


	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Course Specification	
Course Code: PHM0204	Course Title: Chemistry

1. Basic information				
Program Title	Electrical Power Engineering Depart.			
Department offering the program	Electrical Power Engineering Depart.			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	PHM0204			
Prerequisite	None			
Year/level	Prep year / second Semester (First level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	1	1	6



2. Course Aims	
No.	Aim
1	Identify and Formulate essential knowledge of basic principles, laws and theories of physical Chemistry, and applied chemistry, which are necessary for engineering students. Quantitative and theoretical study of the properties and structure of matter and their relation to the interaction of matter with energy will be discussed.(AM1)

3. Learning Outcomes (LOs)	
CLO1	Identify the equations of physical chemistry.

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Clo3	Solve quantitative problems in matter change.
Clo5	Conduct appropriate experimentation to analyze and objective engineering judgment to draw conclusion.
Clo6	Apply engineering design to investigate the behavior of gases

4-Course Contents	
Topics	Week
States of matter.	1
Gases.	2
Work done of gases.	3
Liquids.	4
Solid.	5
Solutions.	6
Thermochemistry.	7
Application on thermochemistry.	8
Laws of thermodynamics.	10
Application on thermodynamics.	11
Chemistry of Cement.	12
Water hardness and its treatment.	13
Water hardness and its treatment.	14



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Revision	15
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5. Teaching and Learning methods	
Course learning Outcomes (LOs)	Teaching and Learning Methods

	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
Clo1	√			√		√	√			√	√	
Clo3	√			√		√	√			√	√	
Clo5	√			√	√		√				√	
Clo6	√			√			√				√	



6. Teaching and Learning methods of Disabled Students		
No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

7. Students' Assessment



7.1 Students' Assessment Method		
No.	Assessment Method	Los
1	Attendance	Clo5,clo6
2	Reports	Clo1,clo3
3	sheets	Clo1,clo3
4	Quizzes	Clo1
5	Mid-term Exam	Clo6
6	Oral/ Practical Exam	Clo5
7	Final Exam	Clo1,clo3,clo6

7.2 Assessment Schedule		
No.	Assessment Method	Weeks
1	Attendance	weekly
2	Reports	Bi- weekly
3	sheets	weekly
4	Quizzes	Bi- weekly
5	Mid-term Exam	9
6	Oral/ Practical Exam	15
7	Final Exam	16

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

7.3 Weighting of Assessments			
	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets	5%	5
	Quizzes	5%	5
	Mid-term exam	10%	10
Practical	Practical Attendance	5%	5
	Reports	5%	5
	Practical exam	10%	10
Final Exam		60%	60
Total		100%	100

8. List of References

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

- [1] Atkins. Peter, Julio de Paula, James Keeler, "Physical chemistry ", 11th ed , Oxford University Press, 2019.
- [2] I.N. Levine, " Physical chemistry", 6th ed, The McGraw-Hill Companies, 2009.
- [3] J. Brady and G. Humistom "General chemistry, Principles and structure", 5th ed, John Wiley and Sons Inc., 1990.
- [4] Francis A Carey, Robert M Giuliano, 11th ed, Mc Graw Hill Education, 2017.

9. Facilities required for teaching and learning



Lecture/Classroom

White board



Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	States of matter Lab1: Introduction	1	CLO1,CLO5
2	Gases. Lab2: Determination of the concentration of sodium hydroxide solution using standard solution of hydrochloric acid.	1	CLO5,CLO6



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

3	Work done of gases. Lab2: Determination of the concentration of sodium hydroxide solution using standard solution of hydrochloric acid.	1	CLO5,CLO6
4	Liquids. Lab3: Determination of the concentration of sodium carbonate solution by using a standard solution of hydrochloric acid.	1	CLO3,CLO5
5	Solid. Lab3: Determination of the concentration of sodium carbonate solution by using a standard solution of hydrochloric acid.	1	CLO3,CLO5
6	Solutions. Lab4: Determination of total hardness of water.	1	CLO3,CLO5
7	Thermochemistry. Lab4: Determination of total hardness of water.	1	CLO1,CLO5
8	Laws of thermodynamics. Lab5: Identification of the acidic radical (Anions).	1	CLO1,CLO5
10	Application on thermochemistry. Lab5: Identification of the acidic radical (Anions).	1	CLO1,CLO5
11	Application on thermodynamics. Lab6: Identification of the basic radical (Cations).	1	CLO1,CLO5
12	Chemistry of Cement. Lab6: Identification of the basic radical (Cations).	1	CLO3,CLO5
13	Water hardness and its treatment. Lab7: Revision	1	CLO3,CLO5
14	Water hardness and its treatment. Lab7: Revision	1	CLO3,CLO5
15	Revision.	1	CLO1,CLO3,CLO5,CLO6

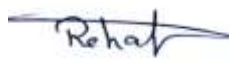

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



11. Matrix of Program LOs with Course LOs


Program LOs		Course LOs	
PL1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the equations of physical chemistry.
		CLO3	Solve quantitative problems in matter change.
PL2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO5	Conduct appropriate experimentation to analyze and objective engineering judgment to draw conclusion.

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

PL3	A3: Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	CLO6	Apply engineering design to investigate the behavior of gases
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Title	Name	Signature
Course coordinator	Ass.Prof. Dr. Rehab Ali Dr. Nagwa Hussen	
Program coordinator	Dr. Hend Salama	



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Head of Department	Ass.Prof.Dr.Osama Elgandour	
Date of Approval	3/9/2023	



Course Specification	
Course Code: PHM 0203	Course Title: mechanics (2)

4. Basic information				
Program Title	Electrical Power Engineering Depart.			
Department offering the program	Electrical Power Engineering Depart.			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	PHM 0203			
Prerequisites	None			
Year/level	Prep year / second semester (1 st Level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

	2	2	0	4
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5. Course Aims

No.	Aim
1	Apply and identify the principles of dynamics, Rectilinear and Curvilinear motion, the Linear momentum, Angular momentum of particles, and solve any problem in a simple and logical manner. (AM1)

6. Course Learning Outcomes (CLOs)

CLO1	Identify the Rectilinear and the Curvilinear motion of particles (Position, Velocity, and acceleration).
CLO2	Identify the equations of motion.
CLO3	Solve the equations of motion in different coordinates, the Projectiles problems and the Loss of Kinetic Energy during the Impact of two objects.
CLO4	Develop the definition of Linear Momentum of particles, rate of change of Linear Momentum.



7. Course Contents

Topics	Week
<ul style="list-style-type: none"> - Kinematics of particles. - Rectilinear motion of particles (Position, Velocity and 	1

acceleration) - two dimension.	
- Rectilinear motion of particles (Position, Velocity and acceleration) - three dimension.	2
- Curvilinear motion: cylindrical coordinates	3
- Curvilinear motion: normal and tangential (intrinsic) coordinates	4
- Motion of a projectile	5
- relative motion	6
- Kinetics of particles. (Force and acceleration) - Newton's Second law of motion. - Equations of motion : rectangular coordinates	7
Equations of motion : normal and tangential coordinates	8
Equations of motion : cylindrical coordinates	10
- Kinetics of particles: work and energy - The work of a force - Principle of work and energy	11
- Power and efficiency - Conservative force and potential energy	12
- Conservation of energy	13
Kinetics of particles: - Principle of linear impulse and momentum - Conservation of linear momentum for a system of particles	14
- Impact	15

8. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO1	√		√	√		√					√	
CLO2	√	√		√		√	√			√	√	
CLO3	√	√		√		√	√			√	√	
CLO4	√		√	√			√					

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√

7. Students' Assessment



7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Attendance	CLO3
2	Reports	CLO1, CLO2.
3	Sheets	CLO1, CLO2, CLO3, CLO4.
4	Quizzes	CLO1, CLO3.
5	Mid-term Exam	CLO1, CLO3.
6	Final Exam	CLO1, CLO2, CLO3, CLO4.

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports	Bi-weekly
3	Sheets	Weekly
4	Quizzes	Bi-weekly
5	Mid-term Exam	9
6	Final Exam	16

7.3 weighting of Assessment

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

	Assessment Method	Weights %	Weights
Teacher Opinion	Reports / sheets	5%	5
	Attendance	5%	5
	Quizzes	10%	10
	Mid-term exam	20%	20
Final Exam		60%	60
Total		100%	100

8. List of References

- [1] Engineering Mechanics: dynamics (11th Edition) R.C. HIBBELER, 2008
- [2] Engineering Mechanics: dynamics (13th Edition) R.C. HIBBELER, 2010
- [3] Ferdinand P. Beer and E. Russell Johnston, Jr. "Vector Mechanics for Engineers"

Dynamics Metric Edition adapted by G. Wayne Brown, Sir Sandford Fleming College, New York 2014

9. Facilities required for teaching and learning



Lecture/Classroom

White board

Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)



10. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	- Kinematics of particles. - Rectilinear motion of particles (Position, Velocity and acceleration) - two dimension.	1	CLO1


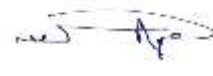

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



2	- Rectilinear motion of particles (Position, Velocity and acceleration) - three dimension.	1	CLO1
3	- Curvilinear motion: cylindrical coordinates	1	CLO1
4	- Curvilinear motion: normal and tangential (intrinsic) coordinates	1	CLO1
5	- Motion of a projectile	1	CLO1
6	- relative motion	1	CLO1, CLO3
7	- Kinetics of particles. (Force and acceleration) - Newton's Second law of motion. - Equations of motion : rectangular coordinates	1	CLO2, CLO3
8	Equations of motion : normal and tangential coordinates	1	CLO2, CLO3
10	Equations of motion : cylindrical coordinates	1	CLO2, CLO3
11	- Kinetics of particles: work and energy - The work of a force - Principle of work and energy	1	CLO3
12	- Power and efficiency - Conservative force and potential energy	1	CLO3
13	- Conservation of energy	1	CLO1, CLO3
14	Kinetics of particles: - Principle of linear impulse and momentum - Conservation of linear momentum for a system of particles	1	CLO4
15	- Impact	1	CLO1, CLO4

11. Matrix of Program LOs with Course Los

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Program LOs		Course Los	
PL1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the Rectilinear and the Curvilinear motion of particles (Position, Velocity, and acceleration).
		CLO2	Identify the equations of motion.
		CLO3	Solve the equations of motion in different coordinates, the Projectiles problems and the Loss of Kinetic Energy during the Impact of two objects.
PL2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO4	Develop the definition of Linear Momentum of particles, rate of change of Linear Momentum.

Title	Name	Signature
Course coordinator	Dr. Wafaa Diab	
Program coordinator	Dr. Hend Abd-Elmonem Salama	
Head of Department	Ass.Prof.Dr.Osama Elgandour	
Date of Approval	3/9/2023	



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



Course Specification	
Course Code: PHM0202	Course Title: Physics (2)

9. Basic information				
Program Title	Electrical Power Engineering Depart.			
Department offering the program	Electrical Power Engineering Depart.			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	PHM0202			
prerequisites	None			
Year/level	Prep year / second Semester (First level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	1	1	6



10. Course Aims	
No.	Aim

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

1	Identify <u>Electricity</u> : Vectors, Electric field, Electric potential, Capacitors and dielectrics, <u>Electromagnetism</u> : Magnetic field, Magnetic force, Biot-Savart law, Ampere's law, Electromagnetic induction, Alternating current and <u>Heat and thermodynamics</u> : Heat transfer, Kinetic theory of gases, First law of thermodynamics. (AM1)
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11. Learning Outcomes (LOs)	
CLO4	Develop appropriate experimentation to analyze the data and using analyses to draw conclusion and identify the basic of electric field and magnetic field
CLO5	Conduct appropriate experimentation to recognize the electric field, magnetic field and AC.

4-Course contents	
Topics	Week
Coulombs Law	1
Potential difference	2
Electric current	3
Capacitors	4
Magnetic Field	5
Inductance	6
Alternating current	7
RLC Circuit	8
Temperature measurement and Specific Heat.	10



		
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Heat transfer and Properties of gases and Vapors	11
Thermodynamics	12
Heat Engines	13
Entropy	14
Revision	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO4	√			√	√	√	√			√	√	
CLO5	√			√	√	√	√				√	

6. Teaching and Learning methods of Disabled Students		
No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√

		
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7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Attendance	Clo5
2	Reports	Clo4
3	Sheets	Clo4,clo5
4	Quizzes	Clo4,clo5
5	Mid-term Exam	Clo5
6	Practical Exam	Clo4,clo5
7	Final Exam	Clo4,clo5

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports	Bi-Weekly
3	Sheets	Weekly
4	Quizzes	Bi-Weekly
5	Mid-term Exam	9
6	Oral/ Practical Exam	15
7	Final Exam	16

7.3 Weighting of Assessments			
	Assessment Method	Weights%	Weights
Teacher opinion	Quizzes	6.6%	10
	Mid-term exam	13.3%	20
Practical / Oral	Attendance	3.33%	5
	Reports /Sheets	3.33%	5
	practical exam	13.3%	20
Final Exam		60%	90
Total		100%	150

8. List of References

- [1] Serway R. A., Jewett J. W. “Physics” ,5th Edition,2013
 [2] Kittle C.: Introduction to solid state physics 9th Edition, 2013.
 [3] Kittel C.” Introduction to Solid State Physics” Wiley; 8th edition, 2018



9. Facilities required for teaching and learning

Lecture/Classroom



White board

Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's

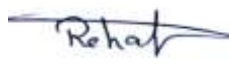
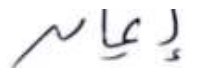
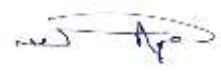

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



No.	Topics	Aim	LO's
1	Coulombs Law Labs: Introduction	1	Clo4,clo5
2	Potential difference Labs: Introduction	1	Clo4,clo5
3	Electric current Labs: whetstone Bridge	1	Clo4,clo5
4	Capacitors Labs: whetstone Bridge	1	Clo4,clo5
5	Magnetic Field Labs: Ohms Law	1	Clo4,clo5
6	Inductance Labs: Ohms Law	1	Clo4,clo5
7	Alternating current Labs: RLC(inductor)	1	Clo4,clo5
8	RLc Circuit Labs: RLC(Inductor)	1	Clo4,clo5
10	Temperature measurement and Specific Heat. Labs: RLC(capacitor)	1	Clo4,clo5
11	Heat transfer and Properties of gases and Vapors Labs: RLC(capacitor)	1	Clo4,clo5
12	Thermodynamics Labs: Thermocouple	1	Clo4,clo5
13	Heat Engines Labs: Thermocouple	1	Clo4,clo5
14	Entropy Labs: Revision	1	Clo4,clo5
15	Revision	1	Clo4,clo5

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO4	Develop appropriate experimentation to analyze the data and using analyses to draw conclusion and identify the basic of electric field and magnetic field
		CLO5	Conduct appropriate experimentation to recognize the electric field, magnetic field and AC.

