Course Specification

Course Code: CSE0101 **Course Title: Computer technology**

1. Basic information

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

2. Course Aims

No.	Aim
1	Identify, analyse, and solve practical problems, making use of appropriate engineering tools, programs and techniques (AM3).

3. Learning Outcomes (LOs)

CLO.2	Formulate computer programs to solve complex problems by applying fundamentals of programing, 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.

4. Course Contents

Topics	Week
Introduction to a computer system: Computer functionality, computer applications, and computer types.	1
Computer hardware: Computer components.	2
Computer hardware: Memory types.	3
Number systems: Types of number systems. Converting between bases.	4
Number systems: Converting fractions.	5
Number systems: Arithmetic operations.	6
Introduction to network: Network classifications according to the network media, architecture, size and topology.	8
Problem solving in programming: Analysis of the problem, drawing flow chart, and coding.	9
Problem solving with decision: Decision statement.	10
Problem solving with Repetition: Loop statements	11
Multimedia: (Audio)	12
Multimedia: (images – videos)	13
Practical Exam	14
Final exam	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.2	√	√			√							√
CLO.3	√	√			√							√
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	Written exam	CLO2, CLO3, CLO13
2	Quizzes	CLO3
3	Practical	CLO2, CLO13
4	Assignments	CLO2, CLO3
5	Report	CLO13
6	Simulation	CLO13

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Sheets /Report	3,4,5,11,13
2	Quizzes	5,13
3	Simulation	13
4	Mid-term Exam	7
5	Practical Exam	14
6	Final Exam	15

7.3 Weighting of Assessments					
	Assessment Method	**Weights%**	**Weights**	**Weights%**	**Weights**
Teacher Opinion	Report/Sheets	40%	40	5%	5
	Quizzes			%10	10
	Mid-term exam			%20	20
Practical	Practical exam /Simulation			5%	5
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
White board
Data show
Laboratory Usage

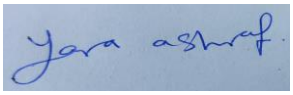
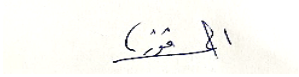
10-Matrix of Course Content with Course LO's

WEEK No.	Topics	Aim	LO's
1	**Introduction to a computer system:** Computer functionality, computer applications, and computer types.	1	CLO13
2	**Computer hardware:** Computer components.	1	CLO13
3	**Computer hardware:** Memory types.	1	CLO13
4	**Number systems:** Types of number systems. Converting between bases.	1	CLO3
5	**Number systems:** Converting fractions.	1	CLO3
6	**Number systems:** Arithmetic operations.	1	CLO3
7	**Mid term**	1	CLO3, CLO13
8	**Introduction to network:** Network classifications according to the network media, architecture, size and topology.	1	CLO3, CLO13
9	**Problem solving in programming:** Analysis of the problem, drawing flow chart, and coding.	1	CLO2, CLO13
10	**Problem solving with decision:** Decision statement.	1	CLO2, CLO13
11	**Problem solving with Repetition:** Loop statements	1	CLO2, CLO13
12	**Multimedia**: (Audio)	1	CLO3
13	**Multimedia**: (images – videos)	1	CLO3
14	**Practical Exam**	1	CLO2, CLO13
15	**Final exam**	1	CLO2, CLO3, CLO13

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 programing, and mathematics.
		CLO.3	Solve problems in data representation, network and multimedia by applying engineering fundamentals.

PL.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. Yara Asharaf**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**16/09/2024**	

Course Specification

Course Code: HUM0101 **Course Title:** Technical English Language

10. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
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

11. Course Aims

No.	Aim
1	Acquire scientific research skills and perform continuous development through self-learning and knowledge. .(AM2)

12.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.

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	8
Present continuous	9
Engineering Design	10
Technical problems	11
Writing and paragraph structure	12
Writing rules-Aircraft	13
Revision	14
Final Exam	15

5-Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
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	Reports	CLO13
2	Sheets	CLO12,CLO13
3	Mid term	CLO12,CLO13
4	Final Exam	CLO12,CLO13

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Reports	Weekly
2	Sheets	Bi-weekly
3	Mid term	7
4	Final Exam	15

7.3 Weighting of Assessments			
	Assessment Method	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets / Activities	10%	10
	Mid-term exam	30%	30
Final Exam		60%	60
Total		100%	100

8. List of References

1 D. J. Weatherford, "Technical Writing in Engineering Professions", 2016.
2 Phillip A. Laplante, "Technical Writing: A Practical Guide for Engineers and Scientists", CRC Press, 2nd edition, July 2018.

9. Facilities required for teaching and learning

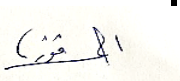
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	Introduction	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	Mid term	1	CLO12,CLO13
8	Recycling	1	CLO12,CLO13
9	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- Aircraft	1	CLO12,CLO13
14	Revision	1	CLO12,CLO13
15	Final Exam	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. Yasser Abd elkhalq**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

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

13. Basic information

Program Title	Electronic and communication Engineering Department			
Department offering the program	Electronic and communication 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

14. Course Aims

No.	Aim
1	Solve and analysis communication and electronic engineering problems based on physical sciences and mathematics. (AM1)

15.	Learning Outcomes (LOs)
CLO 1	Identify and formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO 2	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.

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.	8
Drawing engineering operations and some application on it.	9
Drawing of simple isometrics and its projections.	10
Drawing of complicated isometrics with inclined surfaces.	11
Drawing of complicated isometrics with inclined surfaces.	12
Drawing of the third projection with the knowledge of the other projectors.	13
Revision	14
Final Exam	15

5-Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
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	×

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Reports	Clo1, Clo2, Clo13, Clo14
2	Quizzes	------
3	Mid-term Exam	Clo1, Clo2, Clo13, Clo14
4	Final Exam	Clo1, Clo2, Clo13, Clo14

7.2 Assessment Schedule

No.	Assessment Method	Weeks

1	Reports	weekly
2	Quizzes	-
3	Mid-term Exam	7
4	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	30%	30
	Mid-term exam	30%	30
Final Exam		60%	90
Total		100%	150

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 Publiction; 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, Clo2, Clo14
3	Orthographic projection of engineering bodies.	1	Clo1, Clo2.
4	Orthographic projection of engineering bodies.	1	Clo1, Clo2, Clo14
5	Projection of point, lines, surfaces, and bodies.	1	Clo1, Clo13, Clo2
6	How to divide of engineering drawing board and general engineering drawing	1	Clo1, Clo14,Clo2
7	Midterm	1	CLO1,CLO2
8	Drawing engineering operations and some application on it.		Clo13, Clo14
9	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 complicated isometrics with inclined surfaces.	1	Clo13, Clo14
12	Drawing of complicated isometrics with inclined surfaces.	1	Clo1, Clo2, Clo13, Clo14
13	Drawing of the third projection with the knowledge of the other projectors.	1	Clo13, Clo14
14	Revision	1	Clo1, Clo2, Clo13, Clo14
15	Final Exam	1	Clo1, Clo2, 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 and formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
		CLO2	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.
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.

Title	Name	Signature
Course coordinator	**Dr.Mohamed Abdelrahman**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

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

16. Basic information

Program Title	Electronic and Communication Eng. Department			
Department offering the program	Electronic and Communication Eng. Department			
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

17. Course Aims

No.	Aim
1	Solve and analysis communication and electronic engineering problems based on physical sciences and mathematics. (AM1)

18.	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 straight line, Ellipse, parabola, hyperbola, and circle.

4 Course Contents

Topics	Week
Functions & Transformation of Functions - introduction of conics	1
Combination of Functions - Parabola	2
Limits and continuity - Parabola	3
Derivatives -Parabola.	4
Trigonometric functions and Its derivative -Topics of parabola	5
Logarithmic and exponential functions, Ellipse	6
Integral -Ellipse	8
Integral of Trigonometric functions -Hyperbola	9
Definite integral - Rotation of axes.	10
Definite integral and its applications to area - Planes.	11
L'Hopital Rule - Planes.	12
L'Hopital Rule- straight line	13
Revision	14
Final Exam	15

19. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods

	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO1	√	√					√					
CLO2	√	√					√					
CLO3	√	√			√	√	√	√				√

6. Teaching and Learning methods of Disabled Students

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

. Students' Assessment

7.1 Students' Assessment Method

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

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Reports	Bi-weekly
2	Sheets	Weekly
3	Quizzes	Bi-Weekly
4	Mid-term Exam	7
5	Final Exam	15

7.3 Weighting of Assessments			
	Assessment Method	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets / Activities	10%	15
	Quizzes	13.33%	20
	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	Functions & Transformation of Functions - introduction of conics	1	CLO1
2	Combination of Functions - Parabola	1	CLO1,CLO2
3	Limits and continuity - Parabola	1	CLO1,CLO2,CLO3
4	Derivatives -Parabola.	1	CLO1,CLO2,CLO3
5	Trigonometric functions and Its derivative - Topics of parabola	1	CLO1,CLO2,CLO3
6	Logarithmic and exponential functions, Ellipse	1	CLO1,CLO2,CLO3
7	Mid term	1	CLO2,CLO3
8	Integral -Ellipse	1	CLO1,CLO2,CLO3
9	Integral of Trigonometric functions - Hyperbola	1	CLO1,CLO2,CLO3

10	Definite integral - Rotation of axes.	1	CLO1,CLO2,CLO3
11	Definite integral and its applications to area - Planes.	1	CLO1,CLO2,CLO3
12	L'Hopital Rule - Planes.	1	CLO1,CLO2,CLO3
13	L'Hopital Rule- straight line	1	CLO1,CLO2,CLO3
14	Revision	1	CLO1,CLO2,CLO3
15	Final Exam	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
Course coordinator	**Dr. Eman Abdelaziz** **Dr . Tarek Adel**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**/9/2024**	

Course Specification

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

20. Basic information

Program Title	Electronic and Communication Eng. Department			
Department offering the program	Electronic and Communication Eng. Department			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	PHM0102			
prerequisites	None			
Year/level	Prep year / first Semester (First level)			
Specialization	**Minor**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	1	1	6

21. Course Aims

No.	Aim
1	Solve and analysis communication and electronic engineering problems based on physical sciences and mathematics. (AM1)

22.	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**
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	8
Capillarity and applications of surface tension	9
Viscosity	10
Bernoulli`s equation and its applications	11
Bernoulli`s equation and its applications	12
Types of lenses, mirrors and image formed	13
Practical Exam	14
Final Exam	15

5-Teaching and Learning methods	
	Teaching and Learning Methods

Course learning Outcomes (LOs)	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO1	√	√	√		√		√					
CLO2	√	√	√		√		√					
CLO3	√	√	√		√		√	√				

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	Sheets	CLO1,CLO2,CLO 3
2	Quizzes	CLO1
3	Mid-term Exam	CLO1,CLO2
4	Oral/ Practical Exam	CLO3
5	Final Exam	CLO1,CLO2,CLO 3

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Sheets	Weekly
2	Quizzes	Bi-weekly
3	Mid-term Exam	7
4	Oral/ Practical Exam	14
5	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	3.3%	5
	Quizzes	3.3%	5
	Mid-term exam	13.3%	20
	Lab. Reports	6.66%	10
	Lab. Activities / Projects		
	Final oral / practical exam	13.3%	20
Final Exam		60%	90
Total		100%	150

8. List of References

[1] Serway R. A., Jewett J. W. "Physics" ,5 th 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	1	CLO1 ,CLO3

	Labs: Practicing on measuring instruments (micrometer, and venire).		
3	Rotational motion	1	CLO1,CLO2,CLO3
4	Moment of inertia **Labs:** Archimedes Principle	1	CLO1,CLO2,CLO3
5	Elasticity of length, shape and volume	1	CLO2,CLO3
6	Energy stored in stretched wire , poisson ratio,Bulk modulu`s **Labs:** Hook̀s Law	1	CLO2,CLO3
7	Mid term	1	CLO1,CLO2
8	Absolute pressure, surface tension	1	CLO2,CLO3
9	Capillarity and applications of surface tension **Labs:** Surface tension	1	CLO2,CLO3
10	Viscosity	1	CLO2,CLO3
11	Bernoulli`s equation and its applications **Labs:** Lenses	1	CLO2,CLO3
12	Bernoulli`s equation and its applications	1	CLO2,CLO3
13	Types of lenses, mirrors and image formed	1	CLO2,CLO3
14	Practical Exam	1	CLO3
15	Final Exam	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.	CLO	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.

Title	**Name**	**Signature**
Course coordinator	**Ass.Prof.Dr. Rehab Ali**	

Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**/9/2024**	

Course Specification

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

23. Basic information

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

24. Course Aims

No.	Aim
1	Solve and analysis communication and electronic engineering problems based on physical sciences and mathematics. (AM1)

25. 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

26. 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	8
Three- dimensional force systems	9
Equilibrium of a rigid body in three dimension, free body diagrams, equations of equilibriums.	10
Simple trusses	11
Frames and machines (part 1)	12
Frames and machines (part 2)	13
General revision	14
Final Exam	15

27. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO1	√	√					√					√
CLO2	√	√				√	√	√			√	
CLO3	√	√				√	√	√			√	

28. Teaching and Learning methods of Disabled Students

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

29. Students' Assessment

7.1 Students' Assessment Method

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

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Reports	Bi-weekly
2	Sheets	Weekly
3	Quizzes	Bi- weekly
4	Mid-term Exam	7
5	Final Exam	15

7.3 weighting of Assessment			
	Assessment Method	**Weights %**	**Weights**
Teacher Opinion	Reports / sheets / Activities	10%	10
	Quizzes	10%	10
	Mid-term exam	20%	20
Final Exam		60%	60
Total		100%	100

8. List of References

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

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	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	Midterm exam	1	CLO1, CLO2
8	Coplanar force systems	1	CLO2, CLO3
9	Three- dimensional force systems.	1	CLO2, CLO3
10	Equilibrium of a rigid body in two dimension, free body diagrams, equations of equilibriums.	1	CLO2, CLO3
11	Simple trusses	1	CLO3
12	Frames and machines (part 1)	1	CLO2, CLO3
13	Frames and machines (part 2)	1	CLO2, CLO3
14	General revision	1	CLO1, CLO2, CLO3
15	Final exam		CLO1, CLO2, CLO3

11. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PLO1	Identify, formulate, and solve complex engineering problems by applying engineering	CLO1	Identify the principals of engineering mechanics, vectors, Forces and moments.

	fundamentals, basic science, and mathematics.	CLO2	Identify particle equilibrium, rigid body equilibrium and frames
		CLO3	Solve Equilibrium's equations of particles Rigid Bodies in two and three dimensions

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Title	Name	Signature
Course coordinator	**Dr. Wafaa Diab**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

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

1. Basic information

Program Title	Electronic and communication Engineering Department			
Department offering the program	Electronic and communication 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

2. Course Aims

No.	Aim
1	Solve and analysis communication and electronic engineering problems based on physical sciences and mathematics. (AM1)

3. 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.

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.	8
Identification for different of steel sections.	9
Identification for different of steel sections.	10
Drawing of the sections for different types of steel joints.	11
Drawing of the sections for different types of steel joints.	12
Assembly of some mechanical components.	13
Revision	14
Final Exam	15

5-Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
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
1	Reports	CLO4,CLO5,CLO13,CLO14
2	Quizzes	----------
3	Mid-term Exam	CLO4,CLO5,CLO13
4	Final Exam	CLO4,CLO5,CLO13,CLO14

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Reports	weekly
2	Quizzes	-----
3	Mid-term Exam	7
4	Final Exam	15

7.3 Weighting of Assessments			
	Assessment Method	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets / Activities	30%	30
	Mid-term exam	30%	30
Final Exam		60%	90
Total		100%	150

8. List of References

[1] R.R. Dhawan, " A First Year Engineering Drawing", Text Book, Ratsor Publishing House James H.Earle, "Graphics for Engineers", Text Book..
[2] Technical drawing. Frederick Giesecke et al. Tenth 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

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	Midterm Exam		Clo4,Clo5,Clo14
8	Drawing of the sections for different types of screwed joints.	1	Clo4, Clo14
9	Drawing of the sections for different types of screwed joints.	1	Clo4, Clo14.
10	Identification for different of steel sections.	1	Clo4, Clo14.
11	Drawing of the sections for different types of steel joints.	1	Clo4, clo5, clo13 , Clo14
12	Drawing of the sections for different types of steel joints.	1	Clo4, clo5, clo13 , Clo14
13	Assembly of some mechanical components.	1	Clo4, clo5, clo13 , Clo14
14	Revision	1	Clo4, clo5, clo13 , Clo14
15	Final Exam	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.
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.

Title	Name	Signature
Course coordinator	**Dr.Mohamed Abdelrahