Communication Robot and Software Communication 3D Simulation Software Robot and Software Communication Robot Arm Structure Serial Communication Circuits with Microcontroller Removal and Installation of Robot Path Covers Recording Origin Data Saving Origin Data
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources Fundementals of Robotics, R.J.SCHILLING, Prentice Hall, 1990
Robot Analysis and control, H. ASADA and J.J.E.SLOTINE, Wiley-Interscience, 1986.

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	60	**Science**	:	
Engineering Design	:	30	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Definition of Robots, Classification, Robot Characteristics		
2	Kinematics of Robots		
3	Rotational Movement, Homogeneous Transformations		
4	Inverse Kinematic Transformations		
5	Workspace Analysis and Orbital Planning		
6	Differential Motion and Static of Robots		
7	Manipulator Dynamics and Lagrange Equations		
8	MIDTERM		
9	Manipulator Dynamics and Lagrange Equations		
10	Control of Robots		
11	Uniaxial PID Control		
12	Calculated Torque Control		
13	Variable Structure Control		
14	Robot Programming Methods		
15	Robot Programming Languages and Special Topics		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Learns Robot Parts and Program Commands.
C02	Performs Code Writing.
C03	Performs the disassembly and assembly of Robot Parts.
C04	Provides Motion Control.
C05	The student takes part in and leads multidisciplinary teams in engineering and business fields.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	1	%20
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	1	7	7
Mid-terms	1	15	15
Practice	0	0	0
Laboratory	0	0	0
Project	1	15	15
Final examination	1	15	15
Total Work Load			**136**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	4	3	3	3	3	2	2	2	2	2
C01	5	4	3	3	3	3	2	2	2	2	2
C02	5	4	3	3	3	3	2	2	2	2	2
C03	5	4	3	3	3	3	2	2	2	2	2
C04	5	4	3	3	3	3	2	2	2	2	2

Program Learning Outcomes	
No	**Learning Outcome**
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%0
Total		**%0**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	0	0	0
Hours for off-the-c.r.stud	0	0	0
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**0**
ECTS Credit of the Course			**0**

Contribution of Learning Outcomes to Programme Outcomes



Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM467-2024	Image Processing Techniques				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
7	EEM467-2024	Image Processing Techniques	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
It is aimed to teach the basic image processing functions in computer vision, to use hardware information and skills to analyze the main application areas such as image analysis, image correction and improvement, extraction of features, image compression, accompanied by practical applications.
Teaching Methods and Techniques:
Image Production Mechanisms and Standards; 2D, 3D image production, digital image formats; Geometric relations between the image and the World platform; Image Analysis: Prefunctions, spatial filters; First-Second degree derivative based edge detection operators and applications; Image Segmentation; Thresholding-Edge-Zone based methods; Discrete transforms (Fourier, Cosine, Walsh-Hadamard, Wavelet transforms) and applications in image processing; Model-based object detection with Hough transform; Mathematical Morphology; Production and analysis of property parameters of objects in two-level images; Pattern classification and recognition; Improving image quality; Image restoration, Spatial and spectral filtering techniques; Geometric transformations; Lossless compression methods in image data compression; Lossy image data compression methods, JPEG, MPEG, H. 263 image compression principles.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Yağmur ÖLMEZ
Assistants:

Recommended or Required Reading

Resources	Milan Sonka, Vaclav Hlavac, Roger Boyle. 1999; Image Processing, Analysis, and Machine Vision, Second Edition, PWS Puıblishing,,Rafael C. Gonzales, Richard E. Woods. Scott E. Umbaugh, 2005; Computer Imaging: Digital Image Analysis and Processing, A CRC Press Book, Taylor and Francis Group

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	10	**Science**	:	
Engineering Design	:	80	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Image Production Mechanisms and Standards; 2-Dimensional, 3-Dimensional image production, digital image formats,		
2	Geometric relations between the image and the World platform		
3	Image Analysis: Prefunctions, spatial filters		
4	First-Second degree derivative based edge detection operators and applications		
5	Image Segmentation; Thresholding-Edge-Zone based methods		
6	Discrete transforms in image processing (Fourier, Cosine, Walsh-Hadamard, Wavelet transforms) and their applications		
7	Model-based object detection with Hough transform		
8	Mathematical Morphology		
9	Midterm		
10	Generation and analysis of property parameters of objects in two-level images.		
11	Pattern classification and recognition,		
12	Improving image quality		
13	Image restoration, Spatial and spectral filtering techniques; Geometric transformations		
14	Lossless compression methods in image data compression		
15	General review		
16	Final exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Gain skills in basic algorithm functions commonly used in image processing.
C02	Understands system design and algorithm development function and organization in image-based applications.
C03	gain the ability to apply learned functions and approaches to real life and interdisciplinary studies.
C04	gains lossy or lossless data reduction skills in image and video data.
C05	Learns the concepts of video and audio formats, MPEG, Avi, 2D, 3D, Dolby surround.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	2	%20
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	2	%20
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	2	1	2
Practice	0	0	0
Laboratory	0	0	0
Project	2	25	50
Final examination	2	1	2
Total Work Load			**138**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	2	4	3	5	5	3	3	2	2	2	2
C01	2	4	3	5	5	3	3	2	2	2	2
C02	2	4	3	5	5	3	3	2	2	2	2
C03	2		3	5	5	3	3	2	2	2	2
C04	2	4	3	5	5	3	3	2	2	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

PDF452-2023	Teaching Practice				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
7	PDF452-2023	Teaching Practice	9	5	10

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The aim of this course is to enable prospective teachers to make observations in the school environment, to provide the opportunity to compare theory and practice, to look at the teaching environment with a critical eye, and to increase awareness of the education system and the field through various practices.
Teaching Methods and Techniques:
Making observations on field-specific teaching methods and techniques; conducting individual and group micro-teaching practices using field-specific teaching methods and techniques; developing field-specific activities and materials; preparing teaching environments, managing the classroom, measuring, evaluating and reflecting.
Prerequisites and co-requisities:

Course Coordinator:
Associate Prof. Dr. Öznur ATAŞ AKDEMİR
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources Öğretmen Adaylarının Milli Eğitim Bakanlığına Bağlı Eğitim Öğretim Kurumlarında Yapacakları Öğretmenlik Uygulamasına İlişkin Yönerge.,Selcuk, Z. (2000) Okul Deneyimi

Course Category

Mathmatics and Basic Sciences	:	**Education**	:	100
Engineering	:	**Science**	:	
Engineering Design	:	**Health**	:	
Social Sciences	:	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Sharing the term plan to be implemented throughout the term		
2	Observation of Teachers' Professional and Institutional Duties in School		
3	Review of the Curriculum and Annual Plan		
4	Planning the Lesson, Selecting and Sequencing Activities		
5	Teaching Methods and Techniques		
6	Use of technology. Selecting materials and organizing activities.		
7	Management of the Learning Process. Classroom Communication and Interaction		
8	Mid-term Exam		
9	Questioning Techniques		
10	Observation of Studies on Knowledge and Skill-Based Achievements		
11	Preparation and presentation of a lesson plan		
12	Preparation and presentation of a lesson plan		
13	Preparation and presentation of a lesson plan		
14	Preparation and presentation of a lesson plan		
15	Evaluation of Teaching Practice Studies		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the activities of students and teachers at school throughout the day
C02	Learns and applies the school's functioning and rules to be followed at school.
C03	Observes and applies real applications in the classroom environment.
C04	Evaluates, adapts and applies course materials.
C05	Observes and uses classroom management, motivation, and feedback methods.
C06	Evaluates observations and experiences from a critical and reflective perspective.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	1	14
Hours for off-the-c.r.stud	14	3	42
Assignments	14	3	42
Presentation	14	4	56
Mid-terms	1	15	15
Practice	12	8	96
Laboratory	0	0	0
Project	0	0	0
Final examination	1	20	20
Total Work Load			**285**
ECTS Credit of the Course			**10**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	1	1	1	1	1
C02	1	1	1	1	1	1	1	1	1	1	1
C03	1	1	1	1	1	1	1	1	1	1	1
C04	1	1	1	1	1	1	1	1	1	1	1
C05	1	1	1	1	1	1	1	1	1	1	1
C06	1	1	1	1	1	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