Title	Name	Signature
Course coordinator	Ass.Prof. Dr. Rehab Ali	
	Dr. Ahmed Abdelbary	
	Dr.Eman Abdelaziz	
Program coordinator	Dr. Hend Salama	
Head of Department	Ass.Prof. Osama Elgandour	
Date of Approval	3/9/2023	

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



Course Specification

Course Code: PHM0201



Course Title: Math (2)

12. Basic information

Program Title	Electrical Power Engineering Depart.			
Department offering the program	Electrical Power Engineering Depart.			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	PHM0201			
prerequisites	None			
Year/level	Prep year / Second Semester			(First Level)
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

13. Course Aims



No.	Aim
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1	Identify and apply all techniques of integration and fundamental Theorem of Calculus. Determinates-Matrices-Theory of remainder and Synthetic Division-Theory of equations and infinite series. (AM1)
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14. Learning Outcomes (LOs)	
CLO4	Develop appropriate and identify all techniques of integration, Matrices, theory of equations and infinite series
CLO5	conduct appropriate by using all techniques of integration, Matrices, theory of equations and infinite series



4-Course contents	
Topics	Week
Introduction Hyperbolic and inverse functions and their properties- Matrices and their types.	1
Derivative of hyperbolic and inverse functions-Inverse of matrix	2
Integration of hyperbolic and inverse functions	3
Linear systems and types of solutions.	4
Integration by the method of substitution of trigonometric- Properties of Eigenvalues and eigenvectors of matrices method of solve it.	5
Integration by the method of partial fractions. Properties of Eigenvalues and eigenvectors of matrices method of	6

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

solve it.	
Properties of Eigenvalues and eigenvectors of matrices method of solve it.	7
Integration by the method of Parts- Theory of equations.	8
Integration by the method of Parts- Theory of equations.	10
Applications of the definite integral - Theory of equations.	11
Integration by reduction-infinite series	12
Integration by reduction- infinite series	13
Wails' formula- infinite series	14
Revision	15

5. Teaching and Learning methods												
Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO4	√			√		√	√				√	
CLO5	√		√	√		√	√			√	√	

6. Teaching and Learning methods of Disabled Students		
No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

7. Students' Assessment



7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	CLO5
2	Reports	CLO5
3	Sheets	CLO4,CLO5
4	Quizzes	CLO5
5	Mid-term Exam	CLO5
6	Final Exam	CLO4,CLO5

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	weekly
2	Reports	Bi-weekly
3	Sheets	weekly
4	Quizzes	Bi-weekly
5	Mid-term Exam	9
6	Final Exam	16

7.3 Weighting of Assessments

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets	10%	15
	Attendance	3.33%	5
	Quizzes	10%	15
	Mid-term exam	26.6%	40
Final Exam		50%	75
Total		100%	150

8. List of References

- [1] Stewart. J, "Calculus", 6th, 2008.
- [2] Anderson .D, Cole .J .A, Drucker r. D, "complete Solutions Manual for Single Variable Calculus Early transcendental", 6th Edition, 2008.
- [3]Anton .H, Rorres .C "Elementary Linear Algebra", 9th Edition, 2016.
- [4] George B. Thomas, Calculus, Edition, 2016.

9. Facilities required for teaching and learning

Lecture/Classroom

White board



Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

Data show



10. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	Introduction Hyperbolic and inverse functions and their properties-Matrices and their types.	1	CLO4
2	Derivative of hyperbolic and inverse functions-Inverse of matrix	1	CLO4,CLO5
3	Integration of hyperbolic and inverse functions	1	CLO4,CLO5
4	Linear systems and types of solutions.	1	CLO4,CLO5
5	Integration by the method of substitution of trigonometric-Properties of Eigenvalues and eigenvectors of matrices method of solve it.	1	CLO4,CLO5
6	Integration by the method of partial fractions. Properties of Eigenvalues and eigenvectors of matrices method of solve it.	1	CLO4,CLO5
7	Properties of Eigenvalues and eigenvectors of matrices method of solve it.	1	CLO4,CLO5
8	Integration by the method of Parts- Theory of equations.	1	CLO4,CLO5
10	Integration by the method of Parts- Theory of equations.	1	CLO4,CLO5
11	Applications of the definite integral - Theory of equations.	1	CLO4,CLO5
12	Integration by reduction-infinite series	1	CLO4,CLO5
13	Integration by reduction- infinite series	1	CLO4,CLO5
14	Wails' formula- infinite series	1	CLO4,CLO5
15	Revision	1	CLO4,CLO5

11. Matrix of Program LOs with Course LOs



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Program LOs		Course LOs	
PL2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw Conclusions.	CLO4	Develop appropriate and identify all techniques of integration, Matrices, theory of equations and infinite series
		CLO5	conduct appropriate by using all techniques of integration, Matrices, theory of equations and infinite series

Title	Name	Signature
Course coordinator	Dr. Eman Abdelaziz	
Program coordinator	Dr. Hend Salama	
Head of Department	Ass.Prof.Dr.Osama Elghandour	
Date of Approval	3/9/2023	





Course Specification	
Course Code: PHM0103	Course Title: mechanics (1)

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



15. Basic information				
Program Title	Electrical Power Engineering Depart.			
Department offering the program	Electrical Power Engineering Depart.			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	PHM0103			
Prerequisites	None			
Year/level	Prep year / First Semester (1 st Level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2	0	4

16. Course Aims	
No.	Aim
1	Recognize the principles of the mechanics and statics of particles, moments, Equilibrium's equations and solve any problem in a simple and logical manner. (AM1)

17. Course Learning Outcomes (CLOs)	
CLO1	Identify the principals of engineering mechanics, vectors, Forces and moments.
CLO2	Identify particle equilibrium, rigid body equilibrium and frames
CLO3	Solve Equilibrium's equations of particles Rigid Bodies in two and three dimensions

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

18. Course Contents	
Topics	Week
General principles , fundamental concepts , units of Measurements	1
Scalars and vectors, vector operations, vector addition of forces	2
Position vectors, force vector directed along line, Dot product and cross product	3
Moment of a force (scalar formulation and vector formulation)	4
Moment of a couple, equivalent system, resultants of force and couple system	5
Equilibrium of a particle, condition for the equilibrium of a particle, the free body diagram.	6
Coplanar force systems	7
Three- dimensional force systems	8
Condition for of a rigid boy in two dimensions, free body diagrams, equations of equilibrium.	10

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Equilibrium of a rigid body in three dimension, free body diagrams, equations of equilibriums.	11
Simple trusses	12
Frames and machines (part 1)	13
Frames and machines (part 2)	14
General revision	15



19. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO1	√		√	√		√					√	
CLO2	√	√		√		√	√			√	√	
CLO3	√	√		√		√	√			√	√	

20. Teaching and Learning methods of Disabled Students		
No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√

21. Students' Assessment

7.1 Students' Assessment Method		
No.	Assessment Method	Los

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

1	Attendance	CLO3
2	Reports	CLO1, CLO2
3	Sheets	CLO1, CLO3
4	Quizzes	CLO1, CLO2
5	Mid-term Exam	CLO1, CLO2
6	Final Exam	CLO1, CLO2, CLO3



7.2 Assessment Schedule		
No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports	Bi-weekly
3	Sheets	Weekly
4	Quizzes	Bi-weekly
5	Mid-term Exam	9
6	Final Exam	16

7.3 weighting of Assessment

	Assessment Method	Weights %	Weights
Teacher Opinion	Reports / sheets	5%	5
	Attendance	5%	5
	Quizzes	10%	10
	Mid-term exam	20%	20
Final Exam		60%	60
Total		100%	100

11. List of References

- [1] Engineering Mechanics: Statics (11th Edition) R.C. HIBBELER , 2008
- [2] Engineering Mechanics: Statics (13th Edition) R.C. HIBBELER , 2010

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



12. Facilities required for teaching and learning

Lecture/Classroom

White board

Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)



13. Matrix of Course Content with Course LO's


Week No.	Topics	Aim	LO's
1	General principles , fundamental concepts , units of Measurements	1	CLO1
2	Scalars and vectors, vector operations, vector addition of forces	1	CLO1
3	Position vectors, force vector directed along line, Dot product and cross product	1	CLO1
4	Moment of a force (scalar formulation and vector formulation)	1	CLO1

5	Moment of a couple, equivalent system, resultants of force and couple system	1	CLO1
6	Equilibrium of a particle, condition for the equilibrium of a particle, the free body diagram.	1	CLO1, CLO2
7	Coplanar force systems	1	CLO2, CLO3
8	Three- dimensional force systems.	1	CLO2, CLO3
10	Condition for of a rigid boy in two dimensions, free body diagrams, equations of equilibrium..	1	CLO2, CLO3,
11	Equilibrium of a rigid body in three dimension, free body diagrams, equations of equilibriums.	1	CLO2, CLO3
12	Simple trusses	1	CLO3
13	Frames and machines (part 1)	1	CLO2, CLO3
14	Frames and machines (part 2)	1	CLO2, CLO3
15	General revision	1	CLO1, CLO2, CLO3

11. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PL1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify the principals of engineering mechanics, vectors, Forces and moments.
		CLO2	Identify particle equilibrium, rigid body equilibrium and frames
		CLO3	Solve Equilibrium's equations of particles Rigid Bodies in two and three dimensions



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Title	Name	Signature
Course coordinator	Dr. Wafaa Diab	
Program coordinator	Dr. Hend Abd-Elmonem Salama	
Head of Department	Ass.Prof.Dr.Osama Elgandour	
Date of Approval	3/9/2023	



Course Specification	
Course Code: PHM0102	Course Title: Physics (1)

22. Basic information	
Program Title	Electrical Power Engineering Depart.
Department offering the program	Electrical Power Engineering Depart.
Department offering the course	Engineering Mathematics and Physics department
Course Code	PHM0102
prerequisites	None

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Year/level	Prep year / first Semester (First level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	1	1	6

23. Course Aims



No.	Aim
1	Identify <u>Properties of matter</u> : Units and dimensions, Physical mechanics, Potential energy gradient, Circular motion, Moment of inertia, Elastic properties of materials, Hydrostatics and surface tension, Hydrodynamics and viscosity. <u>Geometrical optics</u> : Refraction of light, Prisms, Reflection of light, Lenses, Lens aberration.(AM1)

24. Learning Outcomes (LOs)



CLO1	Identify Physical quantities (units and dimensions), types of motions and Energy.
CLO2	Formulate complex engineering problems by basic science
CLO3	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.

4-Course Contents



Topics	Week
--------	------

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Introduction, Units and dimension	1
Translational motion, Energy	2
Rotational motion	3
Moment of inertia	4
Elasticity of length, shape and volume	5
Energy stored in stretched wire , poisson ratio,Bulk modulu`s	6
Absolute pressure, surface tension	7
Capillarity and applications of surface tension	8
Viscosity	10
Bernoulli`s equation and its applications	11
Bernoulli`s equation and its applications	12
Types of lenses and image formed	13
Types of lenses, mirrors and image formed	14
Revision	15

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

5. Teaching and Learning methods												
Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO1	√			√	√	√	√				√	
CLO2	√			√	√	√	√				√	
CLO3	√			√	√	√	√				√	

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Attendance	CLO3
2	Reports	CLO1,CLO2,CLO3
3	Quizzes	CLO1
4	Mid-term Exam	CLO1,CLO2
5	Practical Exam	CLO3
6	Final Exam	CLO1,CLO2,CLO3

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports	Weekly
3	Quizzes	Bi-weekly
4	Mid-term Exam	9
5	Practical Exam	15
6	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights

Teacher Opinion	Quizzes	6.6%	10
	Mid-term exam	13.3%	20
Practical	Practical Attendance	3.33%	5
	Reports	3.33%	5
	practical exam	13.3%	20
Final Exam		60%	90
Total		100%	150

8. List of References

- [1] Serway R. A., Jewett J. W. "Physics" ,5th Edition,2013
 [2] Kittle C.: Introduction to solid state physics 9th Edition, 2013.
 [3] Kittel C." Introduction to Solid State Physics" Wiley; 8th edition, 2018

9. Facilities required for teaching and learning

Lecture/Classroom

White board

Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)



10. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	Introduction, Units and dimension	1	CLO1,CLO3
2	Translational motion, Energy Labs: Practicing on measuring instruments (micrometer, and vernier).	1	CLO1 ,CLO3

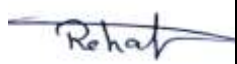
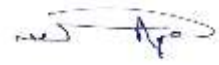

3	Rotational motion Labs: Practicing on measuring instruments (micrometer, and vernier).	1	CLO1,CLO2,CLO3
4	Moment of inertia Labs: Hook's Law	1	CLO1,CLO2,CLO3
5	Elasticity of length, shape and volume Labs: Hook's Law	1	CLO2,CLO3
6	Energy stored in stretched wire, Poisson's ratio, Bulk modulus Labs: Archimedes Principle	1	CLO2,CLO3
7	Absolute pressure, surface tension Labs: Archimedes Principle	1	CLO2,CLO3
8	Capillarity and applications of surface tension Labs: Surface tension	1	CLO2,CLO3
10	Viscosity Labs: Surface tension	1	CLO2,CLO3
11	Bernoulli's equation and its applications Labs: Lenses	1	CLO2,CLO3
12	Bernoulli's equation and its applications Labs: Lenses	1	CLO2,CLO3
13	Types of lenses and image formed Labs: revision	1	CLO2,CLO3
14	Types of lenses, mirrors and image formed Labs: Revision	1	CLO2,CLO3
15	Revision	1	CLO1,CLO2,CLO3

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL1	Identify, formulate, and solve complex engineering problems by	CLO1	Identify Physical quantities (units and dimensions), types of motions and

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



applying engineering fundamentals, basic science, and mathematics.		Energy.
	CLO2	Formulate complex engineering problems by basic science
	CLO3	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.

Title	Name	Signature
Course coordinator	Ass.Prof.Dr. Rehab Ali	
Program coordinator	Dr. Hend Salama	
Head of Department	Ass.Prof. Dr. Osama Elghandour	
Date of Approval	3/9/2023	



Course Specification	
Course Code: PHM0101	Course Title: Mathematics (1)

25. Basic information

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



Program Title	Electrical Power Engineering Depart.			
Department offering the program	Electrical Power Engineering Depart.			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	PHM0101			
prerequisite	none			
Year/level	Prep year / first Semester			(First Level)
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

26. Course Aims

No.	Aim
1	Identify the essential knowledge about Calculus and some of its applications (Functions, Limits and continuity, Differentiation, Applications of Differentiation, and integration) and to have knowledge about Analytic Geometry and its applications (straight line, Ellipse, parabola, hyperbola, and circle equations). (AM1)



27. Learning Outcomes (LOs)

CLO1	Identify the functions (graphs and their properties), the differentiation and its applications, the integration and its applications and the geometric graphs and their equations.
CLO2	Formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO3	Solve a variety of differentiation problems, integration problems and the equations of

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

	straight line, Ellipse, parabola, hyperbola, and circle.
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4 Course Contents	
Topics	Week
Derivatives and techniques of differentiation- introduction of conics	1
Trigonometric functions: properties, derivatives - Parabola	2
Chain rule, implicit, parametric differentiation- Parabola	3
Extreme, points of inflection, asymptotes and curve fitting-Parabola.	4
Indefinite integral and change of variables., Topics of parabola	5
Definite integral, Ellipse	6
Logarithmic and exponential functions: properties, derivatives and integrals-Ellipse	7
Logarithmic and exponential functions: properties, derivatives and integrals-Hyperbola	8
Integral of Trigonometric functions- Hyperbola	10
Definite integral and its applications to area, volumes, arc length and surface- Rotation of axes.	11
Definite integral and its applications to area, volumes, arc length and surface- Planes.	12
L'Hopital Rule-Planes	13
L'Hopital Rule- straight line.	14
L'Hopital Rule- straight line	15

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

5. Teaching and Learning methods	
Course learning Outcomes (LOs)	Teaching and Learning Methods

	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO1	√			√		√					√	
CLO2	√			√		√					√	
CLO3	√		√	√		√	√			√	√	

6. Teaching and Learning methods of Disabled Students		
No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

7. Students' Assessment

7.1 Students' Assessment Method		
No.	Assessment Method	LOs
1	Attendance	CLO3
2	Reports	CLO3
3	Sheets	CLO1,CLO2, CLO3
4	quizzes	CLO1,CLO3
5	Mid-term Exam	CLO2,CLO3
6	Final Exam	CLO1,CLO2, CLO3

7.2 Assessment Schedule		
No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports	Bi-weekly
3	Sheets	Weekly
4	Quizzes	Bi-Weekly
5	Mid-term Exam	9
6	Final Exam	16

7.3 Weighting of Assessments			
	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets	10%	15
	Attendance	3.33%	5
	Quizzes	10%	15

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

	Mid-term exam	26.6%	40
Final Exam		50%	75
Total		100%	150

8. List of References

- [1] Stewart. J, "Calculus", 6th, 2008.
- [2] Anderson .D, Cole .J .A, Drucker r. D, "complete Solutions Manual for Single Variable Calculus Early transcendental", 6th Edition, 2008.
- [3]Anton .H, Rorres .C "Elementary Linear Algebra", 9th Edition, 2016.
- [4] George B. Thomas, Calculus, Edition, 2016.

9. Facilities required for teaching and learning

Lecture/Classroom

White board

Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's



Week No.	Topics	Aim	LO's
1	Derivatives and techniques of differentiation- introduction of conics	1	CLO1
2	Trigonometric functions: properties, derivatives - Parabola	1	CLO1,CLO2
3	Chain rule, implicit, parametric differentiation- Parabola	1	CLO1,CLO2,CLO3
4	Extreme, points of inflection, asymptotes and	1	CLO1,CLO2,CLO3

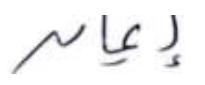
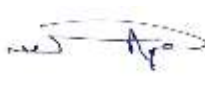

	curve fitting-Parabola.		
5	Indefinite integral and change of variables., Topics of parabola	1	CLO1,CLO2,CLO3
6	Definite integral, Ellipse	1	CLO1,CLO2,CLO3
7	Logarithmic and exponential functions: properties, derivatives and integrals-Ellipse	1	CLO1,CLO2,CLO3
8	Logarithmic and exponential functions: properties, derivatives and integrals-Hyperbola	1	CLO1,CLO2,CLO3
10	Integral of Trigonometric functions- Hyperbola	1	CLO1,CLO2,CLO3
11	Definite integral and its applications to area, volumes, arc length and surface- Rotation of axes.	1	CLO1,CLO2,CLO3
12	Definite integral and its applications to area, volumes, arc length and surface- Planes.	1	CLO1,CLO2,CLO3
13	L'Hopital Rule-Planes	1	CLO1,CLO2,CLO3
14	L'Hopital Rule- straight line.	1	CLO1,CLO2,CLO3
15	L'Hopital Rule- straight line.	1	CLO1,CLO2,CLO3

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify, complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
		CLO2	Formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics
		CLO3	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.

Title	Name	Signature
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	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Course coordinator	Dr. Eman Abdelaziz	
Program coordinator	Dr. Hend Salama	
Head of Department	Ass.Prof.Dr Osama Elghandour	
Date of Approval	3/9/2023	



Course Specification	
Course Code: MCE0202	Course Title: Production Technology and History

28. Basic information	
Program Title	Electrical Power Engineering Depart.
Department offering the program	Electrical Power Engineering Depart.
Department offering the course	Engineering Mathematics and Physics department
Course Code	MCE0202
Prerequisite	None
Year/level	Prep year / second Semester (First Level)

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	0	2	5

29. Course Aims

No.	Aim
1	Use the techniques, skills and appropriate engineering tools, necessary for engineering practice and project management. (AM3)

30. Course Learning Outcomes (CLOs)

CLO6	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
CLO12	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.

4 Course Contents

Topics	Week
Material properties	1

Material classification	2
Casting fundamentals	3
Fundamentals of forming processes	4
Bulk forming processes	5
Sheet metal process	6
Polymer forming processes	7
Joining processes	8
Midterm Exam	9
Fundamentals of Machining processes	10
Machining processes	11
Wood machining	12
History of technology	13
Fourth industrial revolutions	14

5. Teaching and Learning methods												
Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation

CLO6	√			√	√							
CLO12	√		√	√	√							

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√

7. Students' Assessment

7.1 Students' Assessment Method		
No.	Assessment Method	LOs
1	Attendance	CLO12
2	Quizzes	CLO6, CLO12,
3	Mid-term Exam	CLO6
4	Oral/Practical Exam	CLO6, CLO12,
5	Final Exam	CLO6, CLO12

7.2 Assessment Schedule		
No.	Assessment Method	Weeks
1	Attendance	Weekly
3	Quizzes	Bi-weekly
4	Mid-term Exam	9
5	Oral/ Practical Exam	15
6	Final Exam	16

7.3 Weighting of Assessments			
	Assessment Method	Weights%	Weights
Teacher Opinion	Quizzes	5	5
	Attendance	5 %	5
	Mid-term exam	20%	20
Oral/ Practical exam	Oral	10%	10
Final Exam		60%	60
Total		100%	100

8. List of References

- [1] Manufacturing, Engineering and Technology, Serope Kalpakjian, Addison-Wesley.2013
- [2] Bruce J. Black, " Workshop Processes, Practices, and Materials" Fourth Edition, Elsevir 2010.
- [3]R.Singh, "Introduction to Basic Manufacturing Processes and Workshop Technology" New Age International (P) Limited Publishers, New Delhi 2006.



9. Facilities required for teaching and learning

Lecture/Classroom



White board

Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



Week No.	Topics	Aim	LO's
1	Material properties Labs: Casting processes workshop	3	CLO6
2	Material classification Labs: Casting processes workshop	3	CLO6
3	Casting fundamentals Labs: Forming workshop	3	CLO6
4	Casting processes Labs: Forming workshop	3	CLO6
5	Fundamentals of forming processes Lab: Welding workshop	3	CLO6
6	Bulk forming processes Lab: Welding workshop	3	CLO6, CLO12
7	Sheet metal processes Lab: Carpentry workshop	3	CLO6, CLO12
8	Polymer forming processes Lab: Carpentry workshop	3	CLO6, CLO12,
10	Joining processes Lab: Machine workshop	3	CLO6, CLO12,
11	Fundamentals of Machining processes Lab: Machine workshop	3	CLO6, CLO12,
12	Machining processes Lab: Machine workshop	3	CLO6, CLO12,
13	Wood machining Lab: Machine workshop	3	CLO6, CLO12,
14	History of technology Lab: Revision	3	CLO6, CLO12,



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

15	Fourth industrial revolutions Lab: Oral Exam	3	CLO12,
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11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	CLO6	Describe the main properties of engineering materials and select a suitable one for performing an engineering product
PL7	Function efficiently as an individual and as a member of multi disciplinary and multi cultural teams.	CLO12	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

• Title	• Name	• Signature
Course coordinator	Dr. Mohamed Awed	
Program coordinator	Ass.Prof.Dr.Osama Elghandour	
Head of Department	Ass.Prof.Dr.Osama Elghandour	
Date of Approval	3/9/2023	



Course Specification	
Course Code: MCE 0201	Course Title: Engineering drawing & projection (2)

31. Basic information

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



Program Title	Electrical power Engineering Department			
Department offering the program	Electrical power Engineering Department			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	MCE 0201			
Prerequisites	None			
Year/level	Prep year / second Semester (First Level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	4	0	6

32. Course Aims

No.	Aim
1	Identify and apply the basic knowledge and skills of the concepts and principles of engineering drawing and fundamentals of drawing projections. The basic principles of drawing with several applications are also studied.(AM1)

33. Learning Outcomes (LOs)

CLO 4	Develop appropriate to Demonstrate the Methodology of solving problems in orthographic views.
CLO 5	Conduct appropriate to analyze principles of earth intersections.
CLO13	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
CLO14	Use creative, innovative, and flexible thinking to respond to new situations.

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

4- Course contents	
Topics	Week
Review on the drawing of the third projector with the knowledge of the other projections.	1
How to make a section in the engineering drawing.	2
Definition of the different Types in section bodies.	3
Definition of the different Types in section bodies.	4
Intersections of bodies and surfaces and development of surfaces.	5
How to draw the screw and nut in screwed joints.	6
Drawing of the sections for different types of screwed joints.	7
Drawing of the sections for different types of screwed joints.	8
Identification for different of steel sections.	10
Identification for different of steel sections.	11
Drawing of the sections for different types of steel joints.	12
Drawing of the sections for different types of steel joints.	13
Assembly of some mechanical components.	14
Assembly of some mechanical components.	15



5. Teaching and Learning methods	
Course learning Outcomes	Teaching and Learning Methods

(LOs)												
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO 4	√			√		√				√		
CLO 5	√			√		√				√		
CLO13	√			√		√				√		
CLO14	√			√		√				√		

6. Teaching and Learning methods of Disabled Students		
No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√

7. Students' Assessment

7.1 Students' Assessment Method		
No.	Assessment Method	LOs

		
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1	Attendance	CLO13,CLO14
2	Reports	CLO4,CLO5,CLO13, CLO14
3	Mid-term Exam	CLO4,CLO5,CLO13
4	Final Exam	CLO4,CLO5,CLO13, CLO14

7.2 Assessment Schedule		
No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports	weekly
3	Mid-term Exam	9
4	Final Exam	16

7.3 Weighting of Assessments			
	Assessment Method	Weights%	Weights
Teacher Opinion	Reports	10%	10
	Attendance	10%	10
	Mid-term exam	20%	20
Final Exam		60%	60
Total		100%	100

8. List of References

- [1] C. Simmons, D. Maguive, and N. Phelps, 'Manual of Engineering Drawing', Elsevier Ltd., 2009.
- [2] Frederick Giesecke et al, Technical drawing. Tenth Edition, Prentice Hall. (2011)

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

[3] Mahesh Chandra Luintel, Engineering Drawing II, Heritage Publishers and Distributors Pvt. Ltd., (2019), ISBN: 978-9937-9365-1-4

9. Facilities required for teaching and learning



Lecture/Classroom

White board

Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's



Week No.	Topics	Aim	LO's
1	Review on the drawing of the third projector with the knowledge of the other projections.	1	CLO4
2	How to make a section in the engineering drawing.	1	CLO4
3	Definition of the different Types in section bodies.	1	CLO5, CLO14
4	Definition of the different Types in section bodies.	1	Clo4, Clo14
5	Intersections of bodies and surfaces and development of surfaces.	1	Clo4, Clo14
6	How to draw the screw and nut in screwed joints.	1	Clo4, Clo14
7	Drawing of the sections for different types of screwed joints.	1	Clo4, Clo14
8	Drawing of the sections for different types of screwed joints.	1	Clo4, Clo14.
10	Identification for different of steel sections.	1	Clo4, Clo14.
11	Identification for different of steel sections.	1	Clo4, clo5, clo13 , Clo14
12	Drawing of the sections for different types of steel joints.	1	Clo4, clo5, clo13

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

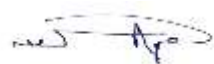

			, Clo14
13	Drawing of the sections for different types of steel joints.	1	Clo4, clo5, clo13 , Clo14
14	Assembly of some mechanical components.	1	Clo4, clo5, clo13 , Clo14
15	Assembly of some mechanical components.	1	Clo4, clo5, clo13 , Clo14.

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO4	Develop appropriate to Demonstrate the Methodology of solving problems in orthographic views.
		CLO5	Conduct appropriate to analyze principles of earth intersections.
PL8	Communicate effectively –graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO13	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



PL9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO14	Use creative, innovative, and flexible thinking to respond to new situations.
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Title	Name	Signature
Course coordinator	Dr. Mohamed Abdelrahman	
Program coordinator	Dr.Hend salama	
Head of Department	Ass.Prof. Dr. Osama Elghandour	
Date of Approval	3/9/2023	



Course Specification	
Course Code: MCE 0101	Course Title: Engineering drawing (1)

34. Basic information	
Program Title	Electrical Power Engineering Department

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



Department offering the program	Electrical Power Engineering Department			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	MCE 0101			
Prerequisites	None			
Year/level	Prep year / first Semester (First Level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	4	0	6

35. Course Aims



No.	Aim
1	Identify and apply the basic knowledge and skills of the concepts and principles of engineering drawing and fundamentals of drawing projections. The basic principles of drawing with several applications are also studied.(AM1)

36. Learning Outcomes (LOs)

CLO 1	Identify complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO 3	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.by applying engineering fundamentals, basic science, and mathematics.
CLO13	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.
CLO14	Use creative, innovative, and flexible thinking to respond to new situations.

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



4-coure contents	
Topics	Week
Introduction of principles of engineering lines used in drawing.	1
Geometric construction theories of view derivation	2
Orthographic projection of engineering bodies.	3
Orthographic projection of engineering bodies.	4
Projection of point, lines, surfaces, and bodies.	5
How to divide of engineering drawing board and general engineering drawing	6
Drawing engineering operations and some application on it.	7
Drawing engineering operations and some application on it.	8
Drawing of simple isometrics and its projections.	10
Drawing of simple isometrics and its projections.	11
Drawing of complicated isometrics with inclined surfaces.	12
Drawing of complicated isometrics with inclined surfaces.	13
Drawing of the third projection with the knowledge of the other projectors.	14
Drawing of the third projection with the knowledge of the other projectors.	15

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

5. Teaching and Learning methods	
Course learning Outcomes (LOs)	<p style="text-align: center;">Teaching and Learning Methods</p>

	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO 1	√			√		√				√		
CLO 2	√			√		√				√		
CLO13	√			√		√				√		
CLO14	√			√		√				√		

6. Teaching and Learning methods of Disabled Students		
No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

7. Students' Assessment

7.1 Students' Assessment Method		
No.	Assessment Method	LOs
1	Attendance	Clo13, Clo14
2	Reports	Clo1, Clo3, Clo13, Clo14
3	Mid-term Exam	Clo1, Clo2
4	Final Exam	Clo1, Clo2, Clo13, Clo14

7.2 Assessment Schedule		
No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports	weekly
3	Mid-term Exam	9
4	Final Exam	16

7.3 Weighting of Assessments			
	Assessment Method	Weights%	Weights
Teacher Opinion	Reports	10%	10
	Attendance	10%	10
	Mid-term exam	20%	20
Final Exam		60%	60
Total		100%	100

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

8. List of References

- [1] K. L. Narayana, P. Kannaiah, and K. Venkata Reddy 'Machine Drawing' New Age International (P) Ltd., 2006.
- [2] C. Simmons, D. Maguive, and N. Phelps, 'Manual of Engineering Drawing', Elsevier Ltd., 2009.
- [3] N. D. Bhatt, Engineering Drawing, Charotar Publication; 54th Edition 2022, ISBN-10 : 9385039709
- [4] R K DHAWAN, A Text Book of Engineering Drawing: Geometrical Drawing 3rd Rev. Edition 2006, Published by S Chand; ASIN : B00QUYKXI Edition, Prentice Hall. (2011)

9. Facilities required for teaching and learning



Lecture/Classroom

White board

Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's



No.	Topics	Aim	LO's
1	Introduction of principles of engineering lines used in drawing.	1	Clo1, Clo3
2	Geometric construction theories of view derivation	1	Clo1, Clo3, Clo14
3	Orthographic projection of engineering bodies.	1	Clo1, Clo13.
4	Orthographic projection of engineering bodies.	1	Clo1, Clo13, Clo14
5	Projection of point, lines, surfaces, and bodies.	1	Clo1, Clo13
6	How to divide of engineering drawing board and general engineering drawing	1	Clo1, Clo14
7	Drawing engineering operations and some application on it.		Clo13, Clo14

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

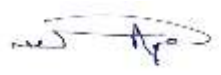

8	Drawing engineering operations and some application on it.	1	Clo13, Clo14
10	Drawing of simple isometrics and its projections.	1	Clo13, Clo14
11	Drawing of simple isometrics and its projections.	1	Clo13, Clo14
12	Drawing of complicated isometrics with inclined surfaces.	1	Clo1, Clo3, Clo13, Clo14
13	Drawing of complicated isometrics with inclined surfaces.	1	Clo13, Clo14
14	Drawing of the third projection with the knowledge of the other projectors.	1	Clo13, Clo14
15	Drawing of the third projection with the knowledge of the other projectors.	1	Clo1, Clo3, Clo13, Clo14

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO1	Identify complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
		CLO3	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics by applying engineering fundamentals, basic science, and mathematics.
PL8	Communicate effectively –graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO13	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



PL9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO14	Use creative, innovative, and flexible thinking to respond to new situations.
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Title	Name	Signature
Course coordinator	Dr.Mohamed Abdelrahman	
Program coordinator	Dr. Hend salama	
Head of Department	Ass.Prof. Dr. Osama Elghandour	
Date of Approval	3/9/2023	



Course Specification	
Course Code: HUM0101	Course Title: Technical Language

37. Basic information	
Program Title	Electrical Power Engineering Department

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



Department offering the program	Electrical Power Engineering Department			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	HUM0101			
prerequisites	None			
Year/level	Prep year / first Semester (First Level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	0	0	2

38. Course Aims

No.	Aim
1	Identify and Apply techniques, skills, and some English grammar and rules necessary for effectively writing numbers, equations, symbols, and some different types of technical documents such as reports, proposals, letters, and presentations.(AM1)

39. Learning Outcomes (LOs)

CLO12	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
CLO13	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



4-Course contents	
Topics	Week
Introduction	1
Engineering—what’s it about?	2
Parts of speech	3
Word order and sentence structure	4
Engineering Materials	5
Present simple	6
Recycling	7
Present continuous	8
Engineering Design	10
Technical problems	11
Writing and paragraph structure	12
Writing rules	13
<ul style="list-style-type: none"> • Aircraft 	14
<ul style="list-style-type: none"> • Aircraft 	15

5. Teaching and Learning methods												
Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
	CLO12	√	√				√	√			√	√
CLO13	√					√	√			√	√	

6. Teaching and Learning methods of Disabled Students		
No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√

7. Students' Assessment

7.1 Students' Assessment Method		
No.	Assessment Method	LOs
1	Attendance	CLO13

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

2	Reports	CLO13
3	Sheets	CLO12,CLO13
4	Final Exam	CLO12,CLO13

7.2 Assessment Schedule		
No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports	Bi-weekly
3	Sheets	Weekly
4	Final Exam	16

7.3 Weighting of Assessments			
	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets	30%	30
	Attendance	10%	10
Final Exam		60%	60
Total		100%	100



8. List of References

1. Murphy R, English Grammar in Use. Cambridge Press. Electric Machinery Fundamentals, 2019
2. Azar, B. , Fundamentals of English grammar (4th edition). Longman. (Chapters 1-9 & 11) ,2011

9. Facilities required for teaching and learning

Lecture/Classroom



White board

		
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Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Data Show

10. Matrix of Course Content with Course LO's

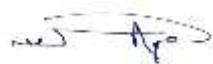

Week No.	Topics	Aim	LO's
1	Introduction	1	CLO13
2	Engineering—what's it about?	1	CLO13
3	Parts of speech	1	CLO13
4	Word order and sentence structure	1	CLO13
5	Engineering Materials	1	CLO13
6	Present simple	1	CLO13
7	Recycling	1	CLO12,CLO13
8	Present continuous	1	CLO13
10	Engineering Design	1	CLO12,CLO13
11	Technical problems	1	CLO12,CLO13
12	Writing and paragraph structure	1	CLO12,CLO13
13	Writing rules	1	CLO12,CLO13



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

14	Aircraft	1	CLO12,CLO13
15	Aircraft	1	CLO12,CLO13

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL7	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	CLO12	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.
PL8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO13	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.

Title	Name	Signature
Course coordinator	Dr. Mona Naeem	
Program coordinator	Dr.Hend Salama	
Head of Department	Ass.Prof.dr.Osama Elghandour	
Date of Approval	3/9/2023	



		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	



Course Specification	
Course Code: CSE0101	Course Title: Computer technology

40. Basic information				
Program Title	Electrical Power Engineering Depart.			
Department offering the program	Electrical Power Engineering Depart.			
Department offering the course	Communication and Electronics Engineering Depart.			
Course Code	CSE0101			
Prerequisite	None			
Year/level	Prep. Year / First Level			
Specialization	Major			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	1		3



41. Course Aims	
No.	Aim
1	Identify Hardware components, and solve practical problems in data representation in computer, network classifications, and multimedia, making use of the fundamental programming to write programs using C language, find the output of any C programs, correct

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

	the errors, and draw their flow chart. (AM1).
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42. Learning Outcomes (LOs)	
CLO.2	Formulate computer programs to solve complex problems by applying fundamentals of programming, and mathematics.
CLO.3	Solve problems in data representation, network and multimedia by applying engineering fundamentals.
CLO.13	Communicate effectively – graphically, and in writing using contemporary tools.

43. Course Contents	
Topics	Week
Computer hardware: Types of Computers, Central Processing Unit, Arithmetic and logic unit, and Control unit.	1
Computer hardware: Input devices- output devices.	2
Computer hardware: Memory types- Registers.	3
Number systems: Decimal- Binary- Octal -Hexadecimal numbers. Conversion from any number system to any number system. Addition in binary system	4
Number systems: Negative numbers in binary system one's and two's complement – sign magnitude. Subtraction in binary system	5
Introduction to C programming language: Variable types, Write an equation, Input and output commands, and flow charts.	6

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

C programming language: Decision making (if-else rule)	7
C programming language: Loops (for - while rules), and nested loops	8
C programming language: Write different programs	10
C programming language: Find and correct the errors in a program. Find the output of any program.	11
Introduction to network: Network classifications according to the network media, architecture, size and topology.	12
Multimedia: (images – videos)	13
Multimedia: (Audio)	14
Practical Exam	15

5. Teaching and Learning methods											
Course learning Outcomes (LOs)	Teaching and Learning Methods										
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning



CLO2	√			√						√		
CLO3	√		√	√								
CLO13	√		√	√	√					√		

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	√
2	Online lectures and assignments	√

7. Students' Assessment

7.1 Students' Assessment Method		
No.	Assessment Method	LOs
1	Assignments	CLO2, CLO3, CLO13
2	Quizzes	CLO3
3	Report	CLO2, CLO13
4	Practical	CLO2, CLO13
5	Mid-term exam	CLO2, CLO13
6	Final exam	CLO2, CLO3,

		
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7.2 Assessment Schedule		
No.	Assessment Method	Weeks
1	Assignments	5,6,12
2	Quizzes	4
3	Report	10
4	Mid-term Exam	9
5	Practical Exam	15
6	Final Exam	16



7.3 Weighting of Assessments					
	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets	40%	40	5%	5
	Quizzes			%5	5
	Mid-term exam			%20	20
Practical	Practical exam			%10	10
Final Exam		60%	60		
Total		100	100		

8. List of References

- [1] Logic & Computer Design Fundamentals by M. Morris Mano, Charles Kime, et al. | Mar 4, 2015
- [2] Dennis M. Ritchi, Brian W. Kernighan, C Programming Language, 2nd Edition, Independently Published, 2021, ISBN 9798468216194
- 3] Darrell Hajek & Cesar Herrera. Introduction to Computers, published (May 19, 2022), ISBN-13 : 979-8830413732

9. Facilities required for teaching and learning



Lecture

		
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White board
Data show
Laboratory Usage

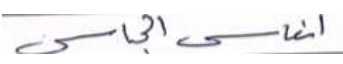

10. Matrix of Course Content with Course LO's



WEEKNo.	Topics	Aim	LO's
1	Computer hardware: Types of Computers, Central Processing Unit, Arithmetic and logic unit, and Control unit.	1	CLO3
2	Computer hardware: Input devices- output devices.	1	CLO3
3	Computer hardware: Memory types- Registers.	1	CLO3
4	Number systems: Decimal- Binary- Octal -Hexadecimal numbers. Conversion from any number system to any number system. Addition in binary system	1	CLO3
5	Number systems: Negative numbers in binary system one's and two's complement – sign magnitude. Subtraction in binary system	1	CLO3
6	Introduction to C programming language: Variable types, Write an equation, Input and output commands, and flow charts.	1	CLO2,C LO13
7	C programming language: Decision making (if-else rule)	1	CLO2, CLO13
8	C programming language: Loops (for - while rules), and nested loops	1	CLO2,C LO13
9	Midterm		
10	C programming language: Write different programs	1	CLO2,C LO13
11	C programming language: Find and correct the errors in a program. Find the output of any program.	1	CLO2,C LO13


		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

12	Introduction to network: Network classifications according to the network media, architecture, size and topology.	1	CLO3
13	Multimedia: (images – videos)	1	CLO3,
14	Multimedia: (Audio)	1	CLO3
15	Practical Exam	1	CLO2,C LO13

11. Matrix of Program LOs with Course Los			
Program Los		Course Los	
PL.1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	CLO.2	Formulate computer programs to solve complex problems by applying fundamentals of programming, and mathematics.
		CLO.3	Solve problems in data representation, network and multimedia by applying engineering fundamentals.
PLO.8	Communicate effectively - graphically, verbally and in writing - with a range of audiences using contemporary tools.	CLO.13	Communicate effectively – graphically, and in writing using contemporary tools

Title	Name	Signature
Course coordinator	Dr. Enas Mahmoud Elgbbas	
Program coordinator	Assoc. Prof. Dr. Osama ELghandour	

		
	Ministry of Higher Education Higher Institute of Engineering and Technology Electrical Power Engineering Department	

Head of Department	Assoc. Prof. Dr. Osama ELghandour	
Date of Approval	3/09/2023	

