Ministry of Higher Education & Scientific Research
Supervision and Scientific Evaluation Apparatus
Department of Quality Assurance and Academic Accreditation

Academic Program Description Form for Colleges and Institutes

University: Al-Bayan University

College / Institute: Technical Engineering College

Department: Medical Instruments Engineering Techniques

File filling date:

Signature:

College Dean's Name: Mohanad Sameer Jabbar

Date: 26/2/2024

Signature:

Department Head's Name: Ass. prof. Thaer Abdulwahab Shihab

Date: 26-02-2024

This file is checked by: Maryam Qutaiba Abdulrazaq

Unit of Quality Assurance and Performance Appraisal

Head of Quality Assurance and Performance Appraisal Unit Name

Date:

COURSE DESCRIPTION FORM

Course Description:

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

1. College / Institute	Al-Bayan University
2. Department / Centre	Power Mechanics Engineering Techniques Dept.
3. Course Name / Code	English / NTU 100
4. Available Attendance Forms	Weekly attendance
5. Year / Semester	2023-2024 / semester 1
6. Number of credit hours (total)	60
7. Date of preparation of this description	4-2-2024

1. Course Objectives

1-To introduce beginner-level learners to the English language, focusing on building vocabulary and acquiring essential language structures.
2-To develop listening and speaking skills through interactive activities and engaging in basic conversational practice.
3-To enhance reading comprehension abilities by introducing simple texts and emphasizing vocabulary and sentence structures.
4-To provide foundational writing skills, including sentence formation paragraph writing, and completing basic forms.

5-To cultivate cultural awareness and equip learners with practical language skills for everyday situations, such as ordering food shopping, and asking for directions.

A- Cognitive Objectives

A1- An explanation of English grammar.
A2- Explanation of how to practice the language.
A3- Learn vocabulary.
A4- Know the understanding of the absorptive pieces.
A5. Listening.
A6- Practice conversation in groups.

B- Course Skills Objectives

B1 - Language Practice
B2 – Speaking and listening
B3 – Vocabulary learning
B4- Learn the basics of grammar

C- Emotional and valuable Objectives

C1- Attracting students and gaining their love to the subject and respecting the lesson.
C2- Achieving pleasure with the benefit of the study material and thus stimulating follow-up in the student.
C3- Generating new ideas when understanding the subject from the theoretical and practical side and asking smart questions in order to achieve full and optimal benefit.

D- General and Qualifying Skills Transferred (other skills related to employability and personal development)

D1- Self-learning through reading: Internet, attending seminars, magazines and periodicals.
D2- Working in a group to exchange and share useful and correct information.
D3- Effective communication by enabling the student to present research and ask questions on related topics.
D4- Disseminating the skills of writing appropriate reports and researches in an optimal manner, stimulating ideas and asking smart questions in order to spread the benefit.

COURSE DESCRIPTION FORM

2. Course Outcomes and Methods of Teaching, Learning and Assessment

1- Develop basic proficiency in listening and understanding spoken English at a beginner level.
2- Demonstrate improved speaking skills by participating in simple conversations and expressing basic deas and opinions.
3- Comprehend and interpret basic written texts, including short passages and simple dialogues.
4- Produce written texts using basic grammatical structures and vocabulary appropriate for beginner-level communication.
5- Increase vocabulary knowledge and usage to effectively communicate in everyday situations.
6- Develop an awareness of cultural aspects related to English-speaking countries and demonstrate cross-cultural understanding in language use.
7- Apply basic language skills in practical situations, such as greetings introductions, making requests, and asking for and giving simple directions.

A- Teaching and learning methods

1- Theoretical lectures.
2- Seminars and Group discussions.
3- Using modern means of education to attract students and achieve fun with interest

B-Assessment Methods

1- Periodic and quarterly theoretical exams
2- Short and rapid tests (Quizzes)
3- Homework , assignments.