PDF451-2023	Guidance and Special Education				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
7	PDF451-2023	Guidance and Special Education	3	3	4

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The aim of this course is to provide teacher candidates with information about guidance and special education activities carried out in schools and to learn the basic principles, concepts and practices of guidance and special education.
Teaching Methods and Techniques:
The place of guidance services in education; a brief history of guidance; models and approaches related to guidance; the philosophy, purpose, principles and program of the developmental guidance model (comprehensive developmental guidance program); types of guidance (educational, vocational and personal guidance); the role and function of the teacher in classroom guidance; basic concepts related to special education; principles and historical development of special education; legal regulations related to special education; screening, orientation, diagnosis and evaluation in special education; individualization of instruction; inclusion and support special education services; family participation and collaboration in special education; ethical principles in guidance and special education.
Prerequisites and co-requisities:

Course Coordinator:
Associate Prof. Dr. Öznur ATAŞ AKDEMİR
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources Kuzgun, Y. (2019). Rehberlik ve Psikolojik Danışma. Nobel Yayıncılık.,Ataman, A. (2020). Özel Gereksinimli Çocuklar ve Özel Eğitim. ,MEB Rehberlik ve Araştırma Merkezi Y

Course Category

Mathmatics and Basic Sciences	:	**Education**	:	100
Engineering	:	**Science**	:	
Engineering Design	:	**Health**	:	
Social Sciences	:	**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Basic concepts related to lesson		
2	Psychological counseling and guidance: Basic concepts, principles and history		
3	Main service types in guidance and psychological counseling: Types of guidance according to the field in which the service		
4	Types of guidance according to problem area, types of guidance according to education level		
5	Guidance services in schools		
6	Guidance services in education		
7	Educational guidance		
8	Mid-term Exam		
9	Personal guidance		
10	Vocational guidance and counseling		
11	Recognizing the individual and techniques for recognizing the individual		
12	The aims and principles of special education		
13	Special Education Schools and Institutions		
14	Individualized Education Program (IEP)		
15	Inclusive education		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Understands the basic concepts, principles and history of psychological counseling and guidance
C02	Knows the main types of services in guidance and psychological counseling
C03	Understands guidance services in education.
C04	Knows the techniques of recognizing individuals and identifying individuals.
C05	Knows the aims, principles and basic concepts of special education.
C06	Have knowledge about Individualized Education Program and inclusive education.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	15	15
Total Work Load			**109**
ECTS Credit of the Course			**4**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	1	1	1	1	1	1	1	1	1	1	1
C01	1	1	1	1	1	1	1	1	1	1	1
C02	1	1	1	1	1	1	1	1	1	1	1
C03	1	1	1	1	1	1	1	1	1	1	1
C04	1	1	1	1	1	1	1	1	1	1	1
C05	1	1	1	1	1	1	1	1	1	1	1
C06	1	1	1	1	1	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM463-2024	Digital Control				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
7	EEM463-2024	Digital Control	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To teach the fundamental characteristics of digital control systems and to provide the ability to design digital controllers for these systems.
Teaching Methods and Techniques:
Continuous and discrete time control systems. Conversion of continuous-time systems to discrete-time systems. Pulse transfer function (PTF). Starred Laplace transform. Transformation from s-plane to z-plane. Stability of discrete time systems. Temporary and steady state responses and performances of discrete time systems. Discrete-time controller design with root-locus curves. Frequency response of discrete time systems. Discrete-time controller design with Bode diagram. Time-optimal controller design of discrete time systems by analytical method. State space model of discrete time systems. State feedback controller design for discrete time systems.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Ali YÜCE
Assistants:

Recommended or Required Reading

Resources

Franklin, G. F., Powell, J. D., & Workman, M. L. (1998). Digital control of dynamic systems (3rd ed.). Addison-Wesley.
Ogata, K. (1995). Discrete-time control systems (2nd ed.). Prentice Hall.

Vize ve Final Sınavları

Course Category

Mathmatics and Basic Sciences	:	40	**Education**	:	
Engineering	:	40	**Science**	:	
Engineering Design	:	20	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Continuous and discrete time control systems.		
2	Conversion of continuous-time systems to discrete-time systems.		
3	Pulse transfer function (PTF) concept and applications.		
4	Starred Laplace Transform		
5	Transformation from s-plane to z-plane		
6	Stability of discrete time systems.		
7	Temporary and steady state responses and performances of discrete time systems		
8	Midterm Exam		
9	Root Location Curve analysis in discrete time systems.		
10	Discrete-time controller design with root-locus curves		
11	Frequency response of discrete time systems		
12	Discrete time controller design with Bode diagram		
13	Time-optimal controller design of discrete time systems by analytical method.		
14	State space model of discrete time systems		
15	State feedback controller design for discrete time systems.		
16	Final Exam		

Recommended Optional Programme Components

EEM309-2024 Automatic Control Systems

Course Learning Outcomes

No	Learning Outcomes
C01	Performs the analysis of numerical control systems.
C02	Performs the digital controller design.
C03	Performs root locus analysis in discrete time systems.
C04	Performs state space model of discrete-time systems.
C05	Designs state feedback controllers for discrete time systems.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	7	98
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	4	4
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	6	6
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	4	3	3	3	3	2	3	2	2	2
C01	3	4	3	3	3	3	2	3	2	2	2
C02	3	4	4	3	3	3	2	3	2	2	2
C03	4	4	3	3	2	2	2	3	2	1	2
C04	4	4	3	3	3	2	2	3	2	2	2
C05	4	4	4	4	3	2	2	3	2	2	2

Program Learning Outcomes	
No	**Learning Outcome**
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%0
Total		**%0**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	0	0	0
Hours for off-the-c.r.stud	0	0	0
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**0**
ECTS Credit of the Course			**0**

Contribution of Learning Outcomes to Programme Outcomes



Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM453-2024	Introduction to Artificial Intelligence				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
7	EEM453-2024	Introduction to Artificial Intelligence	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The aim of the course is to provide students with knowledge about basic techniques and methods in artificial intelligence and to enable students to use artificial intelligence methods in solving practical problems.
Teaching Methods and Techniques:
Basic concepts and methods of artificial intelligence. Problem solving using artificial intelligence; search methods using and not using problem information. Local search methods and simulated annealing algorithm. Meta-heuristic algorithms. Introduction to artificial neural networks. Game Problems. Prolog programming language, information representation and logical inference ..
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. -
Assistants:

Recommended or Required Reading

Resources	Artificial Intelligence: A Modern Approach. Stuart Russell, Peter Norvig, Prentice Hall, Second Edition Artificial Intelligence: A Modern Approach. Stuart Russell, Peter Norvig, Prentice Hall, Second Edition Ders Kitabı, Ders Notları, Ödevler Ders Notları ve Ders Kitabı Ara ve Final Sınavı

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	: 30	**Science**	:
Engineering Design	: 30	**Health**	:
Social Sciences	:	**Field**	: 40

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to Artificial Intelligence and Its History		
2	Applications of Artificial Intelligence and Fundamental Concepts		
3	Blind Search Algorithms		
4	Intuitive Search Algorithms		
5	Local Search Algorithms		
6	Data Structures and Analysis		
7	Image Processing and Computer Vision		
8	Fundamentals of Artificial Neural Networks		
9	Multilayer Perceptrons (MLP)		
10	Backpropagation Algorithm		
11	Optimization Methods		
12	Deep Learning Architectures		
13	Deep Learning Applications		
14	Applications and Project Presentations		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the basic concepts and historical development of artificial intelligence.
C02	Identifies problems that can be solved using artificial intelligence methods.
C03	Analyzes search algorithms and selects the appropriate strategy.
C04	Performs data analysis for machine learning and deep learning techniques.
C05	Describes the methods used in artificial intelligence and solves the given problem using the appropriate AI method.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	5	70
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	15	15
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	15	15
Total Work Load			**142**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	5	4	4	1	1	1	1	1	1
C01	5	5	5	4	4	1	1	1	1	1	1
C02	5	5	4	4	4	1	1	1	1	1	1
C04	5	4	5	4	5	1	1	1	1	1	1
C05	4	5	5	4	4	1	1	1	1	1	1

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM465-2024	Renewable Energy Systems				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
7	EEM465-2024	Renewable Energy Systems	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The aim of this course is to give students information about renewable energy sources and related conversion systems with an emphasis on renewable energy concept and usage.
Teaching Methods and Techniques:
The basic equations of energy. Energy sources and global and national distribution and use. Properties of renewable energy sources. Wind energy: Wind characteristics, wind energy potential, wind power. Hydroelectric energy, sources, potential and applications. General features of horizontal and vertical axis wind turbines. Offshore wind power plants. Solar energy, potential and transforming systems. Geothermal energy. Marine energy sources: Wave energy converters, current (tidal) energy converters. Other renewable energy sources. feasibility and current applications of renewable energy systems in Turkey.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Kadir DOĞANŞAHİN
Assistants:

Recommended or Required Reading

Resources	Tester, E., 2012. Sustainable Energy, Choosing among Options, 2nd Ed., MIT Press. Boyle, G., 2012. Renewable Energy, 3rd Ed. Oxford University Press

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	: 60	**Science**	:
Engineering Design	: 20	**Health**	:
Social Sciences	:	**Field**	: 20

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction, Importance of Renewable Energy Resources, Basic Definitions		
2	Properties of Renewable Energy Resources, Global and National Status in Renewable Energy		
3	Wind: Properties and Power Potential as an Energy Source		
4	Wind Energy Conversion Systems and Applications		
5	Offshore Wind Power Plants		
6	Solar Energy, Potential and Conversion Systems		
7	Hydroelectric Energy, Resources and Potential		
8	Midterm		
9	Hydroelectric Power Plants		
10	Hydroelectric Power Plants		
11	Geothermal energy		
12	Biomass and its use		
13	Hydrogen as a Renewable Energy Source		
14	Feasibility in Renewable Energy Systems		
15	Environmental Effects of Renewable Energy Systems		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	He/she knows renewable energy sources and is knowledgeable about their current status and technologies.
C02	Knows wind energy, potential and conversion systems.
C03	Knows solar energy, potential and transformation systems.
C05	Knows the potential of hydroelectric power plants and their transformation systems.
C07	Knows the environmental effects of renewable energy conversion systems.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%30
Quizzes	0	%0
Assignment	4	%10
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	4	10	40
Presentation	1	2	2
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**140**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	4	5	5	3	2	3	2	3	2
C01	4	4	4	5	5	3	2	3	2	3	2
C02	4	4	4	5	5	3	2	3	2	3	2
C03	4	5	3	5	4	3	2	3	2	3	2
C05	4	5	3	5	4	3	2	3	2	3	2
C07	4	4	4	5	4	3	2	3	2	3	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM461-2024 High Voltage Techniques

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
7	EEM461-2024	High Voltage Techniques	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To reinforce the basic electric field knowledge learned in the Electromagnetic Fields course with engineering applications in high voltage systems. To be able to design insulating systems in high voltage applied electrode structures. To learn the importance of high voltage tests and to produce high alternative, high accurate and high impact voltages for tests. To examine the occurrence, properties and effects of overvoltages and to learn the precautions against them.
Teaching Methods and Techniques:
Electrostatic fields: basic electrode systems, approximate calculation of maximum electric field intensity, multilayer electrode systems, numerical methods for electrostatic field calculation. Introduction to discharge events: gas discharge events (Townsend and channel theories; corona, lightning and superficial discharges); discharge events in solid and liquid insulators.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Kadir DOĞANŞAHİN
Assistants:

Recommended or Required Reading

Resources
High Voltage Engineering Fundamentals, J. KUFFEL and W. S. ZAENGL, Elsevier Science & Technology Books
High Voltage Technique I-II, Prof. Dr. Muzaffer ÖZKAYA, ITU Publications, 1996.
High Voltage Technique with Solved Problems, Vol-I, Özcan KALENDERLİ, Celal KOCATEPE, Oktay ARIKAN, Birsen Publishing, 2005.
Introduction to High Voltage Discharge Technique, Dieter KIND, Translator: Prof. Dr. Ahmet RUMELİ, METU.
Basics of High Voltage Technique, Prof. Dr. Sefa AKPINAR, KTÜ Printing House.

Course Category

Mathmatics and Basic Sciences	:	35	**Education**	:	
Engineering	:	50	**Science**	:	
Engineering Design	:	15	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Fundamental concepts of high voltage, High Voltage usage and types		
2	Generation of high direct voltage		
3	Generation of high alternative voltage		
4	Pulse generators		
5	Measuring high voltage - Direct measuring of high voltage		
6	Measuring high voltage from low voltage		
7	Dielectric materials and dielectric material strengths		
8	Midterm Exam		
9	Tek tabakalı elektrot sistemleri		
10	Electrical discharge phenomena and corona discharge		
11	Internal overvoltages		
12	External overvoltages		
13	Traveling waves		
14	Extra voltage protection components		
15	Isolation coordination		
16	Final Exam		

Recommended Optional Programme Components

EEM302-2024 Power Systems
EEM306-2024 Power Electronics
EEM207-2024 Electromagnetic Field Theory
TBM001-2020 Mathematics I
TBM002-2020 Mathematics II

Course Learning Outcomes

No	Learning Outcomes
C01	Comprehends the fact that isolation is a problem in high voltage electric fields and the solution.
C02	Gains the ability to control high voltage harmlessly.
C03	Understands the importance and working properties of high voltage protection devices.
C04	Performs electric field puncture analysis.
C05	Knows the methods of obtaining high voltage.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	20	20
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	30	30
Total Work Load			**148**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	4	3	3	2	3	3	4	2	4
C01	5	4	3	3	3	2	2	3	4	2	4
C02	4	4	4	4	3	3	3	3	5	3	5
C03	4	4	4	3	3	3	2	2	5	3	4
C04	5	5	4	4	4	2	4	3	3	2	3
C05	4	3	4	3	3	2	2	3	3	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM464-2024	Biomedical Data Processing				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM464-2024	Biomedical Data Processing	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
In this course, it is aimed to inform the student about the formation, characteristic features and processing methods of biological signals.
Teaching Methods and Techniques:
Electrical activity of biological structures, Action potential, evoked potentials, Biomedical signal samples; EOG (electroOculogram), ERG (electroretinogram), EMG (electromygrm), PCG (phonocardg), BPS (Blood Pressure Signals), MEG (Magneto Encephalography), MCG (Magneto Cardiography), EEG (electrophenologram), ECG (electrocardiogram) signals, frequency, frequency-time properties, Active noise suppression methods, Adaptive filters, Wiener filtering, Stochastic signal modeling methods for EEG signals, AR, ARMA models, Wavelet analysis for ECG signals, and infarction diagnosis. Epilepsy diagnosis with Wavelet and frequency analysis for EEG signals. Statistical and linear discrimination functions in the classification of biomedical signals. Deterministic, Stochastic and Chaotic signals, chaotic properties of biomedical signals. Fundamentals of chaos in cardiovascular activity, chaotic structure of ECG signals. Phase-space, Lyapunov exponentials and computational methods for biomedical signals. Analysis of chaotic structure in ECG and EEG signals with Lyapunov exponents. Lyapunov size and fractal size calculation for chaotic biomedical signals.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Yağmur ÖLMEZ
Assistants:

Recommended or Required Reading

Resources

M. Akay, Biomedical Signal Processing, Academic Press, 1994.
Arnon Cohen, Biomedical Signal Processing, CRC Press., 2002.
Rangaraj M. Rangayyan, Metin Akay (Editor), Biomedical Signal Analysis : A case study approach, John Wiley
Suresh R. Devasahayam, Signals and Systems in Biomedical Engineering: Signal Processing and Physiological Systems Modelling, Plenum Pub. Kluwer Academic, 2000

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	30	**Science**	:	
Engineering Design	:	10	**Health**	:	10
Social Sciences	:		**Field**	:	40

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Electrical activity of biological structures, Action potential, evoked potentials.		
2	Examples of biomedical signals; EOG (electroOculogram), ERG (electroretinogram), EMG (electromygrm), PCG (phonocardg		
3	EEG (electrophenologram), ECG (electrocardiogram) signals, frequency, frequency-time properties.		
4	Active noise suppression methods, Adaptive filters, Wiener filtering.		
5	Stochastic signal modeling methods for EEG signals, AR, ARMA models.		
6	Infarction diagnosis with Wavelet analysis for ECG signals.		
7	Epilepsy diagnosis with Wavelet and frequency analysis for EEG signals.		
8	Mıdterm		
9	Statistical and linear discrimination functions in the classification of biomedical signals.		
10	Deterministic, Stochastic and Chaotic signals, chaotic properties of biomedical signals.		
11	Foundations of chaos in cardiovascular activity, chaotic structure of ECG signals.		
12	Phase-space, Lyapunov exponentials and computational methods for biomedical signals.		
13	Analysis of chaotic structure in ECG and EEG signals with Lyapunov exponents.		
14	Lyapunov size and fractal size calculation for chaotic biomedical signals.		
15	General review, student presentations		
16	Final exam		

Course Learning Outcomes

No	Learning Outcomes
C01	gains the ability to acquire current and sufficient knowledge on Biomedical, identify, identify, formulate and solve complex Biomedical signal processing problems.
C02	gains the ability to design a complex system of biomedical signal processing to meet certain requirements under realistic constraints and conditions and to apply modern design methods.
C03	gains the ability to select and apply appropriate analysis and modeling methods in biomedical signal processing.
C04	applies theoretical and applied knowledge in Biomedical signal processing to modeling and solving engineering problems.
C05	Gain both mathematical and analytical and scientific writing skills by giving various midterm assignments and creating publications on these subjects.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%30
Quizzes	0	%0
Assignment	3	%10
Attendance	0	%0
Practice	0	%0
Project	1	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	5	70
Assignments	0	0	0
Presentation	1	10	10
Mid-terms	1	2	2
Practice	5	3	15
Laboratory	0	0	0
Project	1	20	20
Final examination	1	2	2
Total Work Load			**161**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	5	5	4	4	4	2	2	2	2	2
C01	4	5	5	3	4	4	2	2	2	2	2
C02	4	5	5	5	3	4	2	2	2	2	2
C03	4	5	5	4	4	4	2	2	2	2	2
C04	4	5	5	4	3	4	2	2	2	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM466-2024	Electric Power Transmission and Distribution				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM466-2024	Electric Power Transmission and Distribution	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
On the 1/1000 scale zoning plan, to learn the drawing principles of the LV distribution project and to draw the distribution project, to make all calculations related to the project, to select the pole types, to learn the basic information about the OG project drawing.
Teaching Methods and Techniques:
Drawing principles for LV distribution project that feeds a region of distributed loads with two distribution transformers. Provision of 1/1000 scale development plan. Lighting properties in roads, corners and junctions. Insertion principles of transformers. Detection of mast locations. Example LV energy distribution project calculation and drawing: Calculation of pole power, moment and cross section calculation and determination of line arrangements, cross section control according to heating and voltage drop, lighting voltage drop calculation, transformer power calculation, single line diagram, LV pole calculation and selection, traverse types and selection. Study, plan and profile of MV energy transmission lines. OG project drawing principles. 3 AWG conductor type projects.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Kadir DOĞANŞAHİN
Assistants:

Recommended or Required Reading

Resources

Electric Strong Current Facilities Regulation.,Guide to Electrical Power Distribution Systems, Anthony J. Pansini, 2005., Electric Power Distribution Reliability, Richard E. Bro
High Voltage Energy Transmission Lines Project, Atilla YUNUSOĞLU, 2004
Electric Energy Distribution, Nusret ALPERÖZ, 1987.
Technical Compilation for Engineers and Contractors, Bilal AYTEN, 1991.
Electric Networks and Facilities, Mahmut NACAR, 2003.

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	: 50	**Science**	:
Engineering Design	: 50	**Health**	:
Social Sciences	:	**Field**	:

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Drawing principles for the LV distribution project that feeds a region of distributed loads with two distribution transformers.		
2	Lighting properties in roads, corners and junctions.		
3	Insertion principles of transformers.		
4	Detection of mast locations and transformers.		
5	Example LV energy distribution project calculation and drawing.		
6	Calculation of mast forces.		
7	Moment and cross section calculation and determination of line arrangements.		
8	Midterm Exam		
9	Cross section control according to heating and voltage drop, lighting voltage drop calculation.		
10	Transformer power calculation.		
11	Single line scheme.		
12	LV direct calculation and selection, traverse types and selection.		
13	Route study, plan and profile of MV energy transmission lines.		
14	MV project drawing principles.		
15	3 AWG conductor type projects.		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Knowsthe principles of energy distribution in LV and MV.
C02	Design LV distribution project.
C03	Uses basic engineering and materials knowledge.
C04	It determines the nominal cross section of a distribution line according to the criteria specified in the technical specification.
C05	Calculates three-phase balanced short-circuit currents and powers using the relative impedance method.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	1	%20
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	4	56
Hours for off-the-c.r.stud	14	4	56
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	30	30
Practice	1	6	6
Laboratory	0	0	0
Project	1	3	3
Final examination	1	2	2
Total Work Load			**153**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	4	5	4	4	4	3	2	2	3	2
C01	3	4	5	4	4	4	3	2	2	3	2
C02	3	4	5	4	4	4	3	2	2	3	2
C03	3	4	5	4	4	4	3	2	2	3	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM460-2024	Protection in Electrical Installations				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM460-2024	Protection in Electrical Installations	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To learn the basic principles of protection in electrical facilities.
Teaching Methods and Techniques:
To realize the continuity and security of an enterprise by protecting power systems against internal and external influences. To learn the basic principles of protection. To know how to protect with insurance in AG and YG systems. To learn relays and their features. To know how to protect with over current relay, impedance relay and differential relay. To learn generator, line, transformer and motor protections. To learn relay coordination. Knowing the protection devices against overvoltages. To learn surge arresters, protection lines, jump ranges.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Kadir DOĞANŞAHİN
Assistants:

Recommended or Required Reading

Resources
Power System Protection-Volume 1-2-3, Paul M. ANDERSON.,The Institution of Electrical Engineering, London, 1988.
Protection and Control in Medium Voltage Electricity Facilities, TEİAŞ
Electric Energy Distribution, Nusret ALPERÖZ, 1987.
Power Distribution 1, 2, 3, 4, 5 and Power Transmission (Energy Transport), Yetkin SANER, 2004

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	80	**Science**	:	
Engineering Design	:	10	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	The basic principles of protection		
2	The basic principles of protection		
3	Insurance protection in LV and HV		
4	Relays and their features		
5	Relays and their features		
6	Overvoltage relays, impedance relay and differential relay protection		
7	Protection in generators and lines		
8	Midterm Exam		
9	Protection in transformers		
10	Motor protection		
11	Relay coordination		
12	Protection against overvoltages		
13	Structure, operating principles and selection of surge arresters		
14	Line protection		
15	Distance protection		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Knows protection techniques and methods in power systems.
C02	In basic level relay coordination and directional protection.
C03	Knows the principles of protection, choosing the appropriate protection method and device learns.
C04	Performs incident analysis for fault situations in electrical installations
C05	Makes relay coordination calculations for electrical facilities projects.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	2	28
Hours for off-the-c.r.stud	14	8	112
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	10	10
Total Work Load			**160**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	5	4	3	3	2	2	2	2	4	2
C01	4	5	4	3	3	2	2	2	2	4	2
C02	4	5	4	3	3	2	2	2	2	4	2
C03	4	5	4	3	3	2	2	2	2	4	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM462-2024 Electric Drive Systems

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
8	EEM462-2024	Electric Drive Systems	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
students learn the principles of speed and torque control in DC and DC motors and introduce the analysis and design methods of the drive circuits used for this purpose.
Teaching Methods and Techniques:
Fundamentals of drive systems / Construction machinery (Hoists, Lifts, Transportation Systems, Aerators, Pumps) / Dynamics of the drive system / Stability of the Drive System / Characteristics of electric motors / Speed adjustment methods in electric motors / Electric motor drives / Basic power electronic circuits (inverters, rectifiers , choppers).
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources N. Mohan, Electric Drives: An Integrative Approach, Univ. of Minnesota Pr.,T. Wildi, Electrical Machines, Drives and Power Systems, Prentice Hall
R. Krishnan, Electric Motor Drives, Prentice Hall,2002

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	40	**Science**	:	
Engineering Design	:	30	**Health**	:	
Social Sciences	:		**Field**	:	20

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Electric drive concept. Drive system definition and components of drive systems.		
2	An overview of DA engines. Permanent state and dynamic analysis of free excitation and permanent magnet DC motors.		
3	Modeling with state equations. Transfer functions. Control via armature and excitation circuits.		
4	Phase supervised DA motor drives. Basic principles and topologies.		
5	Chopper controlled DC motor drives. Basic principles and topologies.		
6	Controller design for permanent magnet DA motors.		
7	An overview of asynchronous motors. Speed control principles.		
8	Midterm Exam		
9	Asynchronous motor drives (voltage monitoring): Basic principles		
10	Asynchronous motor drives (frequency control): Basic principles		
11	Inverters: 6-step and Pulse Width Modulated inverters		
12	An overview of synchronous motors. Speed control principles.		
13	Brushless DA motors and Permanent Magnet AA motors and drivers.		
14	Single phase induction motors		
15	Step motors		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the conveniences provided by electric drive systems.
C02	Knows the speed control principles of direct current motors, asynchronous motors and brushless AA motors.
C03	Knows the power electronics circuit structures used in speed control for DC motors, asynchronous motors and brushless AC motors and makes modeling and simulation studies of these circuits in D
C04	Designs a simple controller for DC motors.
C05	Servo systems make simulations and designs with models, computers and software.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	2	%25
Quizzes	0	%0
Assignment	3	%5
Attendance	0	%0
Practice	6	%15
Project	1	%15
Final examination	1	%40
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	2	28
Assignments	3	5	15
Presentation	0	0	0
Mid-terms	2	10	20
Practice	0	0	0
Laboratory	0	0	0
Project	1	30	30
Final examination	1	20	20
Total Work Load			**155**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	5	4	3	3	3	2	2	2	2	2
C01	4	5	4	3	3	3	2	2	2	2	2
C02	4	5	4	3	3	3	2	2	2	2	2
C03	4	5	4	3	3	3	2	2	2	2	2
C04	4	5	4	3	3	3	2	2	2	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM470-2024	Filter Design				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM470-2024	Filter Design	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
Learning the filter design methods and designing the filter that provides the desired transfer function
Teaching Methods and Techniques:
Investigation of continuous time signals and systems. Filter concept. Phase and Amplitude responses. Butterworth, Chebyshev, Elliptic filters. Frequency transformations. Synthesis of passive filter circuits. Active filters.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources
Introduction to Filter Theory, David E.Johnson,Prentice-Hall., Englewood Cliffs, New Jersey.
Circuit Synthesis Lecture Notes, Fuat Anday, ITU, Istanbul

Course Category

Mathmatics and Basic Sciences	:	30	**Education**	:	
Engineering	:	30	**Science**	:	
Engineering Design	:	40	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Investigation of continuous time signals and systems.		
2	Foster and Cauer circuits		
3	Foster and Cauer circuits and sample applications		
4	Features of LC, RC and RL type functions		
5	Features of LC, RC and RL type functions		
6	Cauer Transformations		
7	Single-ended implementation		
8	Midterm Exam		
9	Single-ended implementation		
10	Butterworth and Chebyshev filter		
11	Butterworth and Chebyshev filter		
12	Scaling of Circuit Functions		
13	Zero Shift		
14	Zero Shift		
15	Active filters		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Makes analog filter design.
C02	Performs circuit design that provides the desired transfer function.
C03	Implements Kalman filter solutions for special applications.
C04	Applies advanced techniques for optimal filter design.
C05	Explain the structures of linear optimum estimators.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	1	%20
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	4	56
Assignments	2	5	10
Presentation	0	0	0
Mid-terms	1	20	20
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	20	20
Total Work Load			**148**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	3	5	3	4	3	2	2	2	2
C01	4	4	3	5	3	4	3	2	2	2	2
C02	4	4	3	5	3	4	4	2	2	2	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM456-2024	Embedded Systems				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM456-2024	Embedded Systems	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The aim of the course is to teach students the software and hardware features of embedded system design. Teaching the use of design tools for embedded systems and developing projects in this field.
Teaching Methods and Techniques:
Embedded Systems overview, Embedded system components and tools. Software and hardware features of embedded systems. 32-bit ARM-based processors. Programming tools and program development. Embedded peripherals. Apps.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources
STM32 Technical Reference Manual
Embedded Systems Architecture: A Comprehensive Guide for Engineers and Programmers (Embedded Technology), Tammy Noergaard, Newnes, 2005.
ARM System Developer's Guide: Designing and Optimizing System Software, A.Sloss, D.Symes C.Wright,Morgan Kaufman, 1st ed.,2004

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	: 50	**Science**	:
Engineering Design	: 30	**Health**	:
Social Sciences	:	**Field**	: 20

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Embedded Systems overview		
2	Embedded System Components		
3	32-bit processors		
4	ARM Architecture		
5	Hardware Features		
6	Software Features		
7	ARM Command Set		
8	Midterm		
9	Programming Embedded Systems in C Language		
10	Programming Embedded Systems in C Language		
11	Embedded Operating Systems		
12	Input-Output Units		
13	Embedded Peripherals and Programming (ADC, DAC)		
14	Embedded Peripherals and Programming (USART, I2C, I2S)		
15	Embedded Peripherals and their programming (CAN, USB, ETHERNET)		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Learns embedded system features.
C02	Designs an embedded system.
C03	It uses software and hardware tools of embedded systems.
C04	Develops embedded system applications.
C05	memory, processing power, etc. Gains the ability to develop applications for embedded systems with constraints.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	1	%20
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	15	15
Practice	0	0	0
Laboratory	0	0	0
Project	1	25	25
Final examination	1	15	15
Total Work Load			**139**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	2	2	2	2	2	3	3	2	4	4	3
C01	2	2	2	2	2	3	3	2	4	4	3
C02	2	2	2	2	2	3	3	2	4	4	3
C03	2	2	2	2	2	3	3	2	5	5	3
C04	2	2	2	2	2	3	3	2	4	4	3

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM500-2024	Vocational Training in Business				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM500-2024	Vocational Training in Business	25	15	25

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The aim of the course is to provide application skills based on the information they receive during their education through Vocational Training in Business Administration, to closely introduce the work fields of the relevant program, to increase their business experience by practicing in a way that will reinforce the knowledge and skills gained during their education, to provide problem-solving skills, to provide the habit of being able to work in a harmonious team with the business personnel and to establish good communication, to introduce the technological developments in the sector, to provide the opportunity to prepare for working life and to help minimize the adaptation period.
Teaching Methods and Techniques:
Within the scope of the Vocational Training in Business application, content is created by the training personnel in the business and the Faculty Member Responsible for Vocational Training in Business according to the activities that the student will carry out in the business.
Prerequisites and co-requisities:

Course Coordinator:
Undefined Bölüm Öğretim Elemanları
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources	Hands-on Training, Slides, Presentations Resources recommended by the responsible personnel in the business and the faculty advisor

Course Category

Mathmatics and Basic Sciences	:	80	**Education**	:	
Engineering	:	50	**Science**	:	20
Engineering Design	:	80	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
2	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
3	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
4	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
5	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
6	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
7	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
8	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
9	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
10	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
11	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
12	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
13	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
14	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
15	It will be determined according to the work plan created together with the Educational Staff in the company and the Respc		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Knows the work areas of the relevant program closely.
C02	It reinforces the knowledge and skills gained during the education period.
C03	Increases business experiences
C04	They gain the ability to work in a harmonious team with the business personnel and acquire the habit of good communication.
C05	They follow the technological developments in the sector.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	1	%40
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	0	0	0
Hours for off-the-c.r.stud	15	48	720
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	16	16
Total Work Load			**736**
ECTS Credit of the Course			**25**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	5	5	5	5	5	5	5	5	5	5	5
C01	5	5	5	5	5	5	5	5	5	5	5
C02	5	5	5	5	5	5	5	5	5	5	5
C03	5	5	5	5	5	5	5	5	5	5	5
C04	5	5	5	5	5	5	5	5	5	5	5
C05	5	5	5	5	5	5	5	5	5	5	5

Program Learning Outcomes	
No	**Learning Outcome**
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%0
Total		**%0**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	0	0	0
Hours for off-the-c.r.stud	0	0	0
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**0**
ECTS Credit of the Course			**0**

Contribution of Learning Outcomes to Programme Outcomes



Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM402-2024	Professional Practice II				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM402-2024	Professional Practice II	0	0	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Required
Objectives of the Course:
It is aimed that students of the department have knowledge about the basic issues such as factory arrangement, production planning, work flow control, quality control scheme, job security, maintenance and assembly.
Teaching Methods and Techniques:
In the internship course that takes place in a real business environment, it is aimed to develop the decision-making and implementation skills of the students by taking responsibility. Internship students also have the opportunity to compare their theory and practical knowledge. The internship book, where the students regularly record their observations during the internship, is then evaluated by the relevant instructor.
Prerequisites and co-requisities:

Course Coordinator:
Asist Prof. Dr. -
Name of Lecturers:

Assistants:

Recommended or Required Reading

Resources	The student will provide the resources according to the work subjects in the workplace where he / she does Summer Internship. The student will provide the resources according to the work subjects in the workplace where he / she does Summer Internship.

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:	100	**Science**	:	
Engineering Design	:		**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Professional Practice-1 course, "Eng. Fac. Practical Work (Internship) Directive "and" In-Department Student Internship Dir		
2	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
3	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
4	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
5	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
6	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
7	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
8	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
9	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
10	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
11	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
12	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
13	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		
14	Related juries; evaluation of students by listening to the presentations they have prepared regarding their internships and		

Course Learning Outcomes

No	Learning Outcomes
C01	In order to adapt to innovations and developing technology, it gains the awareness of constantly renewing itself and developing its researcher skills.
C02	Gains entrepreneurial skills.
C03	Develops theoretical skills.
C04	Implementation skills develop.
C05	View of business life develops.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	1	%100
Project	0	%0
Final examination	0	%0
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	0	0	0
Hours for off-the-c.r.stud	20	8	160
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	1	2	2
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**162**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	3	3	3	5	4	4	4	5	5	4
C01	3	3	3	3	5	4	4	4	5	5	4
C02	3	3	3	3	5	4	4	4	5	5	4
C03	3	3	3	3	5	4	4	4	5	5	4
C04	3	3	3	3	5	4	4	4	5	5	4
C05	3	3	3	3	5	4	4	4	5	5	4

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM452-2024 Internet of Things

Semester	Course Unit Code	Course Unit Title	L+P	Credit	Number of ECTS Credits
8	EEM452-2024	Internet of Things	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To be able to have information about the architecture, protocol, usage areas of Internet of Things (IoT) and to develop IoT based applications.
Teaching Methods and Techniques:
The internet of things, the differences between internet and machine communication, internet of things, IoT communication technologies and applications, IoT communication protocols and applications, IoT and big data, Project presentations.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Ali YÜCE
Assistants:

Recommended or Required Reading

Resources
Greengard, S. (2015). The internet of things. MIT Press.
Rifkin, J. (2015). The internet of things and the age of collaboration [in Turkish]. Optimist Publishing.

Vize ve Final Sınavları

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	: 20	**Science**	:
Engineering Design	: 60	**Health**	:
Social Sciences	:	**Field**	: 20

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	IoT Concept, History and Application Areas		
2	IoT Architecture and Layers (Perception, Network, Processing, Application)		
3	Sensors and Actuators in IoT		
4	Basic Communication Protocols in IoT (UART, I²C, SPI)		
5	Advanced Communication Protocols in IoT (Modbus, MQTT, CoAP, HTTP)		
6	Microcontrollers for IoT and Application Examples (Arduino, ESP8266, ESP32, Raspberry Pi)		
7	Cloud Platforms for IoT (ThingSpeak, Blynk, Firebase, Node-RED)		
8	Midterm Exam		
9	IoT Data Analysis and Visualization (Python, Matplotlib, Pandas)		
10	Security and Data Privacy in IoT		
11	Databases and Storage Systems in IoT (SQL, NoSQL, Time-Series Databases)		
12	Big Data and Artificial Intelligence Applications in IoT		
13	Energy Efficiency and Edge Computing in IoT		
14	IoT Project Design and Application Development		
15	Future Technologies and Emerging Trends in IoT (5G, Digital Twins, Cyber-Physical Systems)		
16	Final Exam		

Recommended Optional Programme Components

EEM304-2024 Microprocessors

Course Learning Outcomes

No	Learning Outcomes
C01	Recognizes the applications used for the Internet of Things.
C02	Develops internet-based application of objects.
C03	Uses big data processing techniques on the internet of things.
C04	The Internet of Things uses communication technologies protocols.
C05	Selects according to the business models to be developed with the Internet of Things.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%30
Quizzes	0	%0
Assignment	1	%10
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	6	84
Assignments	1	8	8
Presentation	0	0	0
Mid-terms	1	6	6
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	10	10
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	5	5	4	4	4	3	4	4	3	2
C01	4	5	5	3	3	3	3	5	4	3	2
C02	4	5	3	3	4	4	3	3	3	3	2
C03	5	4	3	4	5	4	5	4	4	3	2
C04	4	5	4	3	4	4	3	4	4	3	2
C05	4	5	4	4	4	4	3	4	4	3	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM468-2024	Robotics				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM468-2024	Robotics	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
Introducing the most basic features, definitions, design and control principles of robot technologies Giving preliminary information for the solution of complex robot design problems
Teaching Methods and Techniques:
Introduction to robots, Kinematics of robots, Homogeneous and Inverse kinematic transformations, Workspace analysis, Orbital planning, Static and dynamics of robots, Control of robots, Robot programming methods and languages, Special topics
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Asist Prof. Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources

Robot Analysis and control, H. ASADA and J.J.E.SLOTINE, Wiley-Interscience, 1986.,Fundementals of Robotics, R.J.SCHILLING, Prentice Hall, 1990
Robot Analysis and control, H. ASADA and J.J.E.SLOTINE, Wiley-Interscience, 1986.
Fundementals of Robotics, R.J.SCHILLING, Prentice Hall, 1990
Ders kitabı, çalışma kitabı, videolar, çalışma kağıtları
Ders Notları ve Ders Kitabı
Ara ve Final Sınavı

Course Category

Mathmatics and Basic Sciences	:	10	**Education**	:	
Engineering	:	60	**Science**	:	
Engineering Design	:	30	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Definition of Robots, Classification, Robot Characteristics		
2	Kinematics of Robots		
3	Rotational Movement, Homogeneous Transformations		
4	Inverse Kinematic Transformations		
5	Workspace Analysis and Orbital Planning		
6	Differential Motion and Static of Robots		
7	Manipulator Dynamics and Lagrange Equations		
8	MIDTERM		
9	Control of Robots		
10	Control of Robots		
11	Uniaxial PID Control		
12	Calculated Torque Control		
13	Variable Structure Control		
14	Robot Programming Methods		
15	Robot Programming Languages and Special Topics		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Explains the basic components and operating principles of robotic systems.
C02	Develops mathematical models for robot kinematics and dynamics.
C03	Solves forward and inverse kinematics problems.
C04	Applies and evaluates robot control methods.
C05	Designs robotic applications by integrating sensing and decision-making components.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	2	10	20
Presentation	0	0	0
Mid-terms	1	10	10
Practice	0	0	0
Laboratory	0	0	0
Project	1	12	12
Final examination	1	12	12
Total Work Load			**138**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	3	3	3	4	3	2	2	2	3	2
C01	4	4	4	3	4	3	2	2	2	3	2
C02	5	3	3	3	4	3	2	2	2	3	2
C03	3	4	4	4	4	3	2	2	2	3	2
C04	4	3	3	3	4	3	2	2	2	3	2
C05	5	3	3	3	4	3	2	2	2	3	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM458-2024	Digital Communication				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM458-2024	Digital Communication	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To learn the place, importance and concepts of digital communication in communication theory, to recognize the types of modulation. To show modulator structures as block diagram and to make time and frequency domain analysis using Fourier Transform.
Teaching Methods and Techniques:
Current state of digital communication and future expectations, Digital communication elements, Overview of Codec multiplexer and modem concepts, Communication transmission methods advantages and disadvantages, Sampling, Nyquist criterion, practical sampling reconstruction and signal distortion rate, passing, Quantized pulse amplitude modulation, signal quantization noise ratio, Pulse code modulation and signal noise ratio for decoded PCM, An overview of bandwidth reduction techniques, delta modulation, Discrete PCM, receiver and transmitter block diagrams, operating logic, Adaptive DPCM, receiver and transmitter block diagrams, operating logic Delta modulation and adaptive delta modulation, receiver and transmitter block diagrams, operating logic, Baseband transmission and line coding, Decision theory.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Ali YÜCE
Assistants:

Recommended or Required Reading

Resources

Derin, H., & Aşkar, M. (1987). Communication theory [in Turkish]. METU Publishing.
Kayran, A. H., Panayırcı, E., & Aygölü, Ü. (1996). Digital communication [in Turkish]. Sistem Publishing.

Vize ve Final Sınavları

Course Category

Mathmatics and Basic Sciences	:		**Education**	:	
Engineering	:	40	**Science**	:	
Engineering Design	:	60	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to digital communication and the necessity of digital communication.		
2	Definitions used in digital communication (bit, byte, baud, baud rate, channel capacity, etc.).		
3	Bit error rate in baseband information transmission, probability of bit error for binary signals.		
4	The relationship between the probability of error and the ratio of the signal to noise.		
5	Digitizing the analog signal		
6	Sampling theorem		
7	Quantization techniques		
8	Midterm Exam		
9	Pulse amplitude, pulse duration, pulse location and pulse code modulation		
10	Delta, linear delta, adaptive delta, differential pulse code modulation techniques and the provided		
11	Coding of the quantated signal		
12	Decoding techniques and filters		
13	Transmission of digital signals and error coding techniques		
14	Inter-symbol interference and pulse shaping		
15	Amplitude, frequency and phase shift switching techniques and types		
16	Final Exam		

Recommended Optional Programme Components

EEM310-2024 Analog Communication

Course Learning Outcomes

No	Learning Outcomes
C01	Learns communication systems
C02	Designs and analyzes a system.
C03	Gains basic digital communication knowledge.
C04	Gains knowledge of analytical thinking.
C05	Gains knowledge of modulation and demodulation techniques used in digital communication systems.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	7	98
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	1	4	4
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	6	6
Total Work Load			**150**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	3	4	4	2	2	3	2	3	2
C01	4	4	3	4	4	2	2	3	2	3	2
C02	4	4	3	4	4	2	2	3	2	3	2
C03	4	3	2	2	1	1	2	3	2	1	2
C04	3	4	3	3	2	2	2	3	2	2	2
C05	4	4	3	3	2	1	2	3	2	1	2

Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM472-2024	Digital Signal Processing				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM472-2024	Digital Signal Processing	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
To learn the concept of digital filter and to comprehend how to design a digital filter.
Teaching Methods and Techniques:
Discrete Time Signals and Systems. Analog-Numerical Numerical Analog Transformation and Stages. Solution of Linear Constant Coefficient Difference Equations. Z Transform, Definition and Region of Convergence (ROC). Properties of Z Transform. Inverse Z Transform and Linear Constant Coefficient Difference Equations Solution Using Z Transform. Stability in Discrete Time Systems. Frequency Domain Analysis of Discrete Time Signals and Systems. Discrete Time Fourier Transform (AZFD), Definition and Properties. Fast Fourier Transform (HFD), Description and Properties. Digital Filter Design Techniques. Digital Filter Design. Infinite Time Impulse Response Filter (IIR) Design. Finite Time Impulse Response Filter (FIR) Design.
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Gürkan KAVURAN
Assistants:

Recommended or Required Reading

Resources

Oppenheim, A.V., Schafer, R.W., Discrete-Time Signal Processing, Prentice Hall, New Jersey, 1989.
Ertürk, S., Digital Signal Processing, Birsen Publishing, Istanbul, 2002.
Mitra, S.K., Digital Signal Processing, A Computer-Based Approach, McGraw-Hill, 2002.

Course Category

Mathmatics and Basic Sciences	:	30	**Education**	:	
Engineering	:	40	**Science**	:	
Engineering Design	:	30	**Health**	:	
Social Sciences	:		**Field**	:	

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Discrete Time Signals and Systems		
2	Analog-Numerical Digital Analog Conversion and Stages		
3	Solution of Linear Constant Coefficient Difference Equations		
4	Z Transformation, Definition and Region of Convergence (ROC)		
5	Properties of Z Transform		
6	Inverse Z Transform		
7	Solution of linear constant coefficient difference equations using Z-Transform		
8	Midterm Exam		
9	Frequency Domain Analysis of Discrete Time Signals		
10	Discrete Time Fourier Transform (AZFD), Definition and Properties		
11	Fast Fourier Transform (HFD), Definition and Properties		
12	Simple Digital Filters		
13	Digital filter design methods		
14	Infinite Time Impulse Response Filter (IIR) Design		
15	Infinite Time Impulse Response Filter (IIR) Design		
16	Final Exam		

Course Learning Outcomes

No	Learning Outcomes
C01	Learns the basic concepts of Digital Signal Processing.
C02	Performs digital filter design.
C03	Designs digital filters with a computer-based approach.
C04	Comprehends how to apply mathematical concepts to real world problems.
C05	Develops algorithms for the implementation of digital signal processing concepts.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%20
Quizzes	0	%0
Assignment	2	%20
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%60
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	3	42
Assignments	2	7	14
Presentation	0	0	0
Mid-terms	1	20	20
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	20	20
Total Work Load			**138**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

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	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	3	4	3	3	3	3	2	3	2	2	2
C01	4	4	3	3	3	3	2	3	2	2	2
C02	4	4	4	3	3	3	2	3	2	2	2

Program Learning Outcomes	
No	**Learning Outcome**
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria		
In-Term Studies	**Quantity**	**Percentage**
Mid-terms	0	%0
Quizzes	0	%0
Assignment	0	%0
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	0	%0
Total		**%0**

ECTS Allocated Based on Student Workload			
Activities	**Quantity**	**Duration**	**Total Work Load**
Course Duration	0	0	0
Hours for off-the-c.r.stud	0	0	0
Assignments	0	0	0
Presentation	0	0	0
Mid-terms	0	0	0
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	0	0	0
Total Work Load			**0**
ECTS Credit of the Course			**0**

Contribution of Learning Outcomes to Programme Outcomes



Malatya Turgut Özal University

Faculty of Engineering and Natural Sciences
Electrical Electronics Engineering

EEM454-2024	Medical Electronics				
Semester	**Course Unit Code**	**Course Unit Title**	**L+P**	**Credit**	**Number of ECTS Credits**
8	EEM454-2024	Medical Electronics	3	3	5

Mode of Delivery:
Face to Face
Language of Instruction:
Turkish
Level of Course Unit:
Bachelor's Degree
Work Placement(s):
No
Department / Program:
Electrical Electronics Engineering
Type of Course Unit:
Elective
Objectives of the Course:
The primary aim of this course is to provide the student with educational information about commonly used medical equipment, and to specify the materials used in patient care in hospitals.
Teaching Methods and Techniques:
The basis of biopotential. Electrical behavior of the excitable cell. ENG, EMG, ECG, ERG, EEG, MEG. Measuring blood pressure. Measuring blood flow and volume. Measurement of the respiratory system
Prerequisites and co-requisities:

Course Coordinator:

Name of Lecturers:
Associate Prof. Dr. Ali Yüce
Assistants:

Recommended or Required Reading

Resources Prof. Dr. Inan Guler lecture notes, Medical Electronics, E. YAZGAN, M. KORÜTEK, ITU Publication
Prof. Dr. Inan Guler lecture notes, Medical Electronics, E. YAZGAN, M. KORÜTEK, ITU Publication

Course Category

Mathmatics and Basic Sciences	:	**Education**	:
Engineering	: 20	**Science**	:
Engineering Design	: 40	**Health**	: 40
Social Sciences	:	**Field**	:

Weekly Detailed Course Contents

Week	Topics	Study Materials	Materials
1	Introduction to biomedical systems		
2	Cell and its structure		
3	Action potential		
4	Electrodes, sensors and transducers		
5	Cardiovascular system		
6	ECG and amplifier circuits		
7	EEG and amplifier circuits		
8	MIDTERM EXAM		
9	Ultrasound devices		
10	EMG and amplifier circuits		
11	Respiratory systems		
12	Ventilation and ventilator device		
13	telemetry		
14	Bedside monitoring		
15	Defibrilator and electrosurgical units		
16	FINAL EXAM		

Course Learning Outcomes

No	Learning Outcomes
C01	Recognizes biomedical systems.
C02	Explains information about medical devices.
C03	Gains the ability to understand the electrical properties of biological signals.
C04	Gains the ability to design measurement setups of biological signals.
C05	Gains the ability to understand the principles of biological signal processing.

Program Learning Outcomes

No	Learning Outcome
P01	Applies this knowledge in solving field-specific problems by giving sufficient information on subjects specific to the discipline of mathematics, science, and electrical-electronics engineering.
P02	Identifies, defines, formulates problems related to the field and solves the problem by applying appropriate analytical methods and modeling techniques.
P03	Designs a complex system, process, device or product to meet specific requirements under realistic constraints and conditions; for this purpose, it applies modern design methods.
P04	Applies information technologies effectively by selecting and using modern technical tools necessary for the analysis and solution of complex problems encountered in engineering applications.
P05	Designs, conducts experiments, collects data, analyzes and interprets results for the study of complex engineering problems or discipline-specific research topics.
P06	Works effectively in disciplinary and multi-disciplinary teams.
P07	Acquire knowledge of at least one foreign language through effective oral and written communication; understands effective report writing and written reports, prepares design and production repo
P08	Gains awareness of the necessity of lifelong learning; accesses information, follows developments in science and technology and constantly renews itself.
P09	Gain knowledge about the standards used in engineering applications by acquiring professional and ethical responsibility in accordance with ethical principles.
P10	Gain knowledge of business practices such as project management, risk management and change management; Entrepreneurship provides awareness about innovation.
P11	It provides awareness of the legal consequences of engineering solutions by gaining information about the effects of engineering practices on health, environment and safety in the global and socia

Assessment Methods and Criteria

In-Term Studies	Quantity	Percentage
Mid-terms	1	%40
Quizzes	0	%0
Assignment	2	%10
Attendance	0	%0
Practice	0	%0
Project	0	%0
Final examination	1	%50
Total		**%100**

ECTS Allocated Based on Student Workload

Activities	Quantity	Duration	Total Work Load
Course Duration	14	3	42
Hours for off-the-c.r.stud	14	5	70
Assignments	2	10	20
Presentation	0	0	0
Mid-terms	1	2	2
Practice	0	0	0
Laboratory	0	0	0
Project	0	0	0
Final examination	1	2	2
Total Work Load			**136**
ECTS Credit of the Course			**5**

Contribution of Learning Outcomes to Programme Outcomes

bbb

	P01	P02	P03	P04	P05	P06	P07	P08	P09	P10	P11
All	4	4	4	4	3	3	2	2	2	2	2
C01	4	4	4	4	3	3	2	2	2	2	2
C02	4	4	4	4	3	3	2	2	2	2	2
C03	5	5	5	5	5	5	2	4	3	5	4
C04	4	5	4	4	5	5	2	4	3	5	4
C05	4	5	4	4	5	5	2	4	3	5	4