Ministry of Higher Education and Research
Scientific Supervision and Evaluation Authority
Quality Assurance and Academic Accreditation Department
Department of International Academic Accreditation

Academic program description form for colleges
2021-2022

University name: Anbar University
College name: Engineering
Scientific Department: Electrical Engineering
File filling date: 11/10/2021

Dr. Haitham Kamel Daoud	Dr. Mohamed Abdel Ahmed	Dr. Amir Abdul Rahman Hilal
The Director of the Division Quality Assurance and University Performance	The Associate Dean for Scientific Affairs	The Dean of the College
Signature	**Signature**	**Signature**
25-10-2021	**25-10-2021**	**25-10-2021**

Academic Program Description Form

Reviewing the performance of higher education institutions
((((review of the academic program

This description of the academic program provides a brief summary of the most important characteristics of the program and the learning outcomes expected of the students to achieve, demonstrating whether he/she has made maximum use of the available opportunities. It is accompanied by a description of each course within the program

The educational institution	University of Anbar
University Department/Center	College of Engineering
Academic Program	Electrical Engineering Department
The name of the final certificate	Bachelor of Electrical Engineering
The academic system	Semester
Accredited Accreditation Program	N/A

external influences	N/A
The date of preparing the description 10/14/2019 AD	AD 10/14/2019

Academic Program Objectives: The academic program in the :Electrical Engineering Department aims to	
Building the student scientifically and practically and qualifying.1 .him in the field of electrical engineering	
Building and preparing the student psychologically to play his.2 .role as a reliable engineer in his field of specialization	
Building students who are able to compete with other engineers.3 for job opportunities and obtain the seats required to complete .postgraduate studies	
The possibility of applying for external tests by local, regional or.4 international bodies for the purpose of completing study or .appointment	
Urging the student to be creative and think about specialization.5 .projects and keep pace with the development in this field	
Providing students with scientific, practical and self-skills that.6 enable them to solve practical problems and deal with them with .scientific concepts	

Program.1			
Credit hours and units	course name	course code	Study stage Course

experimental	theoretical			
	1	Human Rights	EE1101	First Year
	2	English I	EE1104	First Year
	1	Democracy	EE1104	First Year
	4	Calculus I	EE1201	First Year
	4	Calculus II	EE1202	First Year
3	3	Physics I	EE1203	First Year
3	3	Physics II	EE1204	First Year
3	3	Computer Science	EE1205	First Year
2	4	Engineering Drawing	EE1206	First Year
3	3	Chemistry I	EE1207	First Year
	4	Fundamentals of EE I	EE1301	First Year
3	4	Fundamentals of EE II	EE1302	First Year
	3	Arabic Language	EE1104	First Year
	2	English II	EE2105	Second Year
	3	Calculus III	EE2208	Second Year
	4	Calculus IV	EE2209	Second Year
	2	Digital Techniques I	EE2304	Second Year
2	2	Digital Techniques II	EE2305	Second Year
6		EE Lab I	EE2306	Second Year
6		EE Lab II	EE2307	Second Year
	3	Fundamentals of Electronics I	EE2308	Second Year
	3	Fundamentals of Electronics II	EE2309	Second Year
	4	Electric Circuits I	EE2310	Second Year
	4	Electric Circuits II	EE2311	Second Year
3	1	Computer Programming	EE2312	Second Year
	3	DC Machines I	EE2313	Second Year
	3	DC Machines II	EE2314	Second Year
	3	Electro-Magnetics I	EE2315	Second Year
	3	Electro-Magnetics II	EE2316	Second Year
	2	English III	EE3106 E	Third Year
	3	Engineering Economy	EE3210	Third Year
3	3	Engineering Numerical Methods	EE3211	Third Year
	3	Engineering statics	EE3212	Third Year
	3	Electric Power I	EE3317	Third Year
	3	Electric Power II	EE3318	Third Year
	2	Signals and Systems I	EE3319	Third Year
	2	Signals and Systems II	EE3320	Third Year

6		EE Lab III	EE3321	Third Year
6		EE Lab IV	EE3322	Third Year
	4	Computer Networks	EE3323	Third Year
	3	AC-Machines I	EE3324	Third Year
	3	AC-Machines II	EE3325	Third Year
	4	Electronics I	EE3326	Third Year
	4	Electronics II	EE3327	Third Year
	3	Analog Communications and Noise	EE3328	Third Year
	3	Digital Communications	EE3329	Fourth Year
	2	English IV	EE4107	Fourth Year
	2	Administration and Leadership skills	EE4108	Fourth Year
3		EE Lab V	EE4330	Fourth Year
3		EE Lab VI	EE4331	Fourth Year
	3	Control Theory I	EE4332	Fourth Year
	3	Control Theory II	EE4333	Fourth Year
	2	Information Theory	EE4334	Fourth Year
	3	Advanced Communications Systems	EE4335	Fourth Year
	4	Electric Power III	EE4336	Fourth Year
	4	Power Electronics	EE4337	Fourth Year
	3	Engineering Project I	EE4338	Fourth Year
	3	Engineering Project II	EE4339	Fourth Year
	3	Digital Electronics	EE4343	Fourth Year
	3	Power System Analysis	EE4342	Fourth Year
	3	Programable logic controller	EE4348	Fourth Year

:Planning for Personal Development .1
The students' personal development is planned by holding panel discussions with them and asking them for periodic reports and seminars throughout the four stages and for various topics to .develop their personal development

Admission criterion (setting regulations related to joining the .2 :(college or institute
Central acceptance by the Ministry of Higher Education and .Scientific Research

3. The most important sources of information about the program: • College website. • The department's website and e-mail.

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Curriculum Skills Outline																				
Please check the boxes corresponding to the individual learning outcomes from the program being evaluated																				
Learning outcomes required from the program																				
General and Transferable Skills or) Other skills) related to employability and personal development				thinking skills				Subject-specific skills				knowledge and understanding				Basic or optional	Course Name	Course code	Year / Level
د4	د3	د2	د1	ج4	ج3	ج2	ج1	ب4	ب3	ب2	ب1	أ4	أ3	أ2	أ1				
									X						X		Human Rights	EE1101	**First Year**
									X								English I	EE1102	
									X								English II	EE1103	**First Year**
									X								Democracy	EE1104	**First Year**
											X				X		Calculus I	EE1201	**First Year**
											X				X		Calculus II	EE1202	
											X				X		Physics I	EE1203	**First Year**
											X				X		Physics II	EE1204	

											X				**X**		Compute r Science	EE1205	**First Year**	
					X			**X**			**X**		**X**				Engineer ing Drawing	EE1206		
											X				**X**		Chemistr y I	EE1207	**First Year**	
																			First Year	
																			First Year	
																			First Year	
					X					**X**	**X**			**X**	**X**		Fundam entals of EE I	EE1301	**First Year**	
					X					**X**	**X**			**X**	**X**		Fundam entals of EE I	EE1302	**First Year**	
								X		**X**	**X**			**X**	**X**		EE Lab I	EE1303	**First Year**	

									X							Arabic Language	EE2104	**Second Year**	
											X				**X**		Calculus III	EE2208	**Second Year**	
											X				**X**		Calculus IV	EE2209	**Second Year**	
					X					X	X			X	X		Digital Techniques I	EE2304	**Second Year**	
					X					X	X			X	X		Digital Techniques II	EE1305	**Second Year**	
								X		**X**	**X**			**X**	**X**		EE Lab II	EE2306	**Second Year**	
								X		**X**	**X**			**X**	**X**		EE Lab III	EE2307	**Second Year**	
					X					**X**	**X**			**X**	**X**		Fundamentals of Electronics I	EE2308	**Second Year**	

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					X					**X**	**X**			**X**	**X**		Fundamentals of Electronics II	EE2309	**Second Year**	
					X					**X**	**X**			**X**	**X**		Electric Circuits I	EE2310	**Second Year**	
					X					**X**	**X**			**X**	**X**		Electric Circuits II	EE2311	**Second Year**	
											X				**X**		Computer Programming	EE2312	**Second Year**	
					X					**X**	**X**			**X**	**X**		DC Machines I	EE2313	**Second Year**	
					X					**X**	**X**			**X**	**X**		DC Machines II	EE2314	**Second Year**	
							X							**X**	**X**		Electro-Magnetics I	EE2315	**Second Year**	

							X						**X**	**X**		Electro-Magnetics II	EE2316	**Second Year**	
					X		**X**						**X**	**X**		Engineering Economy	EE3210	**Third Year**	
						X		**X**			**X**				**X**		Engineering Numerical Methods	EE3211	**Third Year**	
											X				**X**		Engineering Statistics	EE3212	**Third Year**	
					X	**X**				**X**	**X**	**X**		**X**	**X**		Electric Power I	EE3317	**Third Year**	
					X	**X**				**X**	**X**	**X**		**X**	**X**		Electric Power II	EE3318	**Third Year**	
																			Third Year	
					X					**X**	**X**		**X**	**X**	**X**		Signals and	EE3319	**Third Year**	

																Systems I		
					X					**X**	**X**		**X**	**X**	**X**		Signals and Systems II	EE3320	**Third Year**
								X		**X**	**X**			**X**	**X**		EE Lab IV	EE3321	**Third Year**
								X		**X**	**X**			**X**	**X**		EE Lab V	EE3322	**Third Year**
																	Computer Networks	EE3323	**Third Year**
					X					**X**	**X**			**X**	**X**		AC-Machines I	EE3324	**Third Year**
					X					**X**	**X**			**X**	**X**		AC-Machines II	EE3325	**Third Year**
					X					**X**	**X**			**X**	**X**		Electronics I	EE3326	**Third Year**
					X					**X**	**X**			**X**	**X**		Electronics II	EE3327	**Third Year**
					X					**X**	**X**			**X**	**X**		Analog Commu	EE3328	**Third Year**

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Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Applied Physics/EE1304
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	Second / First Academic Year

7. Number of Credit Hours (Total)	30
8. The preparation date of this description	22/6/2022

9. Course Objectives :

- Learn the fundamental concepts of physical laws and how to apply them:
- Study the basic concepts of physical laws and how to apply them.
- Learn some important physical laws relevant to the stability and motion of objects:
- Acquire knowledge of some important physical laws concerning the stability and motion of objects.
- Learn the types of renewable energies and their forms in the modern physics era and evolution:
- Understand the types of renewable energies and their development in the modern era of physics.
- Learn modern mathematical methods for solving physics problems:
- Grasp modern mathematical techniques for solving physics problems.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

-Teaching the student how to apply physics problems and solve them in real-life situations.

-Introducing the student to various problems in electrical systems and their

connection to the field of physics.

-Educating the student about the importance of using laws to find essential variables in any system or object.

-Understanding how to prove physical laws through practical experiments and theoretical and practical implementation.

Assessment methods:

- Learning how to deal with physical theories, inferencing methods, and practical applications.

- Learning how to use computers, if possible, to solve physics problems.

- Solving a real-life physics problem using a physical law.

B. Subject-specific skills

- Scientific Reports
- Graduation Research

C. Teaching and learning methods

- Sudden daily and weekly continuous tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

D. Evaluation methods

-Solving exercises related to electrical physics.

-Assigning students various group activities and assignments.

-Allocating a portion of the grade for daily assignments and tests.

E. Thinking skills

- Develop the student's ability to work on performing duties and deliver them on time.
- Try to apply concepts by solving different types of exercises.
- Opening the way for the student to provide what he sees regarding the material.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with academic curricula in applied physics.
- Developing the student's ability to deal with the Internet.
- Developing the student's ability to deal with multiple means.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Electric charge and electric field	Unit-1	Theoretical + Discussion	General questions and discussion
2	3	Coulomb's law	3	Theoretical + Discussion	General written and oral questions and discussion
3	3	Electric Field of a Continuous Charge Distribution and Due to a Charged Rod	3	Theoretical + Discussion	discussion
4	3	Electric Field Lines and Motion of Charged Particles in a Uniform Electric Field	3	Theoretical + Discussion	Exam I am general questions and discussion

5	3	Electric Flux	3	Theoretical + Discussion	General questions and discussion or exam I
6	3	Gauss's Law	3	Theoretical + Discussion	General questions and discussion
7	3	Application of Gauss's Law to Various Charge Distributions and Conductors in Electrostatic Equilibrium	3	Theoretical + Discussion	Monthly exam
8	3	Formal Derivation of Gauss's Law	3	Theoretical + Discussion	Discussion with to give collective duties
9	3	Potential Difference and Electric Potential and Potential Differences in a Uniform Electric Field	3	Theoretical + Discussion	General Questions
10	3	Electric Potential and Potential Energy Due to Point Charges and Obtaining the Value of the Electric Field from the Electric Potential	3	Theoretical + Discussion	General questions and discussion
11	3	Electric Potential Due to Continuous Charge Distributions and Electric Potential Due to a Charged Conductor	3	Theoretical + Discussion	General Questions
12	3	Definition of Capacitance and Calculating Capacitance	3	Theoretical + Discussion	General questions and discussion
13	3	Combinations of Capacitors And Energy Stored in a Charged	3	Theoretical + Discussion	General Questions
14	3	Capacitors with Dielectrics and Electric Dipole in an Electric Field		Theoretical + Discussion	Monthly exam

15	3	Electric Current And Resistance		Theoretical + Discussion	Oral exam

12.Infrastructure	
Required readings: • Course Books • Other	R.D. Knight, Physics for Scientists and Engineers, 2nd ed., Pearson 2008
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance	
Prerequisites	***EE1201***
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	PhysicsI/ EE1203
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	First /First Academic Year

7. Number of Credit Hours (Total)	30
8. The preparation date of this description	22/6/2022

9. Course Objectives :

- Learn the basic concepts of physical laws and how to apply them.
- Learn some important physical laws relevant to the stability and motion of objects.
- Learn the types of renewable energies and their forms in the modern physics era and their evolution.
- Learn modern mathematical methods for solving physics problems.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

-Teaching the student how to apply physics problems and solve them in real-life situations.
-Introducing the student to various problems in electrical systems and their connection to the field of physics.
-Educating the student about the importance of using laws to find essential variables in any system or object.
-Understanding how to prove physical laws through practical experiments and theoretical and practical implementation.

Assessment Methods:
- Learning how to deal with physical theories, inferencing methods, and practical applications.
- Learning how to use computers, if possible, to solve physics problems.

- Solving a real-life physics problem using a physical law.
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Opening the way for the student to provide what he sees regarding the material.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in Physics. - Developing the student's ability to deal with the Internet. - Developing the student's ability to deal with multiple means.

- Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	**Basic concepts**		Theoretical + Discussion	General questions and discussion
2	3	**Power Systems Collector**		Theoretical + Discussion	General written and oral questions and discussion
3	3	**Power System Collector**		Theoretical + Discussion	discussion
4	3	**Centers and center of gravity**		Theoretical + Discussion	Exam I am general questions and discussion
5	3	**Centers and center of gravity**		Theoretical + Discussion	General questions and discussion or exam I
6	3	**Stability**		Theoretical + Discussion	General questions and discussion
7	3	**Stability**		Theoretical + Discussion	Monthly exam
8	3	**Stability**		Theoretical + Discussion	Discussion with to give collective duties
9	3	**Friction**		Theoretical + Discussion	General Questions
10	3	**Friction**		Theoretical +	General questions

				Discussion	and discussion
11	3	**Friction**		Theoretical + Discussion	General Questions
12	3	**Fixed moments**		Theoretical + Discussion	General questions and discussion
13	3	**Linear motion**		Theoretical + Discussion	General Questions
14	3	**Angular motion**		Theoretical + Discussion	Monthly exam
15	3	**Moment of inertial**		Theoretical + Discussion	O exam

12.Infrastructure	
Required readings: • Course Books • Other	R.D. Knight, Physics for Scientists and Engineers, 2nd ed., Pearson 2008
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance	
Prerequisites	***EE1201***
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Engineering Drawing / **EE1206**
4. Programs in which he enters	
5. Available Attendance Forms	Blended learning
6. Semester / Year	second Semester / First Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	20/9/2022
9- Course Objectives:	

10. Learning outcomes and teaching, learning and assessment methods

Raising and developing the student's mental and expressive skills in the language of drawing.

Training on accuracy in measurements and drawing speed.

Raising and improving the student's ability to visualize and imagine in representing objects geometrically.

B - Subject-specific skills

B1 – Scientific Reports

B2 – Graduation Research

Teaching and learning methods

- Continuous sudden and weekly daily tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods

Participation in the classroom.

Submission of activities

Quarterly tests, activities and activities.

C- Thinking skills

C1 - Developing the student's ability to work on performing duties and delivering them on time.

C2- Try to apply concepts by solving different types of exercises.

C3- Developing the student's ability to dialogue and discussion.

Teaching and learning methods
• Exercises and practical problems • Assigning the student some group activities and duties. • Allocate a percentage of the grade for daily assignments and tests.
Evaluation methods
• Active participation in the classroom is a guide to student commitment and responsibility. • Commitment to the deadline in submitting assignments and research. • Quarterly and final exams express commitment and achievement of knowledge and skills. • Apps, exercises and daily assignments
d. General and transferable skills (other skills related to employability and personal development). D1- Developing the student's ability to deal with the means of technology. D2- Developing the student's ability to deal with the Internet. D3- Developing the student's ability to deal with multiple means. D4- Developing the student's ability to dialogue and discussion.

11. Course Structure					
Evaluation method	**Method of education**	**Name of the unit/course or topic**	**Required Learning Outcomes**	**Hours**	**The week**
General questions and discussion	Theoretical + Discussion	Engineering drawing	**Introduction to Engineering Drawing and Design, Drawing Tools**	4	First
General questions and discussion or exam I	Theoretical + Discussion	Engineering drawing	**Lines in engineering drawing**	4	Second
General questions and discussion	Theoretical + Discussion	Engineering drawing	**Geometric line, panel layout**	4	Third
I'm examined.	Theoretical + Discussion	Engineering drawing	**Engineering Operations**	4	Fourth
General questions and discussion or exam I	Theoretical + Discussion	Engineering drawing	**Exercises in engineering processes**	4	Fifth
General questions and discussion	Theoretical + Discussion	Engineering drawing	**Projection theory**	4	Sixth
General Questions	Theoretical + Discussion	Engineering drawing	**Drawing projections**	4	Seventh
Group duties	Theoretical + Discussion	Engineering drawing	**Exercises in drawing projections**	4	Eighth
General Questions	Theoretical + Discussion	Engineering drawing	**Midterm Exam**	4	Ninth

Monthly exam	Theoretical + Discussion	Engineering drawing	**Exercises in drawing projections**	4	Tenth
General Questions	Theoretical + Discussion	Engineering drawing	**Dimensional mode**	4	Eleventh
Discussion and exam I	Theoretical + Discussion	Engineering drawing	**Exercises in drawing projections**	4	Twelfth
General Questions	Theoretical + Discussion	Engineering drawing	**Holographic projection**	4	Thirteenth
Group Duties+ discussion	Theoretical + Discussion	Engineering drawing	**Exercises in measured drawing**	4	Fourteenth
Monthly exam	Theoretical + Discussion	Engineering drawing	**Assembly**	4	Fifteenth

12. Infrastructure	
Abdul Rasoul Al - Khafaf **Engineering Drawing** **Iraq** University of Technology **Second Edition**	Required readings: ▪ Course Books ▪ Other
	Special requirements
	Social services (e.g., guest lectures, vocational training and field studies)

13. Acceptance	
There isn't any	Prerequisites

20	Minimum number of students
100	The largest number of students

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Calculus I / EE1201
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class
6. Semester / Year	First / First Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	23/6/2022

9. Course Objectives :

- This course aims to provide the student with the skill of dealing with mathematical equations and graphing the functions.
- Demonstrate methods for solving limits and continuity functions with the meaning of the concept of horizontal and vertical asymptotes.
- The course aims to clarify the concept of differentiation function and the techniques of differentiation with a study of the applications of derivatives.
- The course aims to give the student a new background that he can benefit from when studying differential equations.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

- To develop mathematical skills so that students can sketch the graph of various functions and evaluate Limits using different techniques including L'Hopital's Rule.
- Apply mathematical methods and principles in solving various derivative problems from Engineering fields, involving applications of derivatives.
- Demonstrate algebraic facility with algebraic topics including linear, quadratic, exponential, logarithmic, and trigonometric functions,
- Compute derivative and anti-derivative of algebraic, trigonometric, inverse trigonometric, exponential, and logarithmic with apply them to solve problems in a wide range of engineering applications.

B. Subject-specific skills

• Assigning the student to some group activities and duties.
• Allocating a percentage of the grade to daily assignments and tests.

C. Teaching and learning methods

• Sudden daily and continuous weekly tests.
• Trainings and activities.

• Directing students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
• Active participation during the lecture is evidence of the student's commitment and responsibility. • Commitment to the deadline for submitting assignments. • Semester and final tests express commitment and cognitive and skill achievement. • Applications, exercises and daily assignments
E. Thinking skills
• Developing the student's ability to work on performing assignments and submitting them on the scheduled date. • Trying to apply the concepts by solving different types of exercises.
F. General and transferable skills (other skills related to employability and personal development).
• Developing the student's ability to dialogue, discuss, and solve and deal with various issues

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	4	Functions	CH_1	Theoretical + discussion	General questions and discussion
2	4	Functions	CH_1	Theoretical + discussion	General questions, discussion or exam
3	4	Limits	CH_2	Theoretical + discussion	General questions and discussion
4	4	Limits	CH_2	Theoretical + discussion	Exam

5	4	Differentiation rules	CH_3	Theoretical + discussion	General questions, discussion or exam
6	4	Differentiation rules	CH_3	Theoretical + discussion	General questions and discussion
7	4	The Chain Rule, implicit Differentiation	CH_3	Theoretical + discussion	general questions
8	4	Applications of differentiation	CH_4	Theoretical + discussion	Duties + discussion
9	4	Applications of differentiation	CH_4	Theoretical + discussion	general questions
10	4	Exponential and logarithmic functions	CH_4	Theoretical + discussion	Monthly exam
11	4	Trigonometric functions and their derivatives	CH_5	Theoretical + discussion	general questions
12	4	Hyperbolic functions and their derivatives	CH_5	Theoretical + discussion	Discussion and exam
13	4	Advanced Applications of differentiation	CH_5	Theoretical + discussion	general questions
14	4	Derivative and anti-derivative functions	CH_5	Theoretical + discussion	Duties + discussion
15	4	Derivative and anti-derivative functions	CH_5	Theoretical + discussion	Monthly exam

12.Infrastructure

Required readings: ● Course Books ● Other	● Stewart, J., Clegg, D. K., & Watson, S. (2020). Calculus: early transcendental. Cengage Learning ● Thomas, G. B., Haas, J., Heil, C., & Weir, M. (2018). Thomas' Calculus. Pearson Education Limited. ● Stroud, K. A., & Booth, D. J. (2020). Engineering mathematics. Bloomsbury Publishing.
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance

Prerequisites	Non
Minimum number of students	20
The largest number of students	100


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Course Description Form

Review the performance of higher education institutions ((Academic Program Review))

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Calculus II / EE1202
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class
6. Semester / Year	Second / First Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	22/6/2022

9. Course Objectives :

- This course aims to provide the student with the skill of dealing with integral functions and clarifying the concept of integration, the polar, and Cartesian coordinates.
- Demonstrate methods for solving integrals and series.
- The course aims to study the applications of integration in calculating the lengths of curves, areas, and volumes in different coordinates and some physical applications.
- The course aims to give the student a new background that he can benefit from when studying double and triple integrals.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

- Evaluate definite, indefinite, and improper integrals by using different integration techniques.
- To determine arc length, surface area, and volume by using the applications of integration techniques.
- Define polar coordinate graphs and solve related problems including area, arc length, and volume.
- Identify the properties of sequences and their limits by identifying standard convergent operations of power series.

B. Subject-specific skills

• Assigning the student to some group activities and duties.
• Allocating a percentage of the grade to daily assignments and tests.

C. Teaching and learning methods

• Sudden daily and continuous weekly tests.
• Trainings and activities.
• Directing students to some sources that contain examples and exercises to benefit from them.

D. Evaluation methods
• Active participation during the lecture is evidence of the student's commitment and responsibility. • Commitment to the deadline for submitting assignments. • Semester and final tests express commitment and cognitive and skill achievement. • Applications, exercises and daily assignments
E. Thinking skills
• Developing the student's ability to work on performing assignments and submitting them on the scheduled date. • Trying to apply the concepts by solving different types of exercises.
F. General and transferable skills (other skills related to employability and personal development).
• Developing the student's ability to dialogue, discuss, and solve and deal with various issues

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	4	Principles of Integration	CH_1	Theoretical + discussion	General questions and discussion
2	4	Integral Methods	CH_1	Theoretical + discussion	General questions, discussion or exam
3	4	Integration Techniques-Integration by Parts	CH_2	Theoretical + discussion	General questions and discussion
4	4	Integration Techniques-Trigonometric Integrals	CH_2	Theoretical + discussion	Exam
5	4	Integration Techniques-Partial Fractions.	CH_2	Theoretical + discussion	General questions, discussion or exam

6	4	Integration Techniques-Partial Fractions	CH_2	Theoretical + discussion	General questions and discussion
7	4	Applications of Integrals-Infinite Integral Areas	CH_3	Theoretical + discussion	general questions
8	4	Applications of Integrals-Arc Length, Surface area	CH_3	Theoretical + discussion	Duties + discussion
9	4	Applications of Integrals-Volumes (Disk, Washer, Shell)	CH_3	Theoretical + discussion	general questions
10	4	Polar Coordinates - Common Polar Coordinate Graphs	CH_4	Theoretical + discussion	Monthly exam
11	4	Polar Coordinates - Tangents with Polar Coordinates, Curves defined by parametric equations.	CH_4	Theoretical + discussion	general questions
12	4	Polar Coordinates - Tangents with Polar Coordinates, Curves defined by parametric equations.	CH_4	Theoretical + discussion	Discussion and exam
13	4	Sequences and Series	CH_5	Theoretical + discussion	general questions
14	4	Sequences and Series	CH_5	Theoretical + discussion	Duties + discussion
15	4	Sequences and Series	CH_5	Theoretical + discussion	Monthly exam

12.Infrastructure	
Required readings: ● Course Books ● Other	● Stewart, J., Clegg, D. K., & Watson, S. (2020). Calculus: early transcendental. Cengage Learning ● Thomas, G. B., Haas, J., Heil, C., & Weir, M. (2018). Thomas' Calculus. Pearson Education Limited. ● Stroud, K. A., & Booth, D. J. (2020). Engineering mathematics. Bloomsbury Publishing.
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance	
Prerequisites	EE1201
Minimum number of students	20
The largest number of students	100


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Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Fundamentals of EE 1 / EE1301
4. Programs in which it enters	
5. Available Attendance Forms	Blended learning
6. Semester / Year	First Semester / First Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	15/6/2022
9. Course Objectives :	

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

- Graduating qualified engineers in the field of electrical engineering
- Adding full knowledge about electrical engineering circuits
- Ability to conduct scientific research
- Dealing accurately with future work problems**.**

B. Subject-specific skills

- Scientific Reports
- Graduation Research

C. Teaching and learning methods

- Continuous sudden and weekly daily tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

D. Evaluation methods

- Daily exams
- Participation in the classroom.
- Submission of activities
- Quarterly tests, activities and activities.

E. Thinking skills

- Developing the student's ability to work on performing duties and delivering them on time.
- Try to apply concepts by solving different types of exercises.
- Developing the student’s ability to dialogue and discussion.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with the means of technology.
- Developing the student’s ability to deal with the Internet.
- Developing the student’s ability to deal with multiple means.
- Developing the student's ability to dialogue and discussion.

11.Course Structure

Evaluation method	Method of education	Name of the unit/course or topic	Required Learning Outcomes	Hours	The week
General questions and discussion	Theoretical + Discussion	Foundations of Electrical Engineering 1	Introduction, Basic Definitions,	4	First
General questions and discussion or exam I	Theoretical + Discussion	=	KCL, KVL	4	Second
General questions and discussion	Theoretical + Discussion	=	Conservation of power, Series and Parallel	4	Third
I'm examined.	Theoretical + Discussion	=	connection of elements, Ohm's Law	4	Fourth
General questions and discussion or exam I	Theoretical + Discussion	=	, delta and star transformation	4	Fifth
General questions and discussion	Theoretical + Discussion	=	Node Voltage Method	4	Sixth
General Questions	Theoretical + Discussion	=	Node Voltage Method	4	Seventh
Group duties	Theoretical + Discussion	=	Not Current Method	4	Eighth
General Questions	Theoretical + Discussion	=	Source Transformation	4	Ninth
Monthly exam	Theoretical + Discussion	=	Thevenin Theorem, Norton Theorem	4	Tenth
General Questions	Theoretical + Discussion	=	Maximum Power Transfer	4	Eleventh
Discussion and exam I	Theoretical +	=	, Principle of Superposition	4	Twelfth

	Discussion				
General Questions	Theoretical + Discussion	=	Principle of Superposition	4	Thirteenth
Group Duties+ discussion	Theoretical + Discussion	=	Principle of Superposition	4	Fourteenth
Monthly exam	Theoretical + Discussion	=	Principle of Superposition	4	Fifteenth

12.Infrastructure

Required readings: • Course Books • Other	Laboratory sheet prepared by department lecturers
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

11.Acceptance

Prerequisites	***EE1201***
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Fundamentals of EE II/ EE1302
4. Programs in which it enters	
5. Available Attendance Forms	Blended learning
6. Semester / Year	First Semester / First Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	15/6/2022
9. Course Objectives :	

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

- Graduating qualified engineers in the field of electrical engineering
- Adding full knowledge about electrical engineering circuits
- Ability to conduct scientific research
- Dealing accurately with future work problems**.**

B. Subject-specific skills

- Scientific Reports
- Graduation Research

C. Teaching and learning methods

- Continuous sudden and weekly daily tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

D. Evaluation methods

- Daily exams
- Participation in the classroom.
- Submission of activities
- Quarterly tests, activities and activities.

E. Thinking skills

- Developing the student's ability to work on performing duties and delivering them on time.
- Try to apply concepts by solving different types of exercises.
- Developing the student’s ability to dialogue and discussion.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with the means of technology.
- Developing the student’s ability to deal with the Internet.
- Developing the student’s ability to deal with multiple means.
- Developing the student's ability to dialogue and discussion.

11.Course Structure

Evaluation method	Method of education	Name of the unit/course or topic	Required Learning Outcomes	Hours	The week
General questions and discussion	Theoretical + Discussion	Foundations of Electrical Engineering 2	Capacitors, Inductors,	4	First
General questions and discussion or exam I	Theoretical + Discussion	=	Series and Parallel connection	4	Second
General questions and discussion	Theoretical + Discussion	=	=	4	Third
General questions and discussion	Theoretical + Discussion	=	AC circuit Analysis	4	Fourth
General questions and discussion or exam I	Theoretical + Discussion	=	=	4	Fifth
General questions and discussion	Theoretical + Discussion	=	Sinusoidal Review, Complex Numbers	4	Sixth
General Questions	Theoretical + Discussion	=	=	4	Seventh
Group duties	Theoretical + Discussion	=	Sinusoidal Circuits, Impedance and Admittance	4	Eighth
General Questions	Theoretical + Discussion	=	Series and Parallel connection and phase relation in Sinusoidal Circuits	4	Ninth
Monthly exam	Theoretical + Discussion	=	Phasor Diagram, More Sinusoidal Circuits	4	Tenth
General Questions	Theoretical + Discussion	=	=	4	Eleventh
Discussion and exam I	Theoretical + Discussion	=	Instantaneous, Average, Apparent Power and Power Factor and reactive power	4	Twelfth
General Questions	Theoretical + Discussion	=	=	4	Thirteenth
Group Duties+	Theoretical + Discussion	=	Complex Power and Power Triangle	4	Fourteenth
					discussion

12.Infrastructure

Required readings: • Course Books • Other	Electric circuits by Nilson
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13Acceptance	
Prerequisites	***EE1202***
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Engineering Statistics / EE3212
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	Second / Second Academic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	14-10-2023

9. Course Objectives:

This course provides students with a working knowledge of fundamental statistics principles and probability in addition to a preface to the regression and correlation analysis. By the end of the semester, students should be able to determine when each of the various topics we have covered is appropriate to use, and to apply them to practical engineering situations or problems. This course will cover techniques on data collection and presentation, descriptive statistics, basic elements of probability theory, sampling techniques and theory, statistical estimation, hypothesis testing and regression analysis.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

use a number of methods and techniques for collecting and presentation the sets of data;
calculation and demonstration the center tendency and variation of data;
compute the probabilities in a simple case and using the rules of probability in computing;
give an account of the concept random variable and be able to use some common probability distributions;
understand the meaning of the central limit theorem;
use point and interval estimates for some typical statistical problems.
apply elementary regression for fitting measured data.

B. Subject-specific skills

- Scientific Reports
- Graduation Research

C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Develop the student's ability to dialogue and discussion. - Opening the way for the student to provide what he sees regarding the material.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in statistics.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	statistics & probability	Introduction: basic probability	Theoretical + Discussion	General questions and discussion
2	2	statistics & probability	Conditional probability, independent events	Theoretical + Discussion	General questions and discussion
3	2	statistics & probability	Principle of counting, permutations, combinations, binomial coefficient	Theoretical + Discussion	General questions and discussion
4	2	statistics & probability	Random variables and probability distributions	Theoretical + Discussion	General questions and discussion
5	2	statistics & probability	Graphical interpretations, joint distributions	Theoretical + Discussion	General questions and discussion
6	2	statistics & probability	Mathematical expectation	Theoretical + Discussion	General questions and discussion
7	2	statistics & probability	Variance and standard deviation	Theoretical + Discussion	General questions and discussion
8	2	statistics & probability	Correlation coefficient, skewness, and kurtosis	Theoretical + Discussion	General questions and discussion

9	2	statistics & probability	Percentiles, mean, median, mode	Theoretical + Discussion	General questions and discussion
10	2	statistics & probability	examples	Theoretical + Discussion	General questions and discussion
11	2	statistics & probability	exam	Theoretical + Discussion	Monthly exam
12	2	statistics & probability	Binomial distribution	Theoretical + Discussion	General questions and discussion
13	2	statistics & probability	Normal distribution	Theoretical + Discussion	General questions and discussion
14	2	statistics & probability	Exam	Theoretical + Discussion	Monthly exam
15	2	statistics & probability	Review	Theoretical + Discussion	General questions and discussion

12. Infrastructure	
Required readings: Course Books Other	1. Statistics for Engineers and Scientists. 4th edition. by Navidi 2. Probability & Statistics for Engineers & Scientists. 9th edition. by Walpole et.al. 3. Schaum's Outline Probability and Statistics 4th edition. by Spiegel et.al.
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13. Acceptance	
Prerequisites	**EE1202**
Minimum number of students	20
The largest number of students	50

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar / College of Engineering
2. University Department / Center	Electrical Engineering Department
3. Course Name/Code	Fundamentals of Electronics I / EE2308
4. Programs in which he enters	
5. Available Attendance Forms	Traditional class
6. Semester / Year	First Semester / Second Academic Year
7. Number of Credit Hours (Total)	60
8. The history of preparation of this description	23/6/2022

9- Course Objectives:

This course provides the student with the fundamental skills to understand the basics of semiconductor devices such as diode and transistor.

- To understand the working of diode and transistor.
- To study different biasing techniques to operate diode and transistor.

- Analyze output in different operating modes of different semiconductor devices.
- Compare design issues, advantages, disadvantages, and limitations of basic electronics.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

At the end of the course student will be able to:

- Will be able to explain basic operating principle of diodes.
- Explains ideal diode, equivalent circuit, and dc characteristic of a diode.
- Recognize half-wave, full wave, clipping and clamping circuits.
- Will be able to tell the structure and the operation of transistors and recognize the different types of transistors.
- Explains the operation of transistor dc biasing circuits.
- Calculates the parameters of the equivalent circuit of transistor.

B. Subject-specific skills

- Scientific Reports
- Graduation Research

C. Teaching and learning methods

- Sudden daily and weekly continuous tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

D. Evaluation methods

- Daily exams.
- Participation in the lecture
- Submission of activities
- Semi-semester and monthly exams.

E. Thinking skills.

- Developing the student's ability to work on performing duties and delivering them on time.
- Try to apply concepts by solving different types of exercises.
- Developing the student’s ability to dialogue and discussion.

- Opening the way for the student to provide what he sees regarding the material.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with the means of technology.
- Developing the student’s ability to deal with the Internet.
- Developing the student’s ability to deal with electronic devices.
- Developing the student's ability to deal with diode and transistor.

11. Course Structure					
Evaluation method	Method of education	Name of the unit/course or topic	Required Learning Outcomes	Hours	The week
General questions and discussion	Theoretical + Discussion	Foundations of Electronics 1	**BJT-stability**	4	First
General questions and discussion or exam I	Theoretical + Discussion	=	**Bias techniques for stability**	4	Second
General questions and discussion	Theoretical + Discussion	=	**Bias techniques for stability**	4	Third
I'm examined.	Theoretical + Discussion	=	**Voltage-divider CE**	4	Fourth
General questions and discussion or exam I	Theoretical + Discussion	=	**Feedback-bias CE**	4	Fifth
General questions and discussion	Theoretical + Discussion	=	**CB & Common Collector**	4	Sixth
General Questions	Theoretical + Discussion	=	**BJT equivalent circuit**	4	Seventh
Group duties	Theoretical + Discussion	=	**AC equivalent circuit – RE model**	4	Eighth
General Questions	Theoretical + Discussion	=	**RE-model CB**	4	Ninth
Monthly exam	Theoretical + Discussion	=	**RE model – CE**	4	Tenth

General Questions	Theoretical + Discussion	=	**RE model – CE**	4	Eleventh
Discussion and exam I	Theoretical + Discussion	=	**Hybrid – parameters**	4	Twelfth
General Questions	Theoretical + Discussion	=	**AC –equivalent CE**	4	Thirteenth
Group Duties+ discussion	Theoretical + Discussion	=	**AC –equivalent CB, CC**	4	Fourteenth
Monthly exam	Theoretical + Discussion	=	**Mid-year Examination**	4	Fifteenth

12. Infrastructure	
Electronic Devices by Robert L. Boylestad	Required readings: ▪ Course Books ▪ Other
	Special requirements
	Social services (e.g., guest lectures, vocational training, and field studies)

13. Acceptance	
EE1301 & EE1302	Prerequisites
20	Minimum number of students
100	The largest number of students

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Fundamentals of Electronics II/ EE2309
4. Programs in which he enters	
5. Available Attendance Forms	Traditional class
6. Semester / Year	Second Semester / Second Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	23/6/2022

9- Course Objectives:

This course provides the student with the fundamental skills to understand the basics of semiconductor devices such as diode and transistor.

- To understand the working of diode and transistor.
- To study different biasing techniques to operate diode and transistor.
- Analyze output in different operating modes of different semiconductor devices.
- Compare design issues, advantages, disadvantages, and limitations of basic electronics.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

At the end of the course student will be able to:

- Will be able to explain basic operating principle of diodes.
- Explains ideal diode, equivalent circuit, and dc characteristic of a diode.
- Recognize half-wave, full wave, clipping and clamping circuits.
- Will be able to tell the structure and the operation of transistors and recognize the different types of transistors.
- Explains the operation of transistor dc biasing circuits.
- Calculates the parameters of the equivalent circuit of transistor.

B. Subject-specific skills

- Scientific Reports
- Graduation Research

C. Teaching and learning methods

- Continuous sudden and weekly daily tests.
- Trainings and activities.
- Guiding students to some sources that contain examples and exercises to benefit from them.

D. Evaluation methods

- Daily exams.
- Participation in the lecture
- Submission of activities
- Semi-semester and monthly exams.

E. Thinking skills

- Developing the student's ability to work on performing duties and delivering

them on time.

- Try to apply concepts by solving different types of exercises.
- Developing the student's ability to dialogue and discussion.
- Opening the way for the student to provide what he sees regarding the material.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with the means of technology.
- Developing the student's ability to deal with the Internet.
- Developing the student's ability to deal with electronic devices.
- Developing the student's ability to deal with diode an transistor.

11. Course Structure					
Evaluation method	Method of education	Name of the unit/course or topic	Required Learning Outcomes	Hours	The week
General questions and discussion	Theoretical + Discussion	Foundations of Electronics 2	**FET equivalent Circuit**	4	First
General questions and discussion or exam I	Theoretical + Discussion	=	**FET equivalent Circuit**	4	Second
General questions and discussion	Theoretical + Discussion	=	**FET equivalent Circuit**	4	Third
I'm examined.	Theoretical + Discussion	=	**Multi-Two stage amplifier**	4	Fourth
General questions and discussion or exam I	Theoretical + Discussion	=	**Multi-Two stage amplifier**	4	Fifth
General questions and discussion	Theoretical + Discussion	=	**Class-C amplifier**	4	Sixth
General Questions	Theoretical + Discussion	=	**Class-C amplifier**	4	Seventh
Group duties	Theoretical + Discussion	=	**Tuned amplifier**	4	Eighth
General Questions	Theoretical + Discussion	=	**SCR &UJT**	4	Ninth
Monthly exam	Theoretical + Discussion	=	**Introduction to semiconductor laser**	4	Tenth

General Questions	Theoretical + Discussion	=	**Introduction to semiconductor laser**	4	Eleventh
Discussion and exam I	Theoretical + Discussion	=	**Basic IC biasing techniques**	4	Twelfth
General Questions	Theoretical + Discussion	=	**Basic IC biasing techniques**	4	Thirteenth
Group Duties+ discussion	Theoretical + Discussion	=	**Final Examination**	4	Fourteenth
Monthly exam	Theoretical + Discussion	=	**Final Examination**	4	Fifteenth

12. Infrastructure	
Electronic Devices by Robert L. Boylestad	Required readings: ▪ Course Books ▪ Other
	Special requirements
	Social services (e.g., guest lectures, vocational training and field studies)

13. Acceptance	
EE2308	Prerequisites
20	Minimum number of students
100	The largest number of students

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar / College of Engineering
2. University Department / Center	Electrical Engineering Department
3. Course Name/Code	Electro-Magnetics II / EE2316
4. Programs in which he enters	
5. Available Attendance Forms	E- presence
6. Semester / Year	Second Semester / Second Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	23/6/2022

9- Course Objectives:

10. Learning outcomes and teaching, learning and assessment methods
a. Preparing engineering staff in the field of electrical engineering b. Preparing qualified engineers in the implementation of projects and maintenance c. Providing engineering consultations and expertise. d. Instilling professional ethics in the hearts of graduates to spare them corruption and deviation.
B - Subject-specific skills B1 – Scientific Reports B2 – Graduation Research
Teaching and learning methods
- Continuous sudden and weekly daily tests. - Trainings and activities. - Guiding students to some sources that contain examples and exercises to benefit from them.
Evaluation methods
Participation during the lecture. Submission of activities Quarterly tests, activities and activities.
C- Thinking skills C1 - Developing the student's ability to work on performing duties and delivering them on time. C2- Try to apply concepts by solving different types of exercises. C3- Developing the student’s ability to dialogue and discussion.

Teaching and learning methods
• Exercises and practical problems • Assigning the student some group activities and duties. • Allocate a percentage of the grade for daily assignments and tests.
Evaluation methods
• Active participation in the classroom is a guide to student commitment and responsibility. • Commitment to the deadline in submitting assignments and research. • Quarterly and final exams express commitment and achievement of knowledge and skills. • Apps, exercises and daily assignments
d. General and transferable skills (other skills related to employability and personal development). D1- Developing the student's ability to deal with the means of technology. D2- Developing the student's ability to deal with the Internet. D3- Developing the student's ability to deal with multiple means. D4- Developing the student's ability to dialogue and discussion.

11. Course Structure					
Evaluation method	Method of education	Name of the unit/course or topic	Required Learning Outcomes	Hours	The week
General questions and discussion	Theoretical + Discussion	Areas 2	The steady magnetic field	4	First
General questions and discussion or exam I	Theoretical + Discussion	=	Biot- savat law	4	Second
General questions and discussion	Theoretical + Discussion	=	Amperes circuital law & their applications	4	Third
I'm examined.	Theoretical + Discussion	=	Magnetic flux & magnetic flux density	4	Fourth
General questions and discussion or exam I	Theoretical + Discussion	=	CURL	4	Fifth
General questions and discussion	Theoretical + Discussion	=	Stoke's theorem	4	Sixth
General Questions	Theoretical + Discussion	=	The scalar &vector magnetic potential	4	Seventh
Group duties	Theoretical + Discussion	=	Magnetic forces & derivation of the steady magnetic field laws	4	Eighth

General Questions	Theoretical + Discussion	=	Time varying field &Maxwell's equation, Faraday's law	4	Ninth
Monthly exam	Theoretical + Discussion	=	Moving conductor in a magnetic field & general case of induction	4	Tenth
General Questions	Theoretical + Discussion	=	Displacement current & conduction current	4	Eleventh
Discussion and exam I	Theoretical + Discussion	=	Maxwell's equations in point form	4	Twelfth
General Questions	Theoretical + Discussion	=	Maxwell's equations in integral form	4	Thirteenth
Group Duties+ discussion	Theoretical + Discussion	=	Boundary condition	4	Fourteenth
Monthly exam	Theoretical + Discussion	=	Boundary condition	4	Fifteenth

12. Infrastructure

Engineering electromagnetic/ Seventh edition By: William H. Hayt	Required readings: ▪ Course Books ▪ Other
	Special requirements

	Social services (e.g. guest lectures, vocational training and field studies)

13. Acceptance	
EE2315	Prerequisites
20	Minimum number of students
100	The largest number of students

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar / College of Engineering
2. University Department / Center	Electrical Engineering Department
3. Course Name/Code	Electro-Megnetics1 / EE2315
4. Programs in which he enters	
5. Available Attendance Forms	Traditional class
6. Semester / Year	First Semester / Second Academic Year
7. Number of Credit Hours (Total)	60
8. The history of preparation of this description	23/6/2022

9- Course Objectives:

10. Learning outcomes and teaching, learning and assessment methods

A. Preparing engineering staff in the field of electrical engineering

B. Preparing qualified engineers in the implementation of projects and maintenance

C. Providing engineering consultations and expertise.

D. Instilling professional ethics in the hearts of graduates to spare them corruption and deviation.

B - Subject-specific skills

B1 – Scientific Reports

B2 – Graduation Research

Teaching and learning methods

- Continuous sudden and weekly daily tests.

- Trainings and activities.

- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods

Participation during the lecture.

Submission of activities

Quarterly tests, activities and activities.

C- Thinking skills

C1 - Developing the student's ability to work on performing duties and delivering them on time.

C2- Try to apply concepts by solving different types of exercises.

C3- Developing the student's ability to dialogue and discussion.

Teaching and learning methods

- Exercises and practical problems
- Assigning the student some group activities and duties.
- Allocate a percentage of the grade for daily assignments and tests.

Evaluation methods
• Active participation in the classroom is a guide to student commitment and responsibility. • Commitment to the deadline in submitting assignments and research. • Quarterly and final exams express commitment and achievement of knowledge and skills. • Apps, exercises and daily assignments
d. General and transferable skills (other skills related to employability and personal development). D1- Developing the student's ability to deal with the means of technology. D2- Developing the student's ability to deal with the Internet. D3- Developing the student's ability to deal with multiple means. D4- Developing the student's ability to dialogue and discussion.

11. Course Structure					
Evaluation method	**Method of education**	**Name of the unit/course or topic**	**Required Learning Outcomes**	**Hours**	**The week**
General questions and discussion	Theoretical + Discussion	Electro-Megnetics1	Vector analysis &coordinate system	4	First
General questions and discussion or exam I	Theoretical + Discussion	=	Vector analysis &coordinate system	4	Second
General questions and discussion	Theoretical + Discussion	=	Coulomb's law & electric field intensity	4	Third
I'm examined.	Theoretical + Discussion	=	Coulomb's law & electric field intensity	4	Fourth
General questions and discussion or exam I	Theoretical + Discussion	=	Coulomb's law & electric field intensity	4	Fifth
General questions and discussion	Theoretical + Discussion	=	Electric flux density, Gauss's law &divergence	4	Sixth
General Questions	Theoretical + Discussion	=	Electric flux density, Gauss's law &divergence	4	Seventh
Group duties	Theoretical + Discussion	=	Electric flux density, Gauss's law &divergence	4	Eighth
General Questions	Theoretical + Discussion	=	Energy, potential, gradient & dipole	4	Ninth

Monthly exam	Theoretical + Discussion	=	Energy, potential, gradient & dipole	4	Tenth
General Questions	Theoretical + Discussion	=	Energy, potential, gradient & dipole	4	Eleventh
Discussion and exam I	Theoretical + Discussion	=	Current, conductor, dielectrics & capacitance	4	Twelfth
General Questions	Theoretical + Discussion	=	Current, conductor, dielectrics & capacitance	4	Thirteenth
Group Duties+ discussion	Theoretical + Discussion	=	Current, conductor, dielectrics & capacitance	4	Fourteenth
Monthly exam	Theoretical + Discussion	=	Poisson's &Laplace's equations	4	Fifteenth

12. Infrastructure	
Engineering electromagnetic/ Seventh edition By: William H. Hayt	Required readings: ▪ Course Books ▪ Other
	Special requirements
	Social services (e.g. guest lectures, vocational training and field studies)

13. Acceptance	
EE1201, EE1202 & EE1204	Prerequisites
20	Minimum number of students
100	The largest number of students

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Electric Circuits I / EE2310
4. Programs in which it enters	
5. Available Attendance Forms	Traditional Class
6. Semester / Year	First Course of Academic Year (2021-2022)
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	12/10/2022
9. Course Objectives:	
This course is a first course on electric circuits. The course is designed to provide	

students with an importance for electrical engineering field: Natural and Step Response of RL and RC Circuits, Sequential Switching; Natural and Step Response of Parallel and Series RLC Circuits. Operation Amplifiers. Balanced Three-Phase Circuits, Analysis of circuits (Wye, Delta); Power Calculations. Unbalanced Three-Phase systems.

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
- Analyze inverting, summing, and noninverting Op amp circuits. - Analyze and determine the complete response of RL, RC and RLC circuits - Understand 3-phase system and its power calculation. - Apply delta–wye or wye–delta transformation in Three-Phase Circuits as necessary to simplify circuit analysis
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Develop the student's ability to dialogue and discussion. - Opening the way for the student to provide what he sees regarding the material.
F. General and transferable skills (other skills related to employability and personal

development).
- Developing the student's ability to deal with academic curricula in English. - Developing the student's ability to deal with the Internet. - Developing the student's ability to deal with multiple means. - Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Introduction to Op Amp, Ideal Op Amp, and Inverting Op Amp	Chp. 2	Theoretical + Discussion	General questions and discussion
2	3	Non-inverting Op Amp, Summing Op Amp and Subtracting Op Amp	Chp. 2	Theoretical + Discussion	General questions and discussion
3	3	Cascaded Op Amp, Integrator Op Amp, and Differentiator Op Amp	Chp. 2	Theoretical + Discussion	General questions and discussion
4	3	Examples of Op Amp	Chp. 2	Theoretical + Discussion	General questions and discussion
5	3	Introduction to Source-free RC circuit	Chp. 3	Theoretical + Discussion	General questions and discussion
6	3	Source-free RL circuit and Step response of RC circuit	Chp. 3	Theoretical + Discussion	General questions and discussion
7	3	Step response of RL circuit and First-order Op Amp circuit	Chp. 3	Theoretical + Discussion	General questions and discussion
8	3	Introduction to Source-free series RLC circuit	Chp. 4	Theoretical +	General questions

				Discussion	and discussion
9	3	Source-free parallel RLC circuit and Step response of series RLC circuit	Chp. 4	Theoretical + Discussion	General questions and discussion
10	3	Step response of parallel RLC circuit and Second-order Op Amp circuit	Chp. 4	Theoretical + Discussion	General questions and discussion
11	3	Introduction to Balanced three-phase voltages	Chp. 5	Theoretical + Discussion	General questions and discussion
12	3	Balanced Wye-Wye connection and Balanced Wye-Delta connection	Chp. 5	Theoretical + Discussion	General questions and discussion
13	3	Balanced Delta-Delta connection and Balanced Delta-Wye connection	Chp. 5	Theoretical + Discussion	General questions and discussion
14	3	Power in balanced system and Unbalanced three-phase systems.	Chp. 5	Theoretical + Discussion	General questions and discussion
15	3	Examples of Three-phase systems	Chp. 5	Theoretical + Discussion	General questions and discussion

12. Infrastructure	
Required readings: ● Course Books ● Other	• Charles K. Alexander, Matthew N. O. Sadiku "Fundamentals of Electric Circuits" Fifth edition. • James W. Nilsson, Susan A. Riedel "Electric Circuits" Ninth edition
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13. Acceptance

Prerequisites	***EE1104***
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Electric Circuits II / EE2311
4. Programs in which it enters	
5. Available Attendance Forms	Traditional Class
6. Semester / Year	Second Course of Academic Year (2021-2022)
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	12/10/2022
9. Course Objectives:	
This course is a second course on electric circuits. The course is designed to provide	

students with a knowledge on circuit analysis by Introducing the topic and illustrating its importance for electrical engineering field: Laplace transform and relation between current and voltage for resistance, capacitance and inductance, Laplace transform and its applications in electric circuit the concept of magnetic coupling, Analysis of magnetic coupled circuits, Linear transformers, Ideal transformers. Two-port networks and its different equation forms, Evaluation of its parameter, Interconnected two-port networks, Frequency response. High-pass, low-pass, Band pass, and Band-stop filters. Revision and a set of solved examples.

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
- Analyze Laplace transform and relation between current and voltage. - Analyze magnetic coupled circuits (Linear and Ideal transformers) - Understand Two-port networks and its different equation forms. - Apply frequency response in terms of High-pass, low-pass, Band pass, and Band-stop filters as necessary to simplify circuit analysis
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Develop the student's ability to dialogue and discussion
F. General and transferable skills (other skills related to employability and personal

development).
- Developing the student's ability to deal with academic curricula in English. - Developing the student's ability to deal with the Internet. - Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Introduction to Magnetically Coupled Circuits and Matual Inductance	Chp. 1	Theoretical + Discussion	General written and questions
2	3	Energy in a Coupled Circuit	Chp. 1	Theoretical + Discussion	General written and questions
3	3	Explanation of Linear Transformer	Chp. 1	Theoretical + Discussion	General written and questions
4	3	Concept of Ideal Transformer, Concept of Ideal Autotransformer and Three-Phase Transformers	Chp. 1	Theoretical + Discussion	General written and questions
5	3	Concept of Series and Parallel Resonance	Chp. 2	Theoretical + Discussion	General written and questions
6	3	Passive Filters (Lowpass, Highpass, Bandpass, and Bandstop)	Chp. 2	Theoretical + Discussion	General written and questions
7	3	Active Filters (Lowpass, Highpass, Bandpass, and Bandreject)	Chp. 2	Theoretical + Discussion	General written and questions
8	3	Introduction to Laplace Transform and Its Properties	Chp. 3	Theoretical + Discussion	General written and questions
9	3	Inverse Laplace Transform	Chp. 3	Theoretical + Discussion	General written and questions
10	3	Circuit Element Models (Laplace Transform Applications)	Chp. 3	Theoretical + Discussion	General written and questions

11	3	Tow-port Networks (Impedance Parameters)	Chp. 4	Theoretical + Discussion	General written and questions
12	3	Tow-port Networks (Admittance Parameters)	Chp. 4	Theoretical + Discussion	General written and questions
13	3	Tow-port Networks (Hybrid Parameters)	Chp. 4	Theoretical + Discussion	General written and questions
14	3	Tow-port Networks (Transmission Parameters)	Chp. 4	Theoretical + Discussion	General written and questions
15	3	Interconnection of Networks	Chp. 4	Theoretical + Discussion	General written and questions

12. Infrastructure	
Required readings: ● Course Books ● Other	• Charles K. Alexander, Matthew N. O. Sadiku "Fundamentals of Electric Circuits" Fifth edition. • James W. Nilsson, Susan A. Riedel "Electric Circuits" Ninth edition
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13. Acceptance	
Prerequisites	EE2310
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	***EE Lab 21/EE2306***
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class
6. Semester / Year	First / Second Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	23/6/2022

9. Course Objectives :
- The course aims to provide the student with skills in dealing with direct current machines. - Knowledge of the working principle of direct current machines of both types (motors and generators). - The course aims to provide the student with skills in operating and identifying faults in direct current machines. - Drawing equations for direct current machines.

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
• Understand the main principles of operation of direct current machines • Studying the components of machines, winding methods, types of generators and engines, how to control them, and drawing mathematical relationships.
B. Subject-specific skills
• Assigning the student to some group activities and duties. • Allocating a percentage of the grade to daily assignments and tests.
C. Teaching and learning methods
• Sudden daily and continuous weekly tests. • Trainings and activities. • Directing students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
• Active participation during the lecture is evidence of the student's commitment and responsibility. • Commitment to the deadline for submitting assignments. • Semester and final tests express commitment and cognitive and skill achievement.

• Applications, exercises and daily assignments
E. Thinking skills
• Developing the student's ability to work on performing assignments and submitting them on the scheduled date. • Trying to apply the concepts by solving different types of exercises.
F. General and transferable skills (other skills related to employability and personal development).
• Developing the student's ability to dialogue, discuss, and solve and deal with various issues

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Construction of DC Machines	CH_1	Theoretical + discussion	General questions and discussion
2	2	Building up Voltage	CH_2	Theoretical + discussion	General questions, discussion or exam
3	2	Building up Voltage	CH_2	Theoretical + discussion	General questions and discussion
4	2	Building up Voltage	CH_2	Theoretical + discussion	Exam
5	2	Characteristic of Separately Excited Generator	CH_3	Theoretical + discussion	General questions, discussion or exam
6	2	Characteristic of Separately Excited Generator	CH_3	Theoretical + discussion	General questions and discussion
7	2	Characteristic of Separately Excited Generator	CH_3	Theoretical + discussion	general questions
8	2	Characteristic of Self Excited Shunt Generator	CH_4	Theoretical + discussion	Duties + discussion
9	2	Characteristic of Self Excited Shunt Generator	CH_4	Theoretical + discussion	general questions

10	2	Characteristic of Self Excited Shunt Generator	CH_4	Theoretical + discussion	Monthly exam
11	2	Characteristic of (a) Compound Generator	CH_5	Theoretical + discussion	general questions
12	2	Characteristic of and (b) Series Generator	CH_5	Theoretical + discussion	Discussion and exam
13	2	Characteristic of (a) Compound Generator and (b) Series Generator	CH_5	Theoretical + discussion	general questions
14	2	Separation of Losses in DC Generator by Auxiliary Motor.	CH_6	Theoretical + discussion	Duties + discussion
15	2	Separation of Losses in DC Generator by Auxiliary Motor.	CH_6	Theoretical + discussion	Monthly exam

12.Infrastructure

Required readings: ● Course Books ● Other	● Theraja and Theraja (A Textbook of Electrical Technology) volume I basic electrical engineering in S.I. System of units revised by: Tarnekar Chand an ISO 9001:2000 company Chand & company ltd. Ram Nagar (2005) ● Laboratory sheet prepared by department lecturers
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance

Prerequisites	EE2308
Minimum number of students	20
The largest number of students	30

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	***EE Lab 22/EE2307***
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class
6. Semester / Year	Second / Second Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	23/6/2022

9. Course Objectives :
- The course aims to provide the student with skills in dealing with direct current machines. - Knowledge of the working principle of direct current machines of both types (motors and generators). - The course aims to provide the student with skills in operating and identifying faults in direct current machines. - Drawing equations for direct current machines.

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
• Understand the main principles of operation of direct current machines • Studying the components of machines, winding methods, types of generators and engines, how to control them, and drawing mathematical relationships.
B. Subject-specific skills
• Assigning the student to some group activities and duties. • Allocating a percentage of the grade to daily assignments and tests.
C. Teaching and learning methods
• Sudden daily and continuous weekly tests. • Trainings and activities. • Directing students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
• Active participation during the lecture is evidence of the student's commitment and responsibility. • Commitment to the deadline for submitting assignments. • Semester and final tests express commitment and cognitive and skill achievement.

• Applications, exercises and daily assignments
E. Thinking skills
• Developing the student's ability to work on performing assignments and submitting them on the scheduled date. • Trying to apply the concepts by solving different types of exercises.
F. General and transferable skills (other skills related to employability and personal development).
• Developing the student's ability to dialogue, discuss, and solve and deal with various issues

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Connection & Rotational direction test of DC-Shunt Machines Operating as Motors	CH_1	Theoretical + discussion	General questions and discussion
2	2	Connection & Rotational direction test of DC-Shunt Machines Operating as Motors	CH_1	Theoretical + discussion	General questions, discussion or exam
3	2	Speed Control of a DC Shunt Motor	CH_2	Theoretical + discussion	General questions and discussion
4	2	Speed Control of a DC Shunt Motor	CH_2	Theoretical + discussion	Exam
5	2	Speed Control of a DC Shunt Motor	CH_2	Theoretical + discussion	General questions, discussion or exam
6	2	Load Characteristics of the Separately - Excited Shunt- Wound DC Motor,	CH_3	Theoretical + discussion	General questions and discussion
7	2	Load Characteristics of the Separately - Excited Shunt-	CH_3	Theoretical + discussion	general questions

		Wound DC Motor,			
8	2	Load Characteristics of the Separately - Excited Shunt-Wound DC Motor,	CH_3	Theoretical + discussion	Duties + discussion
9	2	Connection & Rotational direction Test of DC-Series Machines Operating as Motors	CH_4	Theoretical + discussion	general questions
10	2	Connection & Rotational direction Test of DC-Series Machines Operating as Motors	CH_4	Theoretical + discussion	Monthly exam
11	2	Load Characteristics of the Series-Wound DC Motor	CH_5	Theoretical + discussion	general questions
12	2	Load Characteristics of the Series-Wound DC Motor	CH_5	Theoretical + discussion	Discussion and exam
13	2	Load Characteristics of Shunt and Compound DC Motor	CH_6	Theoretical + discussion	general questions
14	2	Load Characteristics of Shunt and Compound DC Motor	CH_6	Theoretical + discussion	Duties + discussion
15	2	Load Characteristics of Shunt and Compound DC Motor	CH_6	Theoretical + discussion	Monthly exam

12.Infrastructure

Required readings: ● Course Books ● Other	● Theraja and Theraja (A Textbook of Electrical Technology) volume I basic electrical engineering in S.I. System of units revised by: Tarnekar Chand an ISO 9001:2000 company Chand & company ltd. Ram Nagar (2005) ● Laboratory sheet prepared by department lecturers
special requirements	

Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance	
Prerequisites	EE2309
Minimum number of students	20
The largest number of students	30

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar / College of Engineering
2. University Department / Center	Electrical Engineering Department
3. Course Name/Code	DC Machines I/ EE2313
4. Programs in which he enters	
5. Available Attendance Forms	presence
6. Semester / Year	First Semester / Second Academic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	23/9/2022
9- Course Objectives :	
A. Understand the main principles of DC machinery.	
B. Studying the components of machines, winding methods, types of generators and motors, how to control it, and drawing mathematical relations.	
C- Theoretical study and conducting some applications in the laboratory	

10. Learning outcomes and teaching, learning and assessment methods

a. Ability to handle generators, motors
b. Ability to analyze and study DC machines
c. Ability to infer and solve problems related to machines
d. Know the types of l.osses

B - Subject-specific skills
B1 – Scientific Reports
B2 – Graduation Research

Teaching and learning methods

- Continuous sudden and weekly daily tests.
- Exercises and activities.
- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods

Participation during the lecture.
Submission of activities
Quarterly tests, activities and activities.

C- Thinking skills
C1 - Developing the student's ability to work on performing duties and delivering them on time.
C2- Try to apply concepts by solving different types of exercises.
C3- Developing the student's ability to dialogue and discussion.

Teaching and learning methods

- Exercises and sports problems
- Assigning the student some group activities and duties.
- Allocate a percentage of the grade for daily assignments and tests.

Evaluation methods

- Active participation during the lecture is a guide to the student's commitment and responsibility.
- Commitment to the deadline in submitting assignments and research.
- Quarterly and final exams express commitment and achievement of knowledge and skills.
- Apps, exercises and daily assignments

D - General and transferred skills (other skills related to employability and personal development).

D1- Developing the student's ability to deal with the means of technology.

D2- Developing the student's ability to deal with the work,.

D3- Developing the student's ability to deal with multiple means.

D4- Developing the student's ability to dialogue and discussion.

11. Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
First	3	Principle of operation of generators		Theoretical + Discussion	General questions and discussion
Second	3	Principle of operation of motors		Theoretical + Discussion	General questions and discussion or exam I
Third	3	constrictions		Theoretical + Discussion	General questions and discussion
Fourth	3	Armature windings		Theoretical + Discussion	I'm examined.
Fifth	3	Armature winding schemes		Theoretical + Discussion	General questions and discussion or exam I
Sixth	3	Main field		Theoretical + Discussion	General questions and discussion
Seventh	3	Types of excitations of DC machine		Theoretical + Discussion	General Questions
Eighth	3	Tutorial problem		Theoretical + Discussion	Group duties
Ninth	3	Armature reaction		Theoretical + Discussion	General Questions
Tenth	3	Process of armature reaction		Theoretical + Discussion	Monthly exam
Eleventh	3	Voltage builds up		Theoretical + Discussion	General Questions
Twelfth	3	Commutation process		Theoretical + Discussion	Discussion and exam I
Thirteenth	3	losses		Theoretical	General

				+ Discussion	Questions
Fourteenth	3	Generator operation		Theoretical + Discussion	Group Duties+ discussion
Fifteenth	3	External characteristics		Theoretical + Discussion	Monthly exam

12. Infrastructure	
Required readings: ▪ Course Books ▪ Other	Electrical technology B. L. Theraja Design of Electrical Machines , V.N. Mittle Arvind Mitta
Special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13. Acceptance	
Prerequisites	***EE1301/EE1302/EE1204***
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar / College of Engineering
2. University Department / Center	Electrical Engineering Department
3. Course Name/Code	DC Machines II/ ***EE2314***
4. Programs in which he enters	
5. Available Attendance Forms	presence
6. Semester / Year	Second Semester / Second Academic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	23/6/2022
9- Course Objectives :	
A. Understand the main principles of DC machinery.	
B. Studying the components of machines, winding methods, types of generators and motors, how to control it, and drawing mathematical relations.	
C- Theoretical study and conducting some applications in the laboratory	

10. Learning outcomes and teaching, learning and assessment methods

a. Ability to handle generators, motors and transformers
b. Ability to analyze and study DC machines
c. Ability to infer and solve problems related to machines
d. Know the types of transformers

B - Subject-specific skills
B1 – Scientific Reports
B2 – Graduation Research

Teaching and learning methods

- Continuous sudden and weekly daily tests.
- Trainings and activities.
- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods

Participation during the lecture.
Submission of activities
Quarterly tests, activities and activities.

C- Thinking skills
C1 - Developing the student's ability to work on performing duties and delivering them on time.
C2- Try to apply concepts by solving different types of exercises.
C3- Developing the student's ability to dialogue and discussion.

Teaching and learning methods

- Exercises and sports problems
- Assigning the student some group activities and duties.
- Allocate a percentage of the grade for daily assignments and tests.

Evaluation methods

- Active participation during the lecture is a guide to the student's commitment and responsibility.
- Commitment to the deadline in submitting assignments and research.
- Quarterly and final exams express commitment and achievement of knowledge and skills.
- Apps, exercises and daily assignments

D - General and transferred skills (other skills related to employability and personal development).

D1- Developing the student's ability to deal with the means of technology.

D2- Developing the student's ability to deal with the work,.

D3- Developing the student's ability to deal with multiple means.

D4- Developing the student's ability to dialogue and discussion.

11. Course Structure					
The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
First	3	Motor operation			General questions and discussion
Second	3	Mechanical characteristic			General questions and discussion or exam I
Third	3	Mode of operation			General questions and discussion
Fourth	3	Speed control of DC motor (1)			I'm examined.
Fifth	3	Speed control of DC motor (1)			General questions and discussion or exam I
Sixth	3	Starting of DC motor			General questions and discussion
Seventh	3	Breaking of DC motor			General Questions
Eighth	3	Tutorial problem			Group duties
Ninth	3	Single phase transformers			General Questions
Tenth	3	Equivalent circuit of transformer			Monthly exam
Eleventh	3	Three –phase transformer			General Questions
Twelfth	3	Δ-Δ, Δ -Y, Y-Δ, Y-Y			Discussion and exam I
Thirteenth	3	, T-trans., V-trans.			General Questions
Fourteenth	3	Tutorial problem			Group Duties+ discussion
Fifteenth	3	Tutorial problems			Monthly exam

12. Infrastructure	
Required readings: ▪ Course Books ▪ Other	Electrical technology B. L. Theraja Design of Electrical Machines , V.N. Mittle Arvind Mitta
Special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13. Acceptance	
Prerequisites	***EE2313***
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Analog Communications and Noise / EE3328
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	First / Third Academic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	14-10-2023
9. Course Objectives:	
This course introduces the fundamentals of communication system engineering. Specifically, the analog communication systems (AM and FM). The noise within the communication systems is also introduced.	

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
• Understand and analyze communication systems in both the time and frequency domains. • Understand the principles of amplitude and frequency modulations. • Understand the sources of the electrical noise and its roles on the communications.
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall

- Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Develop the student's ability to dialogue and discussion. - Opening the way for the student to provide what he sees regarding the material.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in communication systems.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Communication	Introduction to Communication systems	Theoretical + Discussion	General questions and discussion
2	2	Communication	Signals & Fourier & Spectrum	Theoretical + Discussion	General questions and discussion
3	2	Communication	Bandwidth & Filters	Theoretical + Discussion	General questions and discussion
4	2	AM	Analog Communications: AM-DSB-SC	Theoretical + Discussion	General questions and discussion
5	2	AM	AM-DSB-LC	Theoretical + Discussion	General questions and discussion
6	2	AM	AM-SSB & VSB	Theoretical + Discussion	General questions and discussion
7	2	FDM	Superheterodyne & FDM	Theoretical + Discussion	General questions and discussion
8	2	FDM	Examples & Problems	Theoretical + Discussion	General questions and discussion
9	2	FM	Quiz & Introduction to FM	Theoretical + Discussion	General questions and discussion
10	2	FM	NB-FM & WB-FM,	Theoretical + Discussion	General questions and discussion
11	2	FM	Types of Mod/DeMod	Theoretical + Discussion	Monthly exam
12	2	Communication	PLL	Theoretical + Discussion	General questions and

					discussion
13	2	Noise	Introduction to Noise	Theoretical + Discussion	General questions and discussion
14	2	Noise	Noise in AM & FM	Theoretical + Discussion	Monthly exam
15	2	Noise	Examples & problems	Theoretical + Discussion	General questions and discussion

12. Infrastructure	
Required readings: Course Books Other	Introduction to Communication Systems by . Ferrel G. Stremler.
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13. Acceptance	
Prerequisites	**EE3319**
Minimum number of students	20
The largest number of students	50

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Digital Communications / EE3329
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	Second / Third Academic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	14-10-2023
9. Course Objectives:	
This course introduces the fundamentals of the digital communication systems. It discusses different techniques of transmitting analog signals in form of discrete/binary signals. Different carrier modulation methods of the binary data are presented.	

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
• Understand the principles of sampling and encoding of analog signals. • Understand the TDM. • Understand the principles of digital modulation.
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments

- Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Develop the student's ability to dialogue and discussion. - Opening the way for the student to provide what he sees regarding the material.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in communication systems.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Communication	Introduction to Sampling	Theoretical + Discussion	General questions and discussion
2	2	Communication	PAM, PWM, PPM	Theoretical + Discussion	General questions and discussion
3	2	Communication	TDM	Theoretical + Discussion	General questions and discussion
4	2	Communication	PCM	Theoretical + Discussion	General questions and discussion
5	2	Communication	DeltaPCM, Differential PCM	Theoretical + Discussion	General questions and discussion
6	2	Communication	DM, Adaptive DM	Theoretical + Discussion	General questions and discussion
7	2	Communication	Channel capacity , ISI	Theoretical + Discussion	General questions and discussion
8	2	Communication	Probability of error	Theoretical + Discussion	General questions and discussion
9	2	Communication	Examples & problems	Theoretical + Discussion	General questions and discussion
10	2	Communication	Quiz & introduction to Digital Comm	Theoretical + Discussion	General questions and discussion
11	2	Communication	ASK, FSK, PSK	Theoretical + Discussion	Monthly exam

12	2	Communication	Probability of error in Digital Mod	Theoretical + Discussion	General questions and discussion
13	2	Communication	M-level Modulation	Theoretical + Discussion	General questions and discussion
14	2	Communication	QPSK	Theoretical + Discussion	Monthly exam
15	2	Communication	QAM, Examples & problems	Theoretical + Discussion	General questions and discussion

12. Infrastructure	
Required readings: Course Books Other	Introduction to Communication Systems by . Ferrel G. Stremler.
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13. Acceptance	
Prerequisites	**EE3328**
Minimum number of students	20
The largest number of students	50

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	EE3106 -English III
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	Second Semester – Third Year

7. Number of Credit Hours (Total)	30
8. The preparation date of this description	22/6/2022

9. Course Objectives :

- This course is designed to enable students to achieve academic oral and written communication in accordance with the standards required at the university level.
- The course integrates all language skills with an emphasis on writing, stimulates students' imagination, and enhances personal expression.
- In thiscourse, students are trained to apply critical thinking skills to a wide range of challenging topics from diverse scientific subjects. Course activities include writing various types of academic essays, acquiring advanced academic vocabulary, and participating in group discussions and debates.
- In addition, the course also includes other skills to enhance key skills, such as other readings in electrical engineering.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

- Raising the level of student proficiency in the English language.
- Develop the student's ability to read and write in English.
- The student should be able to acquire new vocabulary.
- The student should know the extent of his ability to speak English fluently

B. Subject-specific skills

- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Develop the student's ability to dialogue and discussion. - Opening the way for the student to provide what he sees regarding the material.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in English. - Developing the student's ability to deal with the Internet. - Developing the student's ability to deal with multiple means. - Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Forget Questions Using a bilingual dictionary Social expressions-1	Unit-1	Theoretical + Discussion	General questions and discussion
2	2	Present tenses Have/ have got Collection: daily life Making conversation	Unit-2	Theoretical + Discussion	General written and oral questions and discussion
3	2	Past tenses Word formation Time expressions Personal information	Unit-3	Theoretical + Discussion	discussion
4	2	Much/ many-some/ any a few, a little, a lot of Articles Shopping Prices	Unit-4	Theoretical + Discussion	Exam I am general questions and discussion
5	2	Verb patterns-1 Future forms Hot verbs How do you feel?	Unit-5	Theoretical + Discussion	General questions and discussion or exam I
6	2	What ..... Like? Comparatives and superlatives Synonyms and antonyms Directions	Unit-6	Theoretical + Discussion	General questions and discussion
7	2	Progressive Exam-I		Theoretical + Discussion	Monthly exam
8	2	Present perfect For, since Adverbs word pairs Short answers	Unit-7	Theoretical + Discussion	Discussion with to give collective duties
9	2	Have (go) to Should/ must Words that go together At the doctor's	Unit-8	Theoretical + Discussion	General Questions

10	2	Time clauses If Hot verbs In the hotel	Unit-9	Theoretical + Discussion	General questions and discussion
11	2	Verb patterns-2 Manage to, used to -ed/ -ing adjectives Exclamations	Unit-10	Theoretical + Discussion	General Questions
12	2	Passives Verbs and nouns that go together Notices	Unit-11	Theoretical + Discussion	General questions and discussion
13	2	Second conditional Might Phrasal verbs Social expressions-2	Unit-12	Theoretical + Discussion	General Questions
14	2	Progressive Exam-II		Theoretical + Discussion	Monthly exam
15	2	Practical session (oral exam)		Theoretical + Discussion	Oral exam

12.Infrastructure

Required readings: • Course Books • Other	• John & Liz Soars, "New Headway Plus- Pre-Intermediate Student's Book", 10th ed 2012 • Raymond Murphy; "English Grammar in Use", 4th edition 2012 • https://owl.purdue.edu/owl/research_and_citation/apa_style/apa_style_introduction.html • https://elt.oup.com/student/headway/preint4/?cc=global&selLanguage=en
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	***EE1104***
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	AC Machines I/EE3324
4. Programs in which it enters	
5. Available Attendance	Traditional class/ Blended

Forms	
6. Semester / Year	First / third Academic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	1/9/2021

9. Course Objectives :

- Introducing the student to the basics of alternating current machines and developing the skill of finding industrial solutions to most of the problems he may encounter in the field of work.
- It also prepares the student to be able to deal with all faults and how to choose engines according to the type of condition and calculate efficiency.
- In addition to understanding the basics and skills of dealing with electrical transformers and generators.
- Preparing engineering staff in the field of electrical engineering
- Preparing competent engineers in project implementation and maintenance
- Providing engineering consultations and expertise.
- Instilling professional ethics in graduates to protect them from corruption and deviance

10. Learning outcomes and teaching, learning and assessment methods

- Dealing with induction machines and transformers of all kinds

- Conducting practical experiments that suit the methodological data - Dealing with expected problems in the field of work
A. Subject-specific skills
- Scientific Reports - Graduation Research
B. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
C. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
D. Thinking skills
- Intellectual questions that include industrial problems and how to solve them - Selection of type and size of motors for different working conditions
E. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in English. - Developing the student's ability to deal with the Internet. - Developing the student's ability to deal with multiple means.

- Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Single phase winding	Single phase theory	Theoretical + Discussion	General questions and discussion
2	3	Double field theory	Double field theory	Theoretical + Discussion	General written and oral questions and discussion
3	3	Types of 1 phase motor	All Types of 1 phase motor	Theoretical + Discussion	discussion
4	3	Starting torque of single Phase motor	Main equations of Starting torque	Theoretical + Discussion	Exam I am general questions and discussion
5	3	Capacitor type motor	Capacitor motor theory	Theoretical + Discussion	General questions and discussion or exam I
6	3	Three phase induction motor construction	Introduction of three phase induction motor	Theoretical + Discussion	General questions and discussion
7	3	Rotating field for three phase	Rotating field	Theoretical + Discussion	Monthly exam
8	3	Equivalent circuit of 3 phase motor	Exact and approximate Equivalent circuit	Theoretical + Discussion	Discussion with to give collective duties
9	3	Torque -speed in 3 phase motor	Torque - speed characteri	Theoretical +	General Questions

			stic curve	Discussion	
10	3	**Starting torque, maximum torque ,full load torque**	**Torque ratios**	Theoretical + Discussion	General questions and discussion
11	3	**Slip on 3 phase motor**	**Slip on 3 phase motor**	Theoretical + Discussion	General Questions
12	3	**Mechanical load on rotor**	**Mechanical torque**	Theoretical + Discussion	General questions and discussion
13	3	**Circle calculation of three of 3 phase motor**	**Circle diagram**	Theoretical + Discussion	General Questions
14	3	**Speed control of three phase induction motor**	**Speed control**	Theoretical + Discussion	Monthly exam
15	3	**Starting of three phase induction motor**	**Starting Methods**	Theoretical + Discussion	Oral exam

12.Infrastructure	
Required readings: • Course Books • Other	A.C Electrical machines B.L THERAJA ☐ Advanced problems in electrical machines B.L THERAJA ☐ •
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	***non***

Minimum number of students	15
The largest number of students	45

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	AC Machines II/EE3325
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	Second / third Academic Year

7. Number of Credit Hours (Total)	45
8. The preparation date of this description	1/9/2021

9. Course Objectives :

- Introducing the student to the basics of alternating current machines and developing the skill of finding industrial solutions to most of the problems he may encounter in the field of work.
- It also prepares the student to be able to deal with all faults and how to choose engines according to the type of condition and calculate efficiency.
- In addition to understanding the basics and skills of dealing with electrical transformers and generators.
- Preparing engineering staff in the field of electrical engineering
- Preparing competent engineers in project implementation and maintenance
- Providing engineering consultations and expertise.
- Instilling professional ethics in graduates to protect them from corruption and deviance

10. Learning outcomes and teaching, learning and assessment methods

- Dealing with synchronous machines and transformers of all kinds
- Conducting practical experiments that suit the methodological data

- Dealing with expected problems in the field of work
A. Subject-specific skills
- Scientific Reports - Graduation Research
B. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
C. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
D. Thinking skills
- Intellectual questions that include industrial problems and how to solve them - Selection of type and size of motors for different working conditions
E. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in English. - Developing the student's ability to deal with the Internet. - Developing the student's ability to deal with multiple means. - Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	**Synchronous motor construction**	**Introduction of Synchronous motor**	Theoretical + Discussion	General questions and discussion
2	3	**Principle of operations**	**Principle of operations**	Theoretical + Discussion	General written and oral questions and discussion
3	3	**Loaded syn. motor**	**Synchronous motor under load**	Theoretical + Discussion	discussion
4	3	**Loaded syn. motor**	**Synchronous motor under load**	Theoretical + Discussion	Exam I am general questions and discussion
5	3	**Over –under excitation effect on syn. motor**	**Effect of excitation**	Theoretical + Discussion	General questions and discussion or exam I
6	3	**Alternator constructions & winding**	**Introduction of Alternator**	Theoretical + Discussion	General questions and discussion
7	3	**Induced e.m.f**	**Induced e.m.f**	Theoretical + Discussion	Monthly exam
8	3	**Armature reaction effect &synchronous impedance**	**Armature reaction**	Theoretical + Discussion	Discussion with to give collective duties
9	3	**Loaded alternator**	**Loaded alternator**	Theoretical + Discussion	General Questions
10	3	**Regulation of alternator**	**Voltage Regulation**	Theoretical + Discussion	General questions and discussion

11	3	**Regulation techniques**	**Regulation techniques**	Theoretical + Discussion	General Questions
12	3	**Transformer theory**	**Transformer**	Theoretical + Discussion	General questions and discussion
13	3	**Equivalent circuit and phasor diagram of transformer**	**Equivalent circuit and phasor diagram**	Theoretical + Discussion	General Questions
14	3	**Power calculation and efficiency of transformer**	**Power calculation**	Theoretical + Discussion	Monthly exam
15	3	**Power calculation and efficiency of transformer**	**Power calculation**	Theoretical + Discussion	Oral exam

12.Infrastructure	
Required readings: • Course Books • Other	➢ A.C Electrical machines B.L THERAJA ➢ Advanced problems in electrical machines B.L THERAJA •
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	***non***
Minimum number of students	15
The largest number of students	45

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar – College of Engineering
2. University Department / Center	Electrical Engineering Department
3. Course Name/Code	Computer Networks/ EE3323
4. Programs in which he enters	
5. Available Attendance Forms	Traditional class/ Blendeds
6. Semester / Year	First Semester/Third Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	1/10/2021
9. Course Objectives:	
• This course deals with the basic concept of data communications. • To understand the layered architecture of communication protocols. • To learn digital and analog signal transmission and encoding techniques. • To understand multiplexing techniques.	

- Study of network security and encryption methods.
- To understand LAN architectures and systems.

10.Learning outcomes and teaching, learning and assessment methods

- Describe the general principles of data communication.
- Describe how signals are used to transfer data between nodes.
- Describe how packets in the Internet are delivered.
- Explain the concept of dividing a job into layered tasks, the functions of the various layers of the OSI Mode.
- Explain the basics of TCP/IP model, functions of the different layers and protocols involved, addressing mechanisms used under the TCP/IP, IPv4 and importantly IP address and IP header format.
- Define the transmission medium and its types, understand various network strategies and topologies.
- Describe how routing protocols work.
- Design and implement a network protocol.
- Explain multiplexing techniques.
- Explain network security and cryptography.
- Discuss the internet elements and their applications.

Subject-specific skills

- Scientific Reports
- Graduation Research

Teaching and learning methods

- Sudden daily and weekly continuous tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods

- Active participation in the classroom is a guide to student commitment and responsibility.
- Commitment to the deadline in submitting assignments
- Quarterly and final exams express commitment and achievement of knowledge and skills.

• Apps, exercises, and daily assignments.
Thinking skills
• Develop the student's ability to work on performing duties and deliver them on time. • Try to apply concepts by solving different types of exercises. • Develop the student's ability to dialogue and discussion. • Opening the way for the student to provide what he sees regarding the material.
General and transferred skills (other skills related to employability and personal development).
• Developing the student's ability to dialogue, discuss, solve and deal with various problems.

11.Course Structure					
The week	**Hours**	**Name of the unit/course or topic**	**Required Learning Outcomes**	**Method of education**	**Evaluation method**
First	4	Introduction	Data communications and networking	Theoretical + Discussion	General questions and discussion
Second	4	Data transmission	Data, signals, transmission impairments & their parameters	=	General questions and discussion
Third	4	Standard Signal encoding techniques	(digital data, digital signals), (digital data, Analog signals), & (analog data, analog signals).	=	General questions and discussion
Fourth	4	Data communication	Network topologies, network types, & computer communication networks	=	Give an assignment 1 with general questions and discussion
Fifth	4	Transmission media	Introduction, guided media, applications, optical fiber, unguided media, wireless channels, & satellite microwave	=	General questions and discussion
Sixth	4	Wireless LANs	Wireless LAN Technology, IEEE 802.11 Architecture and Services, IEEE 802.11 Medium Access Control, & IEEE 802.11 Physical Layer	=	Quiz 1 for students with general questions and discussion
Seventh	4	Network protocol and standard	Introduction, OSI model with its layers and physical layers	=	General Questions

Eighth	4	Midterm Exam		=	Monthly exam
Ninth	4	Data Link Control & Protocols Data Link Layer	Framing, character-oriented protocols, bit-oriented protocols, flow and error control & protocols.	=	Explanation and discussion
Tenth	4	Network protocol and standard	Introduction, TCP/IP model & its layers	=	Explanation and discussion
Eleventh	4	Switching networks	Circuit switching, packet switching, message switching, virtual circuit, cell switching, & ATM virtual connections	=	Give an assignment 2 with general questions and discussion
Twelfth	4	Routing	Introduction, Path determination & routing algorithms	=	General Questions
Thirteenth	4	Multiplexing	Frequency division multiplexing, synchronous time division multiplexing, statistical time division multiplexing, & digital subscriber line	=	Quiz 2 for students with general questions and discussion
Fourteenth	4	Network security	Introduction, security architecture, security attacks, & achieving network security.	=	Dutie + discussion
Fifteenth	4	Internet applications	Electronic mail and network management, internet directory service & World Wide Web.	=	Explanation and discussion
Sixteen	4	Final exam		=	Monthly exam

12.Infrastructure	
Required readings: Basic lectures ▪ Course Books ▪ Other	1-Data Communication And Computer Networking", Behrou Feourozon. 2-"Computer Networks Fifth Edition "Andrew S. Tanenbaum, David J. Wetherall.
Special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance	
Prerequisites	None
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	***EE Lab 31/EE3321***
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class
6. Semester / Year	First / Third Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	23/6/2022

9. Course Objectives :
- The course aims to provide students with skills in alternating current (AC) machines and transformers. - Knowledge of the working principle of AC machines of both types (motors and generators). - The course aims to provide students with skills in operating and identifying faults in AC machines. - Drawing equations for AC machines and transformers.

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
• Understand the main principles of operation of AC machines • Studying the components of machines, winding methods, types of generators and engines, how to control them, and drawing mathematical relationships.
B. Subject-specific skills
• Assigning the student to some group activities and duties. • Allocating a percentage of the grade to daily assignments and tests.
C. Teaching and learning methods
• Sudden daily and continuous weekly tests. • Trainings and activities. • Directing students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
• Active participation during the lecture is evidence of the student's commitment and responsibility. • Commitment to the deadline for submitting assignments. • Semester and final tests express commitment and cognitive and skill achievement.

• Applications, exercises and daily assignments
E. Thinking skills
• Developing the student's ability to work on performing assignments and submitting them on the scheduled date. • Trying to apply the concepts by solving different types of exercises.
F. General and transferable skills (other skills related to employability and personal development).
• Developing the student's ability to dialogue, discuss, and solve and deal with various issues

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	General knowing of electrical machines.	CH_1	Theoretical + discussion	General questions and discussion
2	2	Characteristics of the single-phase induction motor.	CH_2	Theoretical + discussion	General questions, discussion or exam
3	2	Connection and rotational direction of three phase induction motor.	CH_3	Theoretical + discussion	General questions and discussion
4	2	Connection and rotational direction of three phase induction motor.	CH_3	Theoretical + discussion	Exam
5	2	Operation of three phase induction motor in star and delta circuit.	CH_4	Theoretical + discussion	General questions, discussion or exam
6	2	Operation of three phase induction motor in star and delta circuit.	CH_4	Theoretical + discussion	General questions and discussion
7	2	Efficiency, current and power factor of three phase induction	CH_5	Theoretical + discussion	general questions

		motor.			
8	2	Efficiency, current and power factor of three phase induction motor.	CH_5	Theoretical + discussion	Duties + discussion
9	2	Efficiency, current and power factor of three phase induction motor.	CH_5	Theoretical + discussion	general questions
10	2	Connection & rotational direction and optimum starting resistance test of three phase Induction motor fitted with slip ring rotor.	CH_6	Theoretical + discussion	Monthly exam
11	2	Connection & rotational direction and optimum starting resistance test of three phase Induction motor fitted with slip ring rotor.	CH_6	Theoretical + discussion	general questions
12	2	Connection & rotational direction and optimum starting resistance test of three phase Induction motor fitted with slip ring rotor.	CH_6	Theoretical + discussion	Discussion and exam
13	2	Characteristics of three phase induction motor fitted with slip ring rotor.	CH_7	Theoretical + discussion	general questions
14	2	Characteristics of three phase induction motor fitted with slip ring rotor.	CH_7	Theoretical + discussion	Duties + discussion
15	2	Characteristics of three phase induction motor fitted with slip ring rotor.	CH_7	Theoretical + discussion	Monthly exam

12.Infrastructure	
Required readings: ● Course Books ● Other	● Theraja and Theraja (A Textbook of Electrical Technology) volume I basic electrical engineering in S.I. System of units revised by: Tarnekar Chand an ISO 9001:2000 company Chand & company ltd. Ram Nagar (2005) ● Laboratory sheet prepared by department lecturers
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance	
Prerequisites	EE3324
Minimum number of students	20
The largest number of students	30


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Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	***EE Lab 32/EE3322***
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class
6. Semester / Year	Second / Third Academic Year
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	23/6/2022

9. Course Objectives :

- The course aims to provide students with skills in alternating current (AC) machines and transformers.
- Knowledge of the working principle of AC machines of both types (motors and generators).
- The course aims to provide students with skills in operating and identifying faults in AC machines.
- Drawing equations for AC machines and transformers.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

- Understand the main principles of operation of AC machines
- Studying the components of machines, winding methods, types of generators and engines, how to control them, and drawing mathematical relationships.

B. Subject-specific skills

• Assigning the student to some group activities and duties.
• Allocating a percentage of the grade to daily assignments and tests.

C. Teaching and learning methods

• Sudden daily and continuous weekly tests.
• Trainings and activities.
• Directing students to some sources that contain examples and exercises to benefit from them.

D. Evaluation methods

• Active participation during the lecture is evidence of the student's commitment and responsibility.
• Commitment to the deadline for submitting assignments.
• Semester and final tests express commitment and cognitive and skill achievement.

• Applications, exercises, and daily assignments
E. Thinking skills
• Developing the student's ability to work on performing assignments and submitting them on the scheduled date. • Trying to apply the concepts by solving different types of exercises.
F. General and transferable skills (other skills related to employability and personal development).
• Developing the student's ability to dialogue, discuss, solve and deal with various issues

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Connection And Rotational Direction Test Of Synchronous Generator.	CH_1	Theoretical + discussion	General questions and discussion
2	2	No Load Characteristics Of Synchronous Generator.	CH_2	Theoretical + discussion	General questions, discussion or exam
3	2	Load Characteristics Of Synchronous Generator.	CH_3	Theoretical + discussion	General questions and discussion
4	2	Load Characteristics Of Synchronous Generator.	CH_3	Theoretical + discussion	Exam
5	2	Main Synchronization And Control Characteristics Of The Synchronous Generator.	CH_4	Theoretical + discussion	General questions, discussion or exam
6	2	Connection And Rotational Direction Test And Load Characteristics Of Synchronous Motor.	CH_5	Theoretical + discussion	General questions and discussion
7	2	Connection And Rotational Direction Test And Load Characteristics Of Synchronous Motor.	CH_5	Theoretical + discussion	general questions
8	2	V- Curve Of The Syn. Motor.	CH_6	Theoretical + discussion	Duties + discussion

9	2	V- Curve Of The Syn. Motor.	CH_6	Theoretical + discussion	general questions
10	2	Open Circuit & Short Circuit Tests Of Single-Phase Transformer.	CH_7	Theoretical + discussion	Monthly exam
11	2	Open Circuit & Short Circuit Tests Of Single-Phase Transformer.	CH_7	Theoretical + discussion	general questions
12	2	Polarity Making And Conversion Of Two Winding Transformer Into Auto Transformer.	CH_8	Theoretical + discussion	Discussion and exam
13	2	Back-To-Back Test On Single Phase Transformer.	CH_9	Theoretical + discussion	general questions
14	2	Regulation And Efficiency Of Three Phase Transformer By Direct Load.	CH_10	Theoretical + discussion	Duties + discussion
15	2	SCOTT Connection Of Transformer.	CH_11	Theoretical + discussion	Monthly exam

12.Infrastructure

Required readings: • Course Books • Other	• Theraja and Theraja (A Textbook of Electrical Technology) volume I basic electrical engineering in S.I. System of units revised by: Tarnekar Chand an ISO 9001:2000 company Chand & company ltd. Ram Nagar (2005) • Laboratory sheet prepared by department lecturers
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance

Prerequisites	EE3325
Minimum number of students	20
The largest number of students	30


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Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	**Computer Programming /EE2312**
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	First / FourthAcademic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	1/12/2021

9. Course Objectives:
- This course provides programming and simulink in MATLAB computing environment
- Being able to carry out simple programs in MATLAB to solve scientific and engineering problems.

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
- Become familiar with fundamental operations in Matlab. - Use matrix forms to describe and solve linear systems of equations. - Programming with MATLAB to solve mathematical and engineering problems. - Use MATLAB to generate graphics. - Use the Simulink simulation package to simulate some electric circuits.
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver

them on time.
- Try to apply concepts by solving different types of exercises.
- Develop the student's ability to dialogue and discussion.
- Opening the way for the student to provide what he sees regarding the material.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with academic curricula in MATLAB programming and Simulink.
- Developing the student's ability to deal with the Internet.
- Developing the student's ability to deal with multiple means.
- Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	General introduction to MATLAB.	General introduction to MATLAB.	Theoretical + Discussion	General questions and discussion
2	3	Numeric, Cell, and Structure Arrays.	Numeric, Cell, and Structure Arrays.	Theoretical + Discussion	General written and oral questions and discussion
3	3	Matrix and Array Operations.	Matrix and Array Operations.	Theoretical + Discussion	discussion
4	3	Matrix Methods for solving linear equations.	Matrix Methods for solving linear equations.	Theoretical + Discussion	Exam I am general questions and discussion
5	3	Script Files and Functions.	Script Files and Functions.	Theoretical +	General questions

				Discussion	and discussion or exam I
6	3	Programming in MATLAB.	Programming in MATLAB.	Theoretical + Discussion	General questions and discussion
7	3	Programming Exercises	Programming Exercises	Theoretical + Discussion	Monthly exam
8	3	Programming Exercises	Programming Exercises	Theoretical + Discussion	Discussion with to give collective duties
9	3	**Exam**	**Exam**	Theoretical + Discussion	General Questions
10	3	Control flow and operators.	Control flow and operators.	Theoretical + Discussion	General questions and discussion
11	3	Control flow and operators.	Control flow and operators.	Theoretical + Discussion	General Questions
12	3	Plotting, creating multiple plot types and three dimensional plots.	Plotting, creating multiple plot types and three dimensional plots.	Theoretical + Discussion	General questions and discussion
13	3	Plotting, creating multiple plot types and three dimensional plots.	Plotting, creating multiple plot types and three dimensional plots.	Theoretical + Discussion	General questions and discussion
14	3	Introduction to Simulink and its instruments.	Introduction to Simulink and its instruments.	Theoretical + Discussion	General questions and discussion
15	3	Exam	Exam	Theoretical + Discussion	Monthly exam

12.Infrastructure	
Required readings: ● Course Books ● Other	- W. Bolton, “ Programmable Logic Controllers ” - Dag H. Hanssen, "Programmable Logic Controllers"
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	EE2304
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Signals & Systems I/ EE3319
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	first / third Academic Year
7. Number of Credit Hours	45

(Total)	
8. The preparation date of this description	10/1/2022
9. Course Objectives :	
- To Understand mathematical description and representation of continuous time signals and systems.	
- To develop input output relationship for linear shift invariant system and understand the convolution operator for continuous time system.	
- To understand and resolve the signals in frequency domain using Fourier series and Fourier transforms.	
- To understand the limitations of Fourier transform and need for Laplace transform and develop the ability to analyze the system in s- domain.	

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
1- Represent various types of continuous-time and discrete-time signals, 2- Understand concept of convolution, LTI systems and classify them based on their properties and determine the response of LTI system 3- Determine the impulse response, step response and frequency response of LTI systems. 4-Analyze system properties based on impulse response and Fourier analysis. 5- Analyze the spectral characteristics of continuous-time periodic and a periodic signals using Fourier analysis.

6- Understand Laplace transform and its properties and apply the Laplace transform to obtain
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Develop the student's ability to diagnose the problems. - Opening the way for the student to provide what he sees regarding the material.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in signals. - Developing the student's ability to deal with the different systems. - Developing the student's ability to deal with multiple means.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	**Continuous time signals. Definitions, manipulations**	Unit-1	Theoretical + Discussion	General questions and discussion
2	2	Transformation of the independent variable.	Unit-2	Theoretical + Discussion	
3	2	Properties of signals	Unit-3	Theoretical + Discussion	discussion
4	2	Impulse and unit step functions	Unit-4	Theoretical + Discussion	
5	2	Continuous-Time Systems.	Unit-5	Theoretical + Discussion	General questions and discussion or exam I
6	2	Basic System Properties.	Unit-6	Theoretical + Discussion	General questions and discussion
7	2	Exam		Theoretical + Discussion	Monthly exam
8	2	Continuous time LTI systems, the Convolution Sum.	Unit-7	Theoretical + Discussion	Discussion with to give collective duties
9	2	Unit Step and impulse response.	Unit-8	Theoretical + Discussion	General Questions

10	2	Differential equation formulation of C-T systems	Unit-9	Theoretical + Discussion	General questions and discussion
11	2	Block diagram representation of first order systems.	Unit-10	Theoretical + Discussion	General Questions
12	2	Laplace-Transform, properties of L-T	Unit-11	Theoretical + Discussion	General questions and discussion
13	2	Invers L-T, and solve the differential equation	Unit-12	Theoretical + Discussion	General Questions
14	2	Fourier series		Theoretical + Discussion	Monthly exam
15	2	fourier-Transfrom		Theoretical + Discussion	

12.Infrastructure	
Required readings: • Course Books • Other	V. Oppenheim, A. S. Wilsky and S. H. Nawab, Signals and H. P. Hsu, Signals and Systems, Tata McGraw Hill M. Roberts, Fundamentals of Signals and Systems, Tata McGraw Hill l
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	***EE3318***
Minimum number of students	20
The largest number of students	50

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Signals & Systems II/ EE3320
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	Second / third Academic Year
7. Number of Credit Hours	45

(Total)	
8. The preparation date of this description	22/3/2022
9. Course Objectives :	
- To Understand mathematical description and representation of discrete time signals and systems.	
- To develop input output relationship for linear shift invariant system and understand the convolution operator for discrete time system.	
- To understand and resolve the signals in frequency domain using Fourier series and Fourier transforms.	
- To understand the limitations of Fourier transform and need for Laplace transform and develop the ability to analyze the system in Z- domain.	

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
1- Represent various types of continuous-time and discrete-time signals, 2- Understand concept of convolution, LTI systems and classify them based on their properties and determine the response of LTI system 3- Determine the impulse response, step response and frequency response of LTI systems. 4-Analyze system properties based on impulse response and Fourier analysis. 5- Analyze the spectral characteristics of continuous-time periodic and a periodic signals using Fourier analysis.

6- Understand Laplace transform and its properties and apply the Laplace transform to obtain
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Develop the student's ability to diagnose the problems. - Opening the way for the student to provide what he sees regarding the material.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in signals. - Developing the student's ability to deal with the different systems. - Developing the student's ability to deal with multiple means.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	**discrete time signals. Definitions, manipulations**	Unit-1	Theoretical + Discussion	General questions and discussion
2	2	Transformation of the independent variable.	Unit-2	Theoretical + Discussion	
3	2	Properties of signals	Unit-3	Theoretical + Discussion	discussion
4	2	Impulse and unit step functions	Unit-4	Theoretical + Discussion	
5	2	Discrete-Time Systems.	Unit-5	Theoretical + Discussion	General questions and discussion or exam I
6	2	Basic System Properties.	Unit-6	Theoretical + Discussion	General questions and discussion
7	2	Progressive Exam-I		Theoretical + Discussion	Monthly exam
8	2	Discrete time LTI systems, the Convolution Sum.	Unit-7	Theoretical + Discussion	Discussion with to give collective duties
9	2	Unit Step and impulse response.	Unit-8	Theoretical + Discussion	General Questions

10	2	Difference equation formulation	Unit-9	Theoretical + Discussion	General questions and discussion
11	2	Block diagram representation of first order systems.	Unit-10	Theoretical + Discussion	General Questions
12	2	Z-Transform, properties of Z-T	Unit-11	Theoretical + Discussion	General questions and discussion
13	2	Invers Z-T, and solve the difference equation	Unit-12	Theoretical + Discussion	General Questions
14	2	Discrete Fourier series		Theoretical + Discussion	Monthly exam
15	2	Discrete fourier-Transfrom		Theoretical + Discussion	

12.Infrastructure	
Required readings: • Course Books • Other	V. Oppenheim, A. S. Wilsky and S. H. Nawab, Signals and H. P. Hsu, Signals and Systems, Tata McGraw Hill M. Roberts, Fundamentals of Signals and Systems, Tata McGraw Hill l
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	***EE3319***
Minimum number of students	20
The largest number of students	50

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Electric Power I/ EE3317
4. Programs in which it enters	
5. Available Attendance Forms	Traditional Class
6. Semester / Year	First Course /third class
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	12/10/2022
9. Course Objectives:	
- This course is designed to introduce elements of power system, generation unit, thermal plants, Hydro plants, Steam plants, Nuclear plants. Explain principle of Load factor, capacity factor, transmission line constants, resistance, inductance, single phase two wire, three phase, symmetrical distance, unsymmetrical distance, flat arrangement, horizontal arrangement, hexagonal arrangement. Give an overview of Capacitance, single phase two wire, three phase, symmetrical distance, unsymmetrical distance, flat arrangement, horizontal arrangement, earth effect. Performance design of T.L, short T.L, equivalent circuit, voltage regulation, phasor diagram, Medium T.L, equivalent	

circuit, voltage regulation, phasor diagram, T model, pi model, Long T.L, equivalent circuit, voltage regulation, phasor diagram.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

- Raising Know the basic concept of power generation.
- Explain the electrical power generations methods.
- Understand the electrical design of transmission line.
- Design a transmission line system by applying mathematical methods.

B. Subject-specific skills

- Scientific Reports
- Graduation Research

C. Teaching and learning methods

- Lectures and Tutorials

D. Evaluation methods

- These include quizzes, classroom interactions
- Mid semester exam
- Practical sessions
- Final Exam

E. Thinking skills

- Develop the student's ability to work on performing duties and deliver them on time.
- Opening the way for the student to provide what he sees regarding the material.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with engineering concepts
- Developing the student's ability to deal with the Internet.
- Developing the student's ability to deal with multiple means.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Introduction to elements of power	Chp.1	Theoretical +	General questions

		system		Discussion	and discussion
2	3	Various types of power generating stations	Chp.2	Theoretical + Discussion	General questions and discussion
3	3	Various types of power generating stations	Chp.2	Theoretical + Discussion	General questions and discussion
4	3	Load curve and load duration curve, economic factors: load factor, demand factor, and so on	Chp.2	Theoretical + Discussion	General questions and discussion
5	3	Introduction to the transmission line constants, resistance, inductance	Chp.3	Theoretical + Discussion	General questions and discussion
6	3	Inductance of single-phase two-wire line	Chp.3	Theoretical + Discussion	General questions and discussion
7	2	Inductance of three-phase with symmetrical and unsymmetrical distances	Chp.3	Theoretical + Discussion	General questions and discussion
8	3	Introduction to capacitance of T.L, Capacitance of a Two-Wire Line	Chp.3	General questions and discussion	General questions and discussion
9	3	Capacitance of a three-phase with symmetrical and unsymmetrical distance	Chp.3	Theoretical + Discussion	General questions and discussion
10	3	Effect of earth on the capacitance of three-phase transmission lines	Chp.3	Theoretical + Discussion	General questions and discussion
11	3	Introduction to the transmission lines performance	Chp.4	Theoretical + Discussion	General questions and discussion

12	3	Short T.L, equivalent circuit, voltage regulation, phasor diagram	Chp.4	Theoretical + Discussion	General questions and discussion
13	3	Medium T.L, equivalent circuit, voltage regulation, phasor diagram	Chp.4	Theoretical + Discussion	General questions and discussion
14	3	T model, pi model, Long T.L, equivalent circuit, voltage regulation, phasor diagram.	Chp.4	Theoretical + Discussion	General questions and discussion
15	3	Long T.L, equivalent circuit, voltage regulation, phasor diagram	Chp.4	Theoretical + Discussion	General questions and discussion

12. Infrastructure	
Required readings: ● Course Books ● Other	• Element of Power System Analysis / by W. Stevenson, McGraw- Hill Pub., 2005. • 2- Principles of power system / by V.K Mehta and S. chand, company ltd., 2004
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13. Acceptance	
Prerequisites	***EE1301, EE1302, EE2310 and EE2311***
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Electric Power II/ EE3318
4. Programs in which it enters	
5. Available Attendance Forms	Traditional Class
6. Semester / Year	Second Course of /third class
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	12/10/2022
9. Course Objectives:	
- This course is designed to introduce the 2-port network, ABCD constants, power circle diagram, power flow through T.L. Give an overview of Overhead T.L insulators, string insulators, voltage distribution, and corona. Explain Sag and stress calculations, parabola equation, effect of ice and wind, different level supports, economic operation, and underground cables.	

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding
- Know the basic concept of power generation. - Explain the electrical power generations methods. - Understand the electrical design of transmission line. - Design a transmission line system by applying mathematical methods.
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Lectures and Tutorials
D. Evaluation methods
- These include quizzes, classroom interactions - Mid semester exam - Practical sessions - Final Exam
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Opening the way for the student to provide what he sees regarding the material.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with engineering concepts - Developing the student's ability to deal with the Internet. - Developing the student's ability to deal with multiple means.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Equivalent Circuit of Long Transmission Line	Chp.1	Theoretical + Discussion	General questions and discussion
2	3	2-Port Networks and Determination Short	Chp.1	Theoretical +	General questions

		T.L. Parameters		Discussion	and discussion
3	3	ABCD Method for Medium Transmission Lines	Chp.1	Theoretical + Discussion	General questions and discussion
4	3	ABCD method for long transmission lines and 2-Cascaded T. L	Chp.1	Theoretical + Discussion	General questions and discussion
5	3	Power Flow through T.L., Sending and Receiving Circle Diagrams	Chp.1	Theoretical + Discussion	General questions and discussion
6	3	Overhead T.L Components, Conductor Materials, and Line Supports	Chp.2	Theoretical + Discussion	General questions and discussion
7	2	Potential Distribution over Suspension Insulator String	Chp.2	Theoretical + Discussion	General questions and discussion
8	3	Potential Distribution over Suspension Insulator String	Chp.2	General questions and discussion	General questions and discussion
9	3	Corona and Sag in Overhead Transmission Lines	Chp.2	Theoretical + Discussion	General questions and discussion
10	3	Corona and Sag in Overhead Transmission Lines	Chp.2	Theoretical + Discussion	General questions and discussion
11	3	Underground Cables	Chp.3	Theoretical + Discussion	General questions and discussion
12	3	Economic Operation of Power Generation (without line losses)	Chp.4	Theoretical + Discussion	General questions and discussion
13	3	Economic Operation of Power Generation (without line losses)	Chp.4	Theoretical + Discussion	General questions and

					discussion
14	3	Economic Operation of Power Generation (with line losses)	Chp.4	Theoretical + Discussion	General questions and discussion
15	3	Economic Operation of Power Generation (with line losses)	Chp.4	Theoretical + Discussion	General questions and discussion

12. Infrastructure	
Required readings: ● Course Books ● Other	• Element of Power System Analysis / by W. Stevenson, McGraw- Hill Pub., 2005. • 2- Principles of power system / by V.K Mehta and S. chand, company ltd., 2004
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13. Acceptance	
Prerequisites	***EE3318***
Minimum number of students	20
The largest number of students	100

Ministry of Higher Education and Scientific Research

Scientific Supervision and Evaluation Authority

Department of Quality Assurance and Academic Accreditation

International Accreditation Division

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of the program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	ELECTRONIC I/ EE3326

4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	Third Academic Year- First Semester
7. Number of Credit Hours (Total)	30
8. The preparation date of this description	11/6/2021

9. Course Objectives :

- This course introduces Multistage and compound Configurations , Log and antilog amplifiers, Amplifier frequency response, Differential amplifier , Application to CMOS and BIMOS circuits , Operational amplifier Characteristics , Op -Amp applications : Constant-Gain Multiplier, Voltage Summing, Voltage Buffer, Controlled Sources, Comparator , Active Filters.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

- Understand the Multistage and compound Configurations

- Understand the Amplifier frequency response, Differential amplifier - Understand the Operational amplifier Characteristics , Op -Amp applications .
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Develop the student's ability to analyze and discuss.
F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with electronics' circuits Frequency response.
- Developing the student's ability to deal operational Amplifiers.
- Developing the student's ability to understand electronic circuits applications .
- Develop the student's ability to analyze and discuss.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Amplifier Frequency Response, log , and Antilog	Chapter 9	Theoretical + Discussion	General questions and discussion
2	2	Low-Frequency Response—JFET, and BJT Amplifier	Chapter 9	Theoretical + Discussion	General written and oral questions and discussion
3	2	High frequency responseJFET, and BJT Amplifier	Chapter 9	Theoretical + Discussion	discussion
4	2	Differential Amplifier Circuits, BIMOS and CMOS Differential Amplifier circuits	Chapter 10	Theoretical + Discussion	general questions and discussion
5	2	Operational Amplifiers Basics	Chapter 10	Theoretical + Discussion	General questions and discussion

6	2	Operational Amplifier (op-amp) Circuits: Inverting and non-Inverting amplifier, , Summing amplifier, Integrator and Differentiator.	Chapter 11	Theoretical + Discussion	General questions and discussion
7	2	Progressive Exam-I		Theoretical + Discussion	Monthly exam
8	2	Op-Amp Specifications – DC offset parameters and Frequency parameters	Chapter 11	Theoretical + Discussion	General questions and discussion
9	2	Differential and common – mode operation	Chapter 11	Theoretical + Discussion	General questions and discussion
10	2	Op-Amp Applications: Multiple – stage gains, Voltage Subtraction, Voltage Buffer.	Chapter 11	Theoretical + Discussion	General questions
11	2	Controlled Sources, Instrumentation Circuits	Chapter 12	Theoretical + Discussion	General Questions
12	2	Voltage Comparator	Chapter 12	Theoretical + Discussion	General questions and discussion
13	2	Active Filters: low – pass filter	Chapter 12	Theoretical +	General questions

				Discussion	and discussion
14	2	High – pass filter and Band pass filter	Chapter 12	Theoretical + Discussion	General questions and discussion
15	2	Progressive Exam-II		Theoretical + Discussion	Monthly exam

12.Infrastructure	
Required readings: ● Course Books ● Other	• R. Boylestad and L. Nashelsky, "Electronic Devices and Circuit Theory", 11th ed, 2013. • . Electronic devices : electron flow version / Thomas L. Floyd.— 9th ed
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	EE2311
Minimum number of students	20
The largest number of students	100

Ministry of Higher Education and Scientific Research

Scientific Supervision and Evaluation Authority

Department of Quality Assurance and Academic Accreditation

International Accreditation Division

Ministry of Higher Education and Scientific Research

Scientific Supervision and Evaluation Authority

Department of Quality Assurance and Academic Accreditation

International Accreditation Division

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of the program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	ELECTRONIC II / EE3327

4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	Third Academic Year- First Semester
7. Number of Credit Hours (Total)	30
8. The preparation date of this description	13/7/2021
9. Course Objectives :	
- This course introduces the Power Amplifiers: Definitions and Amplifier Types . Feedback Circuits: Feedback Concepts, Feedback Connection Types .Linear Oscillators : Basic Principles of Sinusoidal Oscillators , Positive Feedback and Oscillation, The oscillation Criterion . RC Oscillator: RC Phase-Shift Oscillator and Wien-Bridge oscillator. LC and Crystal Oscillator . Non-Sinusoidal Oscillators and Tim Circuits. Schmitt Trigger Oscillator, The 555 Circuit and applications (Monostable ultivibrator, Astable Multivibrator). Power Supplies (Voltage Regulators) and Practical Applications.	

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
- Understand the Power Amplifiers concepts - Understand the Feedback Circuits: Feedback Concepts, Feedback Connection - Understand the oscillation Criterion
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver

them on time.
- Try to apply concepts by solving different types of exercises.
- Develop the student's ability to analyze and discuss.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with Power Amplifiers circuits.
- Developing the student's ability to deal with Practical Feedback Circuits: Voltage –shunt, Voltage- series configuration.
- Developing the student's ability to understand Linear Oscillators: Basic Principles of Sinusoidal Oscillators
- Develop the student's ability to analyze and discuss.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Power Amplifiers: Definitions, Amplifier Classes and Efficiency	Chapter 13	Theoretical + Discussion	General questions and discussion
2	2	Class A amplifiers	Chapter 13	Theoretical + Discussion	General written and oral questions and discussion
3	2	Class B amplifiers and Class-(AB), Class- (C)	Chapter 13	Theoretical + Discussion	discussion
4	2	Feedback Circuits: Feedback Concepts. Feedback Connection	Chapter 13	Theoretical +	general questions

		Types Amplifier circuits		Discussion	and discussion
5	2	Practical Feedback Circuits: Voltage –shunt, Voltage- series configuration.	Chapter 14	Theoretical + Discussion	General questions and discussion
6	2	Practical Feedback Circuits: Current –shunt, Current - series configuration	Chapter 14	Theoretical + Discussion	General questions and discussion
7	2	Progressive Exam-I		Theoretical + Discussion	Monthly exam
8	2	RC Phase-Shift Oscillator and Wien Bridge Oscillator	Chapter 14	Theoretical + Discussion	General questions and discussion
9	2	LC Oscillator, Crystal Oscillator	Chapter 14	Theoretical + Discussion	General questions and discussion
10	2	Non-Sinusoidal Oscillators and Timer Circuits Schmitt Trigger Oscillator.	Chapter 14	Theoretical + Discussion	General questions
11	2	The 555 Circuit and applications (Monostable Multivibrator)	Chapter 15	Theoretical + Discussion	General Questions
12	2	Astable Multivibrator	Chapter 15	Theoretical +	General questions

				Discussion	and discussion
13	2	Power Supplies (Voltage Regulators) and Practical Applications	Chapter 15	Theoretical + Discussion	General questions and discussion
14	2	Discrete Transistor Voltage Regulation	Chapter 15	Theoretical + Discussion	General questions and discussion
15	2	Progressive Exam-II		Theoretical + Discussion	Monthly exam

12.Infrastructure	
Required readings: • Course Books • Other	• R. Boylestad and L. Nashelsky, "Electronic Devices and Circuit Theory", 11th ed, 2013. • . Electronic devices : electron flow version / Thomas L. Floyd.— 9th ed
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	EE3326
Minimum number of students	20

The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Electrical power III/EE4336
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	First / fourth Academic Year

7. Number of Credit Hours (Total)	45
8. The preparation date of this description	1/9/2021

9. Course Objectives :

- A - Introducing the student to the power system and extracting its variables to prepare him to be an engineer capable of designing and calculating all requirements.

10. Learning outcomes and teaching, learning and assessment methods

A- Knowledge and understanding

- Recognizes the basic types of power systems.
- Giving the student experience in dealing with various malfunctions.

B . Subject-specific skills

- B1 - Scientific reports
- B2 - Graduation research

c. Teaching and learning methods

- Sudden daily and weekly continuous tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

A. Evaluation methods

- Daily exams
- Submission of assignments
- Participation inside the hall

- Semi-semester and monthly exams
B. Thinking skills
- Intellectual questions that include industrial problems and how to solve them - Selection of type and size of motors for different working conditions
C. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in English. - Developing the student's ability to deal with the Internet. - Developing the student's ability to deal with multiple means. - Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Introduction of power system	Unit 1	Theoretical + Discussion	General questions and discussion
2	3	Per unit system	Unit 1	Theoretical + Discussion	General written and oral questions and discussion
3	3	Balanced fault	Unit 2	Theoretical + Discussion	discussion
4	3	Calculation of balance fault	Unit 2	Theoretical + Discussion	Exam I am general questions and

					discussion
5	3	Z- bus	Unit 3	Theoretical + Discussion	General questions and discussion or exam I
6	3	Symmetrical components	Unit 3	Theoretical + Discussion	General questions and discussion
7	3	Calculation of Symmetrical components	Unit 3	Theoretical + Discussion	Monthly exam
8	3	unbalanced faults	Unit 3	Theoretical + Discussion	Discussion with to give collective duties
9	3	L-G fault	Unit 3	Theoretical + Discussion	General Questions
10	3	L-L fault	Unit 3	Theoretical + Discussion	General questions and discussion
11	3	L-L-G fault	Unit 3	Theoretical + Discussion	General Questions
12	3	Calculation of unbalanced faults	Unit 3	Theoretical + Discussion	General questions and discussion
13	3	Calculation of unbalanced faults	Unit 3	Theoretical + Discussion	General Questions
14	3	Calculation of unbalanced faults	Unit 3	Theoretical + Discussion	Monthly exam
15	3	summary		Theoretical + Discussion	Oral exam

12.Infrastructure	
Required readings: ● Course Books	A.C Electrical machines B.L ➢

• Other	THERAJA ➢ Advanced problems in electrical machines B.L THERAJA •
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	***non***
Minimum number of students	15
The largest number of students	45

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar / College of Engineering
2. University Department / Center	Electrical Engineering Department
3. Course Name/Code	Control Theory I/ EE4332
4. Programs in which he enters	
5. Available Attendance Forms	E- presence
6. Semester / Year	First Semester /fouth class
7. Number of Credit Hours (Total)	90
8. The preparation date of this description	1/9/2021
9- Course Objectives :	
A. The correct understanding of the working methods of control systems.	
B. Theoretical andsimile study on computers of control theories.	
C. Design for conventional controllers for all control systems	

10. Learning outcomes and teaching, learning and assessment methods

To familiarize the student with the history of control science and the most important scientists who made shifts in this science
The student should familiarize himself with the basic units of controlling dealing
The student should know the general structure of the control problem
The student should be introduced to the methods of dealing with traditional control problems
The student should know the goals of control in reducing cost with the largest exit and the fastest response

B - Subject-specific skills
B1 – Scientific Reports
B2 – Graduation Research

Teaching and learning methods

- Continuous sudden and weekly daily tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods

Participation in the classroom.
Submission of activities
Quarterly tests, activities and activities.

C- Thinking skills
C1 - Developing the student's ability to work on performing duties and delivering them on time.
C2- Try to apply concepts by solving different types of exercises.
C3- Developing the student’s ability to dialogue and discussion.

Teaching and learning methods
• Exercises and sports problems • Assigning the student some group activities and duties. • Allocate a percentage of the grade for daily assignments and tests.
Evaluation methods
• Active participation in the classroom is a guide to student commitment and responsibility. • Commitment to the deadline in submitting assignments and research. • Quarterly and final exams express commitment and achievement of knowledge and skills. • Apps, exercises and daily assignments
D - General and transferred skills (other skills related to employability and personal development). D1- Developing the student's ability to deal with the means of technology. D2- Developing the student's ability to deal with the Internet. D3- Developing the student's ability to deal with multiple means. D4- Developing the student's ability to dialogue and discussion.

11. Course Structure					
The week	**Hours**	**Required Learning Outcomes**	**Name of the unit/course or topic**	**Method of education**	**Evaluation method**
First	3	Introduction to control system:		Theoretical + Discussion	General questions and discussion
Second	3	Mathematical Representation of physical systems:		Theoretical + Discussion	General questions and discussion or exam I
Third	3	transfer functions		Theoretical + Discussion	General questions and discussion
Fourth	3	electrical systems.		Theoretical + Discussion	I'm examined.
Fifth	3	mechanical translation system		Theoretical + Discussion	General questions and discussion or exam I
Sixth	3	Block diagrams Processing		Theoretical + Discussion	General questions and discussion
Seventh	3	Block diagrams Processing		Theoretical + Discussion	General Questions
Eighth	3	Signal flow graphs:		Theoretical + Discussion	Group duties
Ninth	3	Signal flow graphs:		Theoretical + Discussion	General Questions
Tenth	3	Transient response analysis:		Theoretical + Discussion	Monthly exam
Eleventh	3	Transient response analysis:		Theoretical + Discussion	General Questions
Twelfth	3	Steady – state error in unity- feedback control system		Theoretical + Discussion	Discussion and exam I
Thirteenth	3	Steady – state error in unity- feedback control system:		Theoretical + Discussion	General Questions
Fourteenth	3	Routh's stability		Theoretical	Group Duties+

		criterion.		+ Discussion	discussion
Fifteenth	3	Routh's stability criterion.		Theoretical + Discussion	Monthly exam

12. Infrastructure	
Required readings: ▪ Course Books ▪ Other	Modern control Engineering Katsuhiko Oqata1 Linear Control System Analysis and Design with MATLAB/ John J. D'Azzo and Constantine 2 – Automatic Control Systems / BENJAMIN C. KUO.
Special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13. Acceptance	
Prerequisites	***EE2209, EE2311, EE3320 and EE3325***
Minimum number of students	10
The largest number of students	40

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar / College of Engineering
2. University Department / Center	Electrical Engineering Department
3. Course Name/Code	Control Theory II/ EE4333
4. Programs in which he enters	
5. Available Attendance Forms	E- presence
6. Semester / Year	Second Semester /Fourth class
7. Number of Credit Hours (Total)	90
8. The preparation date of this description	1/9/2021
9. Course Objectives:	
A. The correct understanding of the working methods of control systems.	
B. Theoretical and simulation study on computers of control theories.	
C. Design for conventional controllers for all control systems	

9. Learning outcomes and teaching, learning and assessment methods

To familiarize the student with the history of the science of control and the most important scientists who made shifts in this science
The student should be familiar with the basic units of the dominant transaction
The student should recognize the general structure of the control problem
The student should be introduced to the methods of dealing with traditional control problems
The student should know the goals of control in reducing the cost with the largest exit and the fastest response

B - Subject-specific skills
B1 – Scientific Reports
B2 – Graduation Research

Teaching and learning methods

- Continuous sudden and weekly daily tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods

Participation in the classroom.
Submission of activities
Quarterly tests, activities and activities.

C- Thinking skills
C1- Developing the student's ability to work on performing duties and delivering them on time.
C2- Try to apply concepts by solving different types of exercises.
C3- Developing the student's ability to dialogue and discuss.

Teaching and learning methods

- Exercises and sports problems
- Assigning the core to some collective activities and duties.
- Allocate a percentage of the grade for daily assignments and tests.

Evaluation methods

- Active participation in the classroom Evidence of student commitment and responsibility.
- Commitment to the deadline in submitting assignments and research.
- Quarterly and final exams express commitment and achievement of knowledge and skills.
- Apps, exercises and daily assignments

d. General and transferable skills (other skills related to employability and personal development).

D1- Developing the student's ability to deal with technical means.

D2- Developing the student's ability to deal with the Internet.

D3- Developing the student's ability to deal with multiple means.

D4- Developing the student's ability to dialogue and discuss.

10. Course Structure					
The week	**Hours**	**Required Learning Outcomes**	**Name of the unit/course or topic**	**Method of education**	**Evaluation method**
First	3	***Root Locus:***			General questions and discussion
Second	3	***Root Locus:***			General questions and discussion or exam I
Third	3	***Control system design by the root locus method***			General questions and discussion
Fourth	3	***Bode diagram***			I'm examined.
Fifth	3	***Bode diagram***			General questions and discussion or exam I
Sixth	3	***Polar plots.***			General questions and discussion
Seventh	3	***Polar plots.***			General Questions
Eighth	3	***Nyquist stability criterion.***			Group duties
Ninth	3	***Nyquist stability criterion.***			General Questions
Tenth	3	***Three term controllers***			Monthly exam
Eleventh	3	***Three term controllers***			General Questions
Twelfth	3	***Sampled data system.***			Discussion and exam I
Thirteenth	3	***Sampled data system.***			General Questions

Fourteenth	3	***Analysis of control systems in state space:***			Group Duties+ discussion
Fifteenth	3	***Analysis of control systems in state space:***			Monthly exam

11. Infrastructure	
Required readings: ▪ Course Books ▪ Other	Modern control Engineering Katsuhiko Oqata1 Linear Control System Analysis and Design with MATLAB/ John J. D'Azzo and Constantine 2 – Automatic Control Systems / BENJAMIN C. KUO.
Special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

12. Acceptance	
Prerequisites	***EE4332***
Minimum number of students	10
The largest number of students	40

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Engineering Numerical Methods / EE3211
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	First / Fourth Academic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	14-10-2023
9. Course Objectives:	
The numerical methods course involves solving engineering problems drawn from all fields of engineering. The numerical methods include: Error analysis, roots of nonlinear algebraic equations, solution of linear and transcendental simultaneous equations, matrix and vector manipulation, curve fitting and interpolation, numerical integration and differentiation, solution of ordinary and partial differential equations.	

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
•Be aware of the mathematical background for the different numerical methods introduced in the course. •Understand the different numerical methods to solve the algebraic equations and to solve system of linear and nonlinear equations. •Understand the different numerical methods for interpolation, differentiation, integration and solving set of ordinary differential equations. •Understand how numerical methods afford a mean to generate solutions in a manner that can be implemented on digital computers. •Use the built-in functions in MATLAB and EXCEL. •Create MATLAB functions for solving numerical engineering problems. •Work on multidisciplinary projects.
B. Subject-specific skills
- Scientific Reports

- Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver them on time. - Try to apply concepts by solving different types of exercises. - Develop the student's ability to dialogue and discussion. - Opening the way for the student to provide what he sees regarding the material.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in numerical methods.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	2	Numerical	Error analysis	Theoretical + Discussion	General questions and discussion
2	2	Numerical	Roots of nonlinear algebraic equations.	Theoretical + Discussion	General questions and discussion
3	2	Numerical	Roots of nonlinear algebraic equations.	Theoretical + Discussion	General questions and discussion
4	2	Numerical	Solution of linear and transcendental simultaneous equation	Theoretical + Discussion	General questions and discussion
5	2	Numerical	Solution of linear equations	Theoretical + Discussion	General questions and discussion
6	2	Numerical	Matrix and vector manipulation	Theoretical + Discussion	General questions and discussion
7	2	Numerical	Matrix and vector manipulation	Theoretical + Discussion	General questions and discussion
8	2	Numerical	Curve fitting and interpolation.	Theoretical + Discussion	General questions and discussion

9	2	Numerical		Theoretical + Discussion	General questions and discussion
10	2	Numerical	Curve fitting and interpolation	Theoretical + Discussion	General questions and discussion
11	2	Numerical	Numerical integration	Theoretical + Discussion	Monthly exam
12	2	Numerical	Numerical integration	Theoretical + Discussion	General questions and discussion
13	2	Numerical	Numerical differentiation	Theoretical + Discussion	General questions and discussion
14	2	Numerical	Numerical differentiation	Theoretical + Discussion	Monthly exam
15	2	Numerical	Solution of differential equations	Theoretical + Discussion	General questions and discussion

12. Infrastructure	
Required readings: Course Books Other	1. Applied numerical analysis, Curtis F. Gerald and Patrick O. wheatley 2. Chapra & Canale “Numerical Methods for Engineers”. 3. Numerical analysis, purna Chandra Biswal
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13. Acceptance	
Prerequisites	**EE1205, EE2209**
Minimum number of students	20
The largest number of students	50

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Advanced Communication Systems/ ***EE4335***
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	second / Fourth Academic Year (2021 -2022)
7. Number of Credit Hours	45

(Total)	
8. The preparation date of this description	30/1/2021

9. Course Objectives:
- Understand the spread spectrum system
- Study satellite communication system
- Study Radar
- Design a link through understanding link budget

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
- Understand the basics of advanced communications - Understand link budget to design comm. links - Ranging using Radar - Understand the rules for satellite communications
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests.

- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

D. Evaluation methods

- Daily exams
- Submission of assignments
- Participation inside the hall
- Quizzes, Semi-semester and monthly exams

E. Thinking skills

- Develop the student's ability to work on performing duties and deliver them on time.
- Try to apply concepts by solving different types of exercises.
- Develop the student's ability to dialogue and discussion.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with recent technologies.
- Developing the student's ability to deal with the Internet.
- Developing the student's ability to deal with multiple means.
- Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Direct Sequence Spread Spectrum	-	Theoretical + Discussion	General questions and discussion
2	3	Frequency Hopping Spread Spectrum	-	Theoretical + Discussion	General written and oral questions and

					discussion
3	3	Tutorials Of Spread Spectrum	-	Theoretical + Discussion	discussion
4	3	Pseudo Random Number Generation	-	Theoretical + Discussion	Exam I am general questions and discussion
5	3	Spectrum Spreading Scenario	-	Theoretical + Discussion	General questions and discussion or exam I
6	3	Advantages, Jamming/Noise Immunity Of Pseudo Noise	-	Theoretical + Discussion	General questions and discussion
7	3	Tutorials Of Pseudo Noise	-	Theoretical + Discussion	Monthly exam
8	3	Introduction Of Satellite Communications	-	Theoretical + Discussion	Discussion with to give collective duties
9	3	Satellite Applications	-	Theoretical + Discussion	General Questions
10	3	Uplink/Downlink Propagation	-	Theoretical + Discussion	General questions and discussion
11	3	Orbits Of Satellites	-	Theoretical + Discussion	General Questions
12	3	Path Loss and Link budget	-	Theoretical + Discussion	General questions and discussion
13	3	Introduction To RADAR Systems	-	Theoretical +	General Questions

				Discussion	
14	3	Transmitter & Receiver Architecture	-	Theoretical + Discussion	Monthly exam
15	3	Fundamental Of GPS System (Space, Control, User) Segment	-	Theoretical + Discussion	General questions and discussion

12.Infrastructure	
Required readings: ● Course Books ● Other	● **Communication-Systems 4ed by Haykin** ● **Satellite Communications- 4th Edition by *Dennis Roddy***
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance	
Prerequisites	**EE3329**
Minimum number of students	10
The largest number of students	40

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Control Lab/ EE4330
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class\ Blended
6. Semester / Year	First course / 4th Academic Year(2021-2022)
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	22/6/2022
9. Course Objectives :	
- 1- Laboratory application to study the fundamentals of analogue control	

2- Laboratory application to study the fundamentals of how to deal with control systems
3-This chapter provides an experimental basis for understanding the control of feedback systems 4- This course provides an experimental basis for the mathematical representation of many physical systems university level.

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
A. Understand the main principles of operation of control systems B. Study of mathematical models of control systems C. Theoretical study and laboratory applications D. Design some control systems and applying them practically E. Practical application of the most important control systems in the laboratory F. Linking the theoretical study of some applications to the practical aspect
B. Subject-specific skills
- Scientific Reports - Graduation Research

C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Frequent daily exam - Participation inside the Lab - Semi-semester and monthly exams
E. Thinking skills
- Developing the student's ability to work on performing assignments and submitting them on the scheduled date. - Trying to apply the concepts by solving different types of exercises. - Developing the student's ability to dialogue and discuss.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with practical curricula in control system. - Developing the student's ability to deal with control devices. - Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Compensator	Lec1	Theoretical + practical	General question
2	3	Phase lag compensator Part 1	Experiment 9-part 1	Theoretical + practical	Report+ Discussion
3	3	Phase lag compensator Part2	Experiment 9-part 2	Theoretical + practical	Report+ Discussion
4	3	Phase lead compensator Part1	Experiment 10-part 1	Theoretical + practical	general questions and discussion
5	3	Phase lead compensator Part 2	Experiment 10-part 1	Theoretical + practical	General questions and discussion or exam I
6	3	Phase lead -lag compensator	Experiment 11	Theoretical + practical	Report+ Discussion
7	3	Integral controller	Experiment 12	Theoretical + practical	Monthly exam
8	3	Derivative controller	Experiment 13	Theoretical + practical	Report+ Discussion
9	3	Proportional + integral controller part 1	Experiment 14-part 1	Theoretical + practical	General Questions
10	3	Proportional + integral controller part 2	Experiment 14-part2	Theoretical + practical	General questions and discussion
11	3	Proportional +Derivative controller	Experiment 15	Theoretical + practical	Report+ Discussion
12	3	Proportional + integral + derivative controller Part 1	Experiment 16- part1	Theoretical + practical	Report+ Discussion
13	3	Mid-term examination	Examination	Theoretical + practical	Oral + practical exam
14	3	Proportional + integral + derivative controller Part 2	Experiment 16- part2	Theoretical + practical	Report+ Discussion
15	3	Final course exam	-	Theoretical + practical	Oral + practical exam

12.Infrastructure	
Required readings: • Course Books • Other	**Laboratory sheet prepared by department lecturers**
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	
Minimum number of students	20
The largest number of students	25

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Control Lab/ EE4331
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class\ Blended
6. Semester / Year	Second course / 4th Academic Year(2021-2022)
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	22/6/2022
9. Course Objectives :	
- 1- Laboratory application to study the fundamentals of analogue control	

2- Laboratory application to study the fundamentals of how to deal with control systems
3-This chapter provides an experimental basis for understanding the control of feedback systems 4- This course provides an experimental basis for the mathematical representation of many physical systems university level.

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
A. Understand the main principles of operation of control systems B. Study of mathematical models of control systems C. Theoretical study and laboratory applications D. Design some control systems and applying them practically E. Practical application of the most important control systems in the laboratory F. Linking the theoretical study of some applications to the practical aspect
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom.

- Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Frequent daily exam - Participation inside the Lab - Semi-semester and monthly exams
E. Thinking skills
- Developing the student's ability to work on performing assignments and submitting them on the scheduled date. - Trying to apply the concepts by solving different types of exercises. - Developing the student's ability to dialogue and discuss.
F. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with practical curricula in control system. - Developing the student's ability to deal with control devices. - Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Compensator	Lec1	Theoretical + practical	General question
2	3	Phase lag compensator Part 1	Experiment 9-part 1	Theoretical + practical	Report+ Discussion
3	3	Phase lag compensator Part2	Experiment 9-part 2	Theoretical + practical	Report+ Discussion
4	3	Phase lead compensator Part1	Experiment 10-part 1	Theoretical + practical	general questions and

					discussion
5	3	Phase lead compensator Part 2	Experiment 10-part 1	Theoretical + practical	General questions and discussion or exam I
6	3	Phase lead -lag compensator	Experiment 11	Theoretical + practical	Report+ Discussion
7	3	Integral controller	Experiment 12	Theoretical + practical	Monthly exam
8	3	Derivative controller	Experiment 13	Theoretical + practical	Report+ Discussion
9	3	Proportional + integral controller part 1	Experiment 14-part 1	Theoretical + practical	General Questions
10	3	Proportional + integral controller part 2	Experiment 14-part2	Theoretical + practical	General questions and discussion
11	3	Proportional +Derivative controller	Experiment 15	Theoretical + practical	Report+ Discussion
12	3	Proportional + integral + derivative controller Part 1	Experiment 16- part1	Theoretical + practical	Report+ Discussion
13	3	Mid-term examination	Examination	Theoretical + practical	Oral + practical exam
14	3	Proportional + integral + derivative controller Part 2	Experiment 16- part2	Theoretical + practical	Report+ Discussion
15	3	Final course exam	-	Theoretical + practical	Oral + practical exam

12.Infrastructure

Required readings: ● Course Books ● Other	**Laboratory sheet prepared by department lecturers**
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance

Prerequisites	
Minimum number of students	20
The largest number of students	25

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	**Programmable Logic Controller / EE4345**
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	First / FourthAcademic Year
7. Number of Credit Hours (Total)	45
8. The preparation date of this description	1/12/2021

9. Course Objectives:
- The goals of this course are to introduce students to the fundamentals of Programmable Logic Controllers (PLC) and Industrial Automation.
- Upon this course, students will be able to describe PLC components, interface transducer and actuator to PLC ports and create PLC ladder logic diagrams.

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
- Describe the basic properties of PLC architecture and recognize different types of communications techniques with PLC. - Identify the important transducer and actuator devices used with PLC. - Learning the programming of PLC via ladder logic diagrams.
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests. - Exercises and activities in the classroom. - Guiding students to some sources that contain examples and exercises to benefit from them.
D. Evaluation methods
- Daily exams - Submission of assignments - Participation inside the hall - Semi-semester and monthly exams
E. Thinking skills
- Develop the student's ability to work on performing duties and deliver

them on time.
- Try to apply concepts by solving different types of exercises.
- Develop the student's ability to dialogue and discussion.
- Opening the way for the student to provide what he sees regarding the material.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with academic curricula in PLC programming.
- Developing the student's ability to deal with the Internet.
- Developing the student's ability to deal with multiple means.
- Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Introduction to Programmable logic controllers	Introduction to Programmable logic controllers	Theoretical + Discussion	General questions and discussion
2	3	Internal architecture of PLC	Internal architecture of PLC	Theoretical + Discussion	General written and oral questions and discussion
3	3	Input-output devices	Input-output devices	Theoretical + Discussion	discussion
4	3	I/O processing	I/O processing	Theoretical + Discussion	Exam I am general questions and discussion
5	3	Ladder programming	Ladder programming	Theoretical +	General questions

				Discussion	and discussion or exam I
6	3	functional block programming	functional block programming	Theoretical + Discussion	General questions and discussion
7	3	PLC Program examples	PLC Program examples	Theoretical + Discussion	Monthly exam
8	3	PLC Program examples	PLC Program examples	Theoretical + Discussion	Discussion with to give collective duties
9	3	Exam	Exam	Theoretical + Discussion	General Questions
10	3	Internal relays	Internal relays	Theoretical + Discussion	General questions and discussion
11	3	Types of timers	Types of timers	Theoretical + Discussion	General Questions
12	3	Programming timers	Programming timers	Theoretical + Discussion	General questions and discussion
13	3	Forms of counter	Forms of counter	Theoretical + Discussion	General questions and discussion
14	3	Programming counter	Programming counter	Theoretical + Discussion	General questions and discussion
15	3	Exam	Exam	Theoretical + Discussion	Monthly exam

12.Infrastructure

Required readings: ● Course Books ● Other	- W. Bolton, " Programmable Logic Controllers " - Dag H. Hanssen, "Programmable Logic Controllers"
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	EE2304
Minimum number of students	20
The largest number of students	100

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Information Theory/ ***EE4334***
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	First / Fourth Academic Year (2021 -2022)
7. Number of Credit Hours	45

(Total)	
8. The preparation date of this description	30/1/2021
9. Course Objectives:	
- Understand the digital communication system	
- Theoretical and simulation of Information theory	
- Design algorithm for source and channel	
- Data protection with channel coding	

10. Learning outcomes and teaching, learning and assessment methods
A. Knowledge and understanding
- Study the basics of digital communications - Design algorithms for source coding - Solve communication channel parameters - Design algorithms for forward error correction in channel
B. Subject-specific skills
- Scientific Reports - Graduation Research
C. Teaching and learning methods
- Sudden daily and weekly continuous tests.

- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

D. Evaluation methods

- Daily exams
- Submission of assignments
- Participation inside the hall
- Quizzes, Semi-semester and monthly exams

E. Thinking skills

- Develop the student's ability to work on performing duties and deliver them on time.
- Try to apply concepts by solving different types of exercises.
- Develop the student's ability to dialogue and discussion.

F. General and transferable skills (other skills related to employability and personal development).

- Developing the student's ability to deal with recent technologies.
- Developing the student's ability to deal with the Internet.
- Developing the student's ability to deal with multiple means.
- Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Model of communication system, Elements of a digital communication system	-	Theoretical + Discussion	General questions and discussion
2	3	Measure of Information, Information content of a message, Average information content [Entropy]	-	Theoretical + Discussion	General written and oral questions and

					discussion
3	3	Entropy & information rate of Markov source, Encoding of the source output.	-	Theoretical + Discussion	discussion
4	3	Shannon's Encoding Algorithm	-	Theoretical + Discussion	Exam I am general questions and discussion
5	3	Fano Encoding Algorithm	-	Theoretical + Discussion	General questions and discussion or exam I
6	3	Huffman Encoding Algorithm	-	Theoretical + Discussion	General questions and discussion
7	3	LZ Algorithm	-	Theoretical + Discussion	Monthly exam
8	3	Channels, capacity of discrete memoryless channel	-	Theoretical + Discussion	Discussion with to give collective duties
9	3	Channel analysis	-	Theoretical + Discussion	General Questions
10	3	Examples	-	Theoretical + Discussion	General questions and discussion
11	3	Error detection & correction	-	Theoretical + Discussion	General Questions
12	3	linear block codes (error correction & detection)	-	Theoretical + Discussion	General questions and discussion
13	3	binary cyclic codes (syndrome calculation error	-	Theoretical +	General Questions

		detection & error correction)		Discussion	
14	3	Examples	-	Theoretical + Discussion	Monthly exam
15	3	convolutional codes (encoding, decoding and performance), the viterbi algorithm (optimum decoding),	-	Theoretical + Discussion	General questions and discussion

12.Infrastructure	
Required readings: ● Course Books ● Other	● S. Haykin; "Communication Systems", 4th ed. ● Glavieux, "Channel Coding in Communication Networks", ISTE, 2007. ● Viterbi, and Omura, "Principles of Digital Communication and Coding", 1979.
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	

13.Acceptance	
Prerequisites	***EE3328 / EE3329***
Minimum number of students	10
The largest number of students	40

Course Description Form

Review the performance of higher education institutions ((review of the academic program))

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve. Prove whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	University of Anbar / College of Engineering
2. University Department / Center	Electrical Engineering Department
3. Course Name/Code	Power electronics / EE4337
4. Programs in which he enters	Multisim
5. Available Attendance Forms	E- presence
6. Semester / Year	Second Semester 2021-2022
7. Number of Credit Hours (Total)	60
8. The preparation date of this description	1/9/2021

9- Course Objectives :
A. The student acquires detailed information about the electronic elements and their properties that qualify them to be used in power electronics.
B. The course aims to study some of the three-phase controlled units, where

these units convert the alternating source voltage and has a constant effective value into a variable continuous face, where it is controlled by ignition motors of electronic keys used in this circuit .

C- The course aims to study some DC sections, as these sections aim to convert a voltage

Constant constant source to constant voltage variable value and can be controlled by controlling circuits

Ignition of electronic keys used in section wires at the time of separating and closing electronic keys.

D- The course aims at some single-phase inverters, where these inverters are used to convert the constant constant source voltage into a constant alternating voltage or variable value, where this voltage is controlled by controlling the closing and disconnection time of the electronic keys used in these inverters and also by controlling the value of the liter required to separate and close these electronic switches.

10. Learning outcomes and teaching, learning and assessment methods

A. Knowledge and understanding

- Making the scientific science of power electronics appear for the student in an accessible manner and for those interested in knowing and studying this science as a stage that they can start with the help of other valuable references.
- Give the student experience in electronic elements, whose function is keys to separate and close electronic circuits and apply these elements to make the required control of power electronics circuits..

B - Subject-specific skills

B1 – Scientific Reports

B2 – Graduation Research

Teaching and learning methods

- Continuous sudden and weekly daily tests .
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

Evaluation methods
Participation in the classroom. Submission of activities Quarterly tests, activities and activities.
C- Thinking skills C1 - Developing the student's ability to work on performing duties and delivering them on time. C2- Try to apply concepts by solving different types of exercises. C3- Developing the student's ability to dialogue and discussion.
Teaching and learning methods
• Exercises and practical problems • Assigning the student some group activities and duties. • Allocate a percentage of grade tofor daily assignments and tests.
Evaluation methods
• Active participation in the classroom is a guide to student commitment and responsibility. • Commitment to the deadline in submitting assignments and research. • Quarterly and final exams express commitment and achievement of knowledge and skills. • Apps, exercises and daily assignments
d. General and transferable skills (other skills related to employability and personal development). D1- Developing the student's ability to deal with the means of technology. D2- Developing the student's ability to deal with the Internet. D3- Developing the student's ability to deal with multiple means. D4- Developing the student's ability to dialogue and discussion.

11. Course Structure					
The week	**Hours**	**Required Learning Outcomes**	**Name of the unit/course or topic**	**Method of education**	**Evaluation method**
First	4	Introduction to Electronics Capability	Power Electronics	Theoretical + Discussion	General questions and discussion
Second	4	Introduction to Electronics Capability	Power Electronics	Theoretical + Discussion	General questions and discussion or exam I
Third	4	Semiconductors and their properties.	Power Electronics	Theoretical + Discussion	General questions and discussion
Fourth	4	Semiconductors and their properties.	Power Electronics	Theoretical + Discussion	I'm examined.
V	4	Semiconductors and their properties.	Power Electronics	Theoretical + Discussion	General questions and discussion or exam I
Sixth	4	Uniters	Power Electronics	Theoretical + Discussion	General questions and discussion
Seventh	4	Uniters	Power Electronics	Theoretical + Discussion	General Questions
Eighth	4	Uniters	Power Electronics	Theoretical + Discussion	Group duties
Ninth	4	Uniters	Power Electronics	Theoretical + Discussion	General Questions
X	4	DC Cutters	Power Electronics	Theoretical + Discussion	Monthly exam
Eleventh	4	DC Cutters	Power Electronics	Theoretical + Discussion	General Questions
Twelfth	4	Reflectors	Power Electronics	Theoretical + Discussion	Discussion and exam I
Thirteenth	4	Reflectors	Power Electronics	Theoretical	General

				+ Discussion	Questions
Fourteenth	4	Cyclo Converter	Power Electronics	Theoretical + Discussion	Group Duties+ discussion
Fifteenth	4	Cyclo Converter	Power Electronics	Theoretical + Discussion	Monthly exam

12. Infrastructure	
Required readings: ▪ Course Books ▪ Other	(1) M.H. Rashid, 'Power Electronics: Circuits, Devices and Applications', Pearson Education, PHI Third Edition, New Delhi, 2004 (2) Power Electronics DanielW. Hart Valparaiso University Valparaiso, India (3) Interactive of Power Electronic
Special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13. Acceptance	
Prerequisites	EE2308 / Electronics 1 EE2309Electronics 2
Minimum number of students	10
The largest number of students	40

Course Description Form

Review the performance of higher education institutions ((Academic Program Review)

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, proving whether he has made the most of the available learning opportunities. It must be linked to the description of program.

1. Educational institution	Anbar University / College of Engineering
2. University Department / Center	Department of Electrical Engineering
3. Course Name/Code	Power system analysis/EE4348
4. Programs in which it enters	
5. Available Attendance Forms	Traditional class/ Blended
6. Semester / Year	second / fourth Academic Year

7. Number of Credit Hours (Total)	45
8. The preparation date of this description	1/9/2021

9. Course Objectives :

- A - Introducing the student to the power system and extracting its variables to prepare him to be an engineer capable of designing and calculating all requirements.

10. Learning outcomes and teaching, learning and assessment methods

A- Knowledge and understanding

- Recognizes the basic types of power systems.
- Giving the student experience in dealing with various malfunctions.

B . Subject-specific skills

- B1 - Scientific reports
- B2 - Graduation research

c. Teaching and learning methods

- Sudden daily and weekly continuous tests.
- Exercises and activities in the classroom.
- Guiding students to some sources that contain examples and exercises to benefit from them.

A. Evaluation methods

- Daily exams
- Submission of assignments
- Participation inside the hall

- Semi-semester and monthly exams
B. Thinking skills
- Intellectual questions that include industrial problems and how to solve them - Selection of type and size of motors for different working conditions
C. General and transferable skills (other skills related to employability and personal development).
- Developing the student's ability to deal with academic curricula in English. - Developing the student's ability to deal with the power system. - Developing the student's ability to deal with multiple means. - Develop the student's ability to dialogue and discussion.

11. Course Structure

The week	Hours	Required Learning Outcomes	Name of the unit/course or topic	Method of education	Evaluation method
1	3	Introduction of power system analysis	Unit 1	Theoretical + Discussion	General questions and discussion
2	3	Y-bus	Unit 1	Theoretical + Discussion	General written and oral questions and discussion
3	3	Introduction of load flow	Unit 2	Theoretical + Discussion	discussion
4	3	Load flow	Unit 2	Theoretical + Discussion	Exam I am general questions and

					discussion
5	3	Newton Raphson method	Unit 2	Theoretical + Discussion	General questions and discussion or exam I
6	3	Calculation of Newton Raphson method	Unit 2	Theoretical + Discussion	General questions and discussion
7	3	G.S method	Unit 2	Theoretical + Discussion	Monthly exam
8	3	Calculation of G.S method	Unit 2	Theoretical + Discussion	Discussion with to give collective duties
9	3	Introduction of power system stability	Unit 3	Theoretical + Discussion	General Questions
10	3	Stady stat stability	Unit 3	Theoretical + Discussion	General questions and discussion
11	3	Calculation of study stat stability	Unit 3	Theoretical + Discussion	General Questions
12	3	Transient stability	Unit 3	Theoretical + Discussion	General questions and discussion
13	3	Calculation of study Transient stability	Unit 3	Theoretical + Discussion	General Questions
14	3	Power system protection	Unit 3	Theoretical + Discussion	Monthly exam
15	3	Power system protection	Unit 3	Theoretical + Discussion	Oral exam

12.Infrastructure	
Required readings: ● Course Books	(**Elements of power systems analysis by**

• Other	**Stevenson** • **Modern power system**
special requirements	
Social services (e.g. guest lectures, vocational training and field studies)	Practical application in graduation research projects.

13.Acceptance	
Prerequisites	***non***
Minimum number of students	15
The largest number of students	45