3. Course Structure

Week	Hours	Unit Name / Subject	Required Learning Outcomes	Learning Method	Assessment Method
Week 1	2+1	Hello!	Hello!	Theoretical +Seminar	Daily and monthly exams and discussions
Week 2	2+1	Your world	Your world	Theoretical +Seminar	Daily and monthly exams and discussions
Week 3	2+1	All about you	All about you	Theoretical +Seminar	Daily and monthly exams and discussions

Week 4	2+1	Family and friends	Family and friends	Theoretical +Seminar	Daily and monthly exams and discussions
Week 5	2+1	The way I live	The way I live	Theoretical +Seminar	Daily and monthly exams and discussions
Week 6	2+1	My favorites	My favorites	Theoretical +Seminar	Daily and monthly exams and discussions
Week 7	2+1	My favorites	My favorites	Theoretical +Seminar	Daily and monthly exams and discussions
Week 8	2+1	Where I live Times past	Where I live Times past	Theoretical +Seminar	Daily and monthly exams and discussions
Week 9	2+1	!We had a great time I can do that	!We had a great time I can do that	Theoretical +Seminar	Daily and monthly exams and discussions
Week 10	2+1	Please and thank you. Here and now	Please and thank you. Here and now	Theoretical +Seminar	Daily and monthly exams and discussions
Week 11	2+1	It's time to go! Getting to know you	It's time to go! Getting to know you	Theoretical +Seminar	Daily and monthly exams and discussions
Week 12	2+1	The way we live It all went wrong	The way we live It all went wrong	Theoretical +Seminar	Daily and monthly exams and discussions
Week 13	2+1	Let's go shopping!	Let's go shopping!	Theoretical +Seminar	Daily and monthly exams and discussions
Week 14	2+1	What do you want to do?	What do you want to do?	Theoretical +Seminar	Daily and monthly exams and discussions
Week 15	2+1	Tell me! What's it like?	Tell me! What's it like?	Theoretical +Seminar	Daily and monthly exams and discussions
Week 16		Preparatory week before the final Exam	Preparatory week before the final Exam		Exam

COURSE DESCRIPTION FORM

4. Infrastructure	
1- Required Textbooks	New Headway Plus: Beginner Students Book
2- Main references	Soars, J., Sors, L.(2014).New Headway Plus: Beginner Students Book. United Kingdom. Oxford University Press . Soars, J., Soars, L. (2006). New Headway Plus: Pre intermediate. United Kingdom: Oxford University Press
3- Recommended books and references (scientific journals, reports)	Audio CDs or Online Audio: Recordings of listening exercises, dialogues, and pronunciation practice
4- Electronic references, websites	

5- Course Development Plan
Familiarity with all that is new and new in teaching and learning strategies.

COURSE DESCRIPTION FORM

Course Description:

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

1. College / Institute	Al-Bayan University
2. Department / Center	Power Mechanics Engineering Techniques Dept.
3. Course Name / Code	Engineering Mechanics-Static / AM 100
4. Available Attendance Forms	Weekly attendance
5. Year / Semester	2023-2024 / semester 1
6. Number of credit hours (total)	175
7. Date of preparation of this description	4-2-2024

1. Course Objectives

Prepare the student to study the principles of mechanical engineering, and learn about different theories.
Understanding the principles and concepts of mechanical engineering The module aims to provide students with a clear understanding of mechanical principles and concepts, including forces and moments. Students will learn how to apply these concepts in mechanical systems.
Develop practical skills in mechanical tests: The unit aims to provide students with practical skills in the use of mechanical tools and equipment and tests.
Apply knowledge to mechanical machines and systems.

COURSE DESCRIPTION FORM

A- Cognitive Objectives

A1- Explanation of the concept of static mechanics.
A2- Understand and identify the basic components of the mechanical system.
A3- Describe the types of methods of analysis of forces and finding outcomes
A4- Identify the different areas of application how to describe mechanical systems and ways to simplify and solve them.
A5- Determine the methods of measurement and its devices.

B- Course Skills Objectives

B1 - Learn the basics of numerical and directional quantities.
B2 – Learn the types of forces and distinguish between them and methods of calculation related to them.
B3 – How to calculate outcomes and moments
B4 – Knowledge of balance and friction.
B5 – Know the centre of gravity and moment of inertia.

C- Emotional and valuable Objectives

C1- Attracting students and gaining their love to the subject and respecting the lesson.
C2- Achieving pleasure with the benefit of the study material and thus stimulating follow-up in the student.
C3- Generating new ideas when understanding the subject from the theoretical and practical side and asking smart questions in order to achieve full and optimal benefit.

D- General and Qualifying Skills Transferred (other skills related to employability and personal development)

D1- Self-learning through reading: Internet, attending seminars, magazines and periodicals.
D2- Working in a group to exchange and share useful and correct information.
D3- Effective communication by enabling the student to present research and ask questions on related topics.
D4- Disseminating the skills of writing appropriate reports and researches in an optimal manner, stimulating ideas and asking smart questions in order to spread the benefit.

COURSE DESCRIPTION FORM

2. Course Outcomes and Methods of Teaching, Learning and Assessment

1. Apply the basic concepts of geomechanics/statics to analyse and solve problems related to the balance of solid bodies.
2. Demonstrate a deep understanding of vector mathematics and its application in statistics, including vector addition, subtraction, dot product, and cross product.
3. Apply the principles of static equilibrium to solve problems involving forces and moments acting on rigid bodies in two and three dimensions.
4. Analyse and calculate internal forces, such as axial forces, shear forces and bending torque, in statically defined structures using methods such as the section method and the joint method.
5. Use free-body diagrams to model and analyse forces acting on a structure or solid body, and determine the forces and moments produced at specific points.
6. Analyse and calculate the midpoint and moment of inertia of various two-dimensional shapes, including rectangles, triangles and circles, and apply these concepts to determine the stability and strength of structures.
7. Apply the concepts of friction and its effects on the equilibrium of objects in statics, including the calculation of static and kinetic frictional forces and the determination of the angle of friction.
8. Analysis and calculation of forces in supports and frames, including joint method and section method, determination of stability and structural integrity of these systems.
9. Apply equilibrium principles to solve real-world engineering problems, such as determining the stability of structures, calculating forces on supports and joints, and analysing the behaviour of mechanical systems.
10. Communicate effectively, orally and in writing, to present and explain the analysis, results and solutions of static mechanics engineering problems.

By achieving these learning outcomes, students will develop a strong foundation in engineering mechanics/statics and be equipped with the knowledge and skills to analyse and solve a wide range of engineering problems involving static equilibrium and structural stability.

A- Teaching and learning methods

1- Theoretical lectures.
2- Practical lectures and practical application in the laboratory.
3- Group discussions.
5- Tutorials and solving examples.
6- Using modern means of education to attract students and achieve fun with interest

B-Assessment Methods

1- Periodic and quarterly theoretical exams
2- Periodic and quarterly practical exams
3- Short and rapid tests (Quizzes)
4- Homework , assignments, and practical reports

3. Course Structure

Week	Hours	Unit Name / Subject	Required Learning Outcomes	Learning Method	Assessment Method
Week 1	3+2+1	Introduction, Fundamental Concepts	Introduction, Fundamental Concepts	Theoretical +Practical +Tutorial +Online	Daily and monthly exams with Lab Reports and discussions
Week 2	3+2+1	Units Conversion	Units Conversion	Theoretical +Practical +Tutorial +Online	Daily and monthly exams with Lab Reports and discussions
Week 3	3+2+1	Scalar and Vector Quantities	Scalar and Vector Quantities	Theoretical +Practical +Tutorial +Online	Daily and monthly exams with Lab Reports and discussions
Week 4+5+6	3+2+1	Resultant force: Resolution & Composition of Forces. Triangle & parallelogram law	Resultant force: Resolution & Composition of Forces. Triangle & parallelogram law	Theoretical +Practical +Tutorial +Online	Daily and monthly exams with Lab Reports and discussions
Week 7+8	3+2+1	Addition of a System of Coplanar Forces: Scalar Notation, Cartesian Vector Notation	Addition of a System of Coplanar Forces: Scalar Notation, Cartesian Vector Notation	Theoretical +Practical +Tutorial +Online	Daily and monthly exams with Lab Reports and discussions
Week 9+10+11	3+2+1	Equilibrium of a Particle	Equilibrium of a Particle	Theoretical +Practical +Tutorial +Online	Daily and monthly exams with Lab Reports and discussions
Week 12+13+14	3+2+1	Moment of a Force, Varignon Theorem.	Moment of a Force, Varignon Theorem.	Theoretical +Practical +Tutorial +Online	Daily and monthly exams with Lab Reports and discussions
Week 15	3+2+1	Moment of a Couple	Moment of a Couple	Theoretical +Practical +Tutorial +Online	Daily and monthly exams with Lab Reports and discussions

COURSE DESCRIPTION FORM

4. Infrastructure	
1- Required Textbooks	1- Engineering Mechanics/ Statics, Fourteen Edition, R.C. Hibbeler 2- Engineering Mechanics, Meriam
2- Main references	Engineering Mechanics, Higdon
3- Recommended books and references (scientific journals, reports)	1- Engineering Mechanics , Ferdinand L. Singer 2- Engineering Mechanics/ Statics, Arthur P. Boresi & Richard J. Schmidt
4- Electronic references, websites	https://www.bing.com/ck/a?!&&p=758cdd89908918ecJmltdHM9MTcwNzA5MTIwMCZpZ3VpZD0wNjA4YTI2OS1kNzEwLTZhYmMtMDRkZC1hZmM1ZDY2MTZiOTUmaW5zaWQ9NTIxMg&ptn=3&ver=2&hsh=3&fclid=0608a269-d710-6abc-04dd-afc5d6616b95&psq=static+mecanics+engineering&u=a1aHR0cHM6Ly9tYXRoYWxpbm8uY29tL3Jldmlld2VyL2VuZ2luZWVyaW5nLW1lY2hhbmljcy9zdGF0aWNz&ntb=1

5- Course Development Plan

Familiarity with all that is new and new in teaching and learning strategies.

COURSE DESCRIPTION FORM

Course Description:

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

1. College / Institute	Al-Bayan University
2. Department / Center	Power Mechanics Engineering Techniques Dept.
3. Course Name / Code	Mathematics/ TEMO 100
4. Available Attendance Forms	Weekly attendance
5. Year / Semester	2023-2024 / semester 1
6. Number of credit hours (total)	200
7. Date of preparation of this description	4-2-2024

1. Course Objectives

To let students be able to identify the advanced basic fundamentals in mathematics (differentiation and integration and their different applications) to develop their mentally capability by exercises solution. Also can be able to correlate the information data in order to solve the scientific problem and how to make use of it in other scientific subjects

COURSE DESCRIPTION FORM

A- Cognitive Objectives

A1- Explain the concept of mathematics, equations and methods of calculation
A2- Identify the methods of derivation, its characteristics and applications
A3- Identify the different integration methods and applications
A4- Linking mathematics with physical reality

B- Course Skills Objectives

D.1 The ability to express and convey ideas clearly
D.2 Ability to work in a team
D.3 Ability to adapt to course-like subjects
D.4 Ability to communicate effectively and enable the student for continuous self-development after graduation

C- Emotional and valuable Objectives

C1- Attracting students and gaining their love to the subject and respecting the lesson.
C2- Achieving pleasure with the benefit of the study material and thus stimulating follow-up in the student.
C3- Generating new ideas when understanding the subject from the theoretical and practical side and asking smart questions in order to achieve full and optimal benefit.

D- General and Qualifying Skills Transferred (other skills related to employability and personal development)

D1- Self-learning through reading: Internet, attending seminars, magazines and periodicals.
D2- Working in a group to exchange and share useful and correct information.
D3- Effective communication by enabling the student to present research and ask questions on related topics.
D4- Disseminating the skills of writing appropriate reports and researches in an optimal manner, stimulating ideas and asking smart questions in order to spread the benefit.

2. Course Outcomes and Methods of Teaching, Learning and Assessment

1. Students are able to relate the significance of comprehending algebra's structure to a higher-level subject.
2. Within the parameters of the theory of modules, students have the ability to generate consciousness, particularly symbolic thinking.

3. Students are capable of using their understanding and analyzing models of mathematics, science, and technology, as well as other fields that are relevant to those disciplines.
4. Students are able to convey the outcomes of the growth of oral and writing comprehension as well as construct a framework for knowledge that supports mathematics, science, and technology.

A- Teaching and learning methods

1- Theoretical lectures.
2- Online lectures.
3- Group discussions.
5- Tutorials and solving examples.
6- Using modern means of education to attract students and achieve fun with interest

B-Assessment Methods

1- Periodic and quarterly theoretical exams
2- Periodic and quarterly practical exams
3- Short and rapid tests (Quizzes)
4- Homework and assignments.

3. Course Structure

Week	Hours	Unit Name / Subject	Required Learning Outcomes	Learning Method	Assessment Method
Week 1	3+2+1	Basic fundamentals in mathematics (differentiation and integration and their different applications)	To let students be able to identify the advanced basic fundamentals in mathematics (differentiation and integration and their different applications) to develop their	Theoretical +Online +Tutorial	Daily and monthly exams with discussions

			mentally capability by exercises solution. Also can be able to correlate the information data in order to solve the scientific problem and how to make use of it in other scientific subjects.		
Week 2	3+2+1	Trigonometric functions, trigonometric relations, graphic drawing, applications	Trigonometric functions, trigonometric relations, graphic drawing, applications	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 3	3+2+1	Limits of algebraic and trigonometric functions, limit near, applications	Limits of algebraic and trigonometric functions, limit near, applications	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 4	3+2+1	Theory of derivatives, derivative of algebraic and trigonometric and empirical functions	Theory of derivatives, derivative of algebraic and trigonometric and empirical functions	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 5	3+2+1	Chain rules, applications	Chain rules, applications	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 6	3+2+1	Inverse functions and inverse of trigonometric functions, applications	Inverse functions and inverse of trigonometric functions, applications	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 7	3+2+1	Derivatives of logarithmic and exponential functions, hyperbolic and its derivatives, relation and drawing, applications	Derivatives of logarithmic and exponential functions, hyperbolic and its	Theoretical +Online +Tutorial	Daily and monthly exams with discussions

			derivatives, relation and drawing, applications		
Week 8	3+2+1	Integration theory, indefinite and definite integration, trigonometric and its inverse	Integration theory, indefinite and definite integration, trigonometric and its inverse	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 9	3+2+1	Integration of logarithmic and exponential functions, integration of hyperbolic functions, other integrations	Integration of logarithmic and exponential functions, integration of hyperbolic functions, other integrations	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 10	3+2+1	Methods of integrations, integration by parts	Methods of integrations, integration by parts	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 11	3+2+1	Integration by partial fractions	Integration by partial fractions	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 12	3+2+1	Area under a curve, area between two curves	Area under a curve, area between two curves	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 13	3+2+1	Volumes by revolutions, length of a curve	Volumes by revolutions, length of a curve	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 14	3+2+1	Simple differential equations	Simple differential equations	Theoretical +Online +Tutorial	Daily and monthly exams with discussions
Week 15	3+2+1	Approximate area by trapezoidal and Simpson rule, numerical integration, applications	Approximate area by trapezoidal and Simpson rule, numerical integration, applications	Theoretical +Online +Tutorial	Daily and monthly exams with discussions

4. Infrastructure	
1- Required Textbooks	1-“Thomas' Calculus”, Joel Hass, Christopher Heil, Maurice D. Weir, Edition: 14th ed. 2- "Modern control systems" / Richard C. Dorf, Robert H. Bishop. 12th ed.
2- Main references	1-Measurement, Instrumentation, and Sensors Handbook: Spatial, 2-Mechanical, Thermal, and Radiation Measurement 3-Introduction to Measurements and Instrumentation
3- Recommended books and references (scientific journals, reports)	IEEE Journals
4- Electronic references, websites	Online Tutorials and You Tube Lecture

5- Course Development Plan
Familiarity with all that is new and new in teaching and learning strategies.

COURSE DESCRIPTION FORM

Course Description:

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

1. College / Institute	Al-Bayan University
2. Department / Center	Power Mechanics Engineering Techniques Dept.
3. Course Name / Code	Electrical Technology / TEMO 101
4. Available Attendance Forms	Weekly attendance
5. Year / Semester	2023-2024 / semester 1
6. Number of credit hours (total)	150
7. Date of preparation of this description	4-2-2024

1. Course Objectives

Preparing the student to study the different arithmetic operations in alternating current and direct current circuits, and to identify the different theories for studying these calculations.
Understanding electrical principles and concepts: The module aims to provide students with a clear understanding of electrical principles and concepts, including voltage, current, resistance, and power. Students will learn how to apply these concepts in electrical circuits and systems.

COURSE DESCRIPTION FORM

Develop practical skills in electrical measurements and tests: The unit aims to provide students with practical skills in the use of electrical tools and equipment for measurements and tests. Students will learn how to make accurate measurements, interpret results, and troubleshoot electrical systems.
Application of knowledge to electrical machines and power systems: The module aims to enable students to apply their knowledge of electrical technology to the operation and maintenance of electrical machinery, such as motors and generators. Students will also gain an understanding of energy systems and components, including power generation, transmission, and distribution.

A- Cognitive Objectives

A1- Explain the concept of electricity and electricity technology.
A2- Understand and identify the basic components of electrical circuits.
A3- Describe the types of analysis methods for electrical circuits
A4- Identify the different areas of application, how to describe circuits and ways to simplify and solve them.
A5- Determining measurement methods and devices as well as measurement methods for high pressure.

B- Course Skills Objectives

B1 - Learn the basics of numerical and directional quantities and electrical elements.
B2 – Learn the types of electrical signals and distinguish between them and the methods of calculation related to them.
B3 – How to calculate the time response of electrical circuits as well as the analysis of resonant circuits
B4 – Knowledge of the Laplace transform and phase directional representation.
B5 – Knowledge of three-phase signals and methods of analysis.
B6 – Calculating currents and voltages in different ways using the basic theories of electricity

C- Emotional and valuable Objectives

C1- Attracting students and gaining their love to the subject and respecting the lesson.
C2- Achieving pleasure with the benefit of the study material and thus stimulating follow-up in the student.
C3- Generating new ideas when understanding the subject from the theoretical and practical side and asking smart questions in order to achieve full and optimal benefit.

D- General and Qualifying Skills Transferred (other skills related to employability and personal development)

D1- Self-learning through reading: Internet, attending seminars, magazines and periodicals.
D2- Working in a group to exchange and share useful and correct information.
D3- Effective communication by enabling the student to present research and ask questions on related topics.
D4- Disseminating the skills of writing appropriate reports and researches in an optimal manner, stimulating ideas and asking smart questions in order to spread the benefit.

2. Course Outcomes and Methods of Teaching, Learning and Assessment

1- Understanding electrical circuit theory: Students will gain knowledge of basic electrical circuit theory, including concepts such as voltage, current, resistance, and power. They will be able to apply this understanding to the analysis and solution of basic electrical circuits.
2- Proficiency in electrical measurements and tests: Students will develop their skills in using electrical tools and equipment to measure and test electrical parameters. They will learn how to interpret measurement results and troubleshoot electrical systems to identify faults.
3- Application of electrical machines and power systems: Students will learn about electrical machines, such as motors and generators, and the principles of their operation. They will understand the characteristics and applications of these machines. In addition, they will gain a basic understanding of energy systems, including power generation, transmission, and distribution.

A- Teaching and learning methods

1- Theoretical lectures.
2- Practical lectures and practical application in the laboratory.
3- Group discussions.
5- Tutorials and solving examples.
6- Using modern means of education to attract students and achieve fun with interest

B-Assessment Methods

1- Periodic and quarterly theoretical exams
2- Periodic and quarterly practical exams
3- Short and rapid tests (Quizzes)
4- Homework , assignments, and practical reports

3. Course Structure

Week	Hours	Unit Name / Subject	Required Learning Outcomes	Learning Method	Assessment Method
Week 1	2+2+1	Symbols and abbreviations, electric circuit and its elements	To know the symbols and abbreviations, electric circuit and its elements	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 2	2+2+1	The direct-current network (kerchief's law & their use in network analysis	Studying direct-current network (kerchief's law & their use in network analysis	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 3	2+2+1	Conversion of delta-connected resistance into an equivalent Wye connection & vice versa	Learning Conversion of delta-connected resistance into an equivalent Wye connection & vice versa	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 4	2+2+1	Power sources connected in parallel, node voltage method	Learning the Power sources connected in parallel, node voltage method	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 5	2+2+1	Loop current method.	Studying the Loop current analysis method.	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 6	2+2+1	Super position method.	Studying the Super position analysis method.	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 7	2+2+1	Thevenin's theorem and Norton's theorem	Studying the Thevenin's theorem and Norton's theorem	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 8	2+2+1	Maximum power transfer.	To study how to calculate Maximum power transfer and its conditions	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 9	2+2+1	Reciprocity theorem	To know the Reciprocity theorem	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions

Week 10	2+2+1	Sinusoidal excitation, average, effective values and their steady- state analysis	Studying the Sinusoidal excitation, average, effective values and their steady- state analysis	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 11	2+2+1	Generation of alternating current, sinusoidal current	Studying the generation of alternating current, sinusoidal current	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 12	2+2+1	The mean values of current and voltage	Learning how to find the mean values of current and voltage	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 13	2+2+1	Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots	Studying the Complex Frequency, s-Plane, Poles and Zeros, Response Function, Bode Plots	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 14	2+2+1	Frequency Response of Series/Parallel Resonances, High-Q Circuits	Studying the Frequency Response of Series/Parallel Resonances, High-Q Circuits	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions
Week 15	2+2+1	Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance	Studying the Mutual Inductance, Linear and Ideal Transformers, Circuits with Mutual Inductance	Theoretical +Practical +Tutorial	Daily and monthly exams with Lab Reports and discussions

4. Infrastructure

1- Required Textbooks	1- ELECTRONIC DEVICES AND CIRCUIT THEORY By: ROBERT L. BOYLESTAD 2. Electricity and Electronics for HVAC By: Rex Miller and Mark R. Miller
2- Main references	1. Principles of Electric Machines and Power Electronics. by P.C. Sen 2. Electrical Power Systems: Design and Analysis. by Mohamed E. El-Hawary
3- Recommended books and references (scientific journals, reports)	1. Electrical Wiring Residential. by Ray C. Mullin and Phil Simmons 2. Industrial Electrical Troubleshooting. by Lynn Lundquist 3. Digital Control Systems. by Benjamin C. Kuo

4- Electronic references, websites	1- (www.allaboutcircuits.com) 2- (www.electrical4u.com) 3- (www.khanacademy.org)

5- Course Development Plan
Familiarity with all that is new and new in teaching and learning strategies.

COURSE DESCRIPTION FORM

Course Description:

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

1. College / Institute	Al-Bayan University
2. Department / Centre	Power Mechanics Engineering Techniques Dept.
3. Course Name / Code	Workshop/ TEMO 102
4. Available Attendance Forms	Weekly attendance
5. Year / Semester	2023-2024 / semester 1
6. Number of credit hours (total)	150
7. Date of preparation of this description	4-2-2024

1. Course Objectives

The objective of studying Electrical, Electronic, and Mechanical workshops is to enable students to acquire the necessary skills and knowledge to deal with electrical, electronic, and mechanical systems and devices. This subject aims to teach students how to diagnose faults, repair systems, and perform maintenance on these systems and devices. By studying Electrical, Electronic, and Mechanical workshops, students can understand the principles of electricity, electronics, and mechanics, as well as how to read engineering diagrams and use various tools and equipment to work on them. They also learn how to diagnose faults, repair them, and properly maintain different devices in a safe manner.

COURSE DESCRIPTION FORM

A- Cognitive Objectives

1. Acquisition of diagnostic and repair skills: Students learn how to analyse problems, identify faults in electrical, electronic, and mechanical systems, and implement appropriate repair procedures.
2. Understanding of electrical, electronic, and mechanical principles: Students gain knowledge of engineering and technical fundamentals related to electricity, electronics, and mechanics, including reading engineering diagrams and practical understanding of circuits, electronic devices, and mechanical components.
3. Development of practical work skills: Students have the opportunity to learn hands-on and practice using various tools and equipment used in electrical, electronic, and mechanical workshops

B- Course Skills Objectives

B1. Acquisition of diagnostic and repair skills: Students learn how to analyse problems, identify faults in electrical, electronic, and mechanical systems, and implement appropriate repair procedures.
B2. Understanding of electrical, electronic, and mechanical principles: Students gain knowledge of engineering and technical fundamentals related to electricity, electronics, and mechanics, including reading engineering diagrams and practical understanding of circuits, electronic devices, and mechanical components.
B3. Development of practical work skills: Students have the opportunity to learn hands-on and practice using various tools and equipment used in electrical, electronic, and mechanical workshop

C- Emotional and valuable Objectives

C1- Attracting students and gaining their love to the subject and respecting the lesson.
C2- Achieving pleasure with the benefit of the study material and thus stimulating follow-up in the student.
C3- Generating new ideas when understanding the subject from the theoretical and practical side and asking smart questions in order to achieve full and optimal benefit.

D- General and Qualifying Skills Transferred (other skills related to employability and personal development)

D1- Self-learning through reading: Internet, attending seminars, magazines and periodicals.
D2- Working in a group to exchange and share useful and correct information.
D3- Effective communication by enabling the student to present research and ask questions on related topics.
D4- Disseminating the skills of writing appropriate reports and researches in an optimal manner, stimulating ideas and asking smart questions in order to spread the benefit.

COURSE DESCRIPTION FORM

2. Course Outcomes and Methods of Teaching, Learning and Assessment

1- Understanding electrical and Mechanical Engineering tools and devices: Students will gain knowledge of basic electrical circuit theory, including concepts such as voltage, current, resistance, and power. They will be able to apply this understanding to the analysis and solution of basic electrical circuits.
2- Proficiency in electric and electronic measurements and tests: Students will develop their skills in using electric and electronic and mechanical tools and equipment to measure and test electric parameters. They will learn how to interpret measurement results and troubleshoot electrical systems to identify faults.
3- Application of electrical machines, mechanical systems, and power systems: Students will learn about electrical machines, such as motors and generators, and the principles of their operation. They will understand the characteristics and applications of these machines. In addition, they will gain a basic understanding of energy systems, including power generation, transmission, and distribution.

A- Teaching and learning methods

1- Theoretical and Practical lectures.
2- Practical lectures and application in the laboratory.
3- Group discussions.
4- Using modern means of education to attract students and achieve fun with interest

B-Assessment Methods

1- Periodic and quarterly theoretical exams
2- Periodic and quarterly practical exams
3- Short and rapid tests (Quizzes)
4- Homework , assignments, and practical reports and Projects.

3. Course Structure

Week	Hours	Unit Name / Subject	Required Learning Outcomes	Learning Method	Assessment Method
Week 1	6	Introduction - Difference the basic principles of the	Introduction - Difference the basic principles of the	Theoretical +Practice	Connect, test, measure, and results recording

		compression refrigeration cycle.	compression refrigeration cycle.		
Week 2	6	Learn about the types of furnaces for melting metals, and how to pour molten metal into sand molds.	Learn about the types of furnaces for melting metals, and how to pour molten metal into sand molds.	Theoretical +Practice	Connect, test, measure, and results recording
Week 3	6	Identify the tools used in the field of refrigeration and air-conditioning in general.	Identify the tools used in the field of refrigeration and air-conditioning in general.	Theoretical +Practice	Connect, test, measure, and results recording
Week 4	6	Identify the types of filings and their shapes	Identify the types of filings and their shapes	Theoretical +Practice	Connect, test, measure, and results recording
Week 5	6	Training students on the operations carried out on pipes used in the field of refrigeration and air-conditioning.	Training students on the operations carried out on pipes used in the field of refrigeration and air-conditioning.	Theoretical +Practice	Connect, test, measure, and results recording
Week 6	6	Learn about all types of lathes and how to use them.	Learn about all types of lathes and how to use them.	Theoretical +Practice	Connect, test, measure, and results recording
Week 7	6	Mid-term Exam	Mid-term Exam	Theoretical +Practice	Connect, test, measure, and results recording
Week 8	6	Learn how to deal with sheet metal.	Learn how to deal with sheet metal.	Theoretical +Practice	Connect, test, measure, and results recording
Week 9	6	Introducing students to the main parts that make up refrigeration and air-conditioning equipment of all kinds.	Introducing students to the main parts that make up refrigeration and air-conditioning equipment of all kinds.	Theoretical +Practice	Connect, test, measure, and results recording
Week 10	6	Learn about the most important methods of welding and the machines and tools needed for that.	Learn about the most important methods of welding and the machines and tools needed for that.	Theoretical +Practice	Connect, test, measure, and results recording
Week 11	6	Teaching students the basic operations of	Teaching students the basic operations of	Theoretical +Practice	Connect, test, measure, and results recording

		refrigeration and air-conditioning equipment.	refrigeration and air-conditioning equipment.		
Week 12	6	Learn about the most important tools and machines for dealing with wood, in addition to identifying the most popular and common types of wood.	Learn about the most important tools and machines for dealing with wood, in addition to identifying the most popular and common types of wood.	Theoretical +Practice	Connect, test, measure, and results recording
Week 13	6	Teaching students about the electrical and mechanical parts of household refrigeration and air-conditioning devices.	Teaching students about the electrical and mechanical parts of household refrigeration and air-conditioning devices.	Theoretical +Practice	Connect, test, measure, and results recording
Week 14	6	Carrying out operations to find and repair leakages and charge gas for air-conditioning devices.	Carrying out operations to find and repair leakages and charge gas for air-conditioning devices.	Theoretical +Practice	Connect, test, measure, and results recording
Week 15	6	Conducting a practical exercise chosen by the course Lecturer as a test before the final exam	Conducting a practical exercise chosen by the course Lecturer as a test before the final exam	Theoretical +Practice	Connect, test, measure, and results recording

4. Infrastructure	
1- Required Textbooks	Modern Refrigeration and Air-conditioning.
2- Main references	Hand Book Of Air Condition and Refrigeration.

3- Recommended books and references (scientific journals, reports)	
4- Electronic references, websites	YouTube Videos, and Education and learning websites

5- Course Development Plan
Familiarity with all that is new and new in teaching and learning strategies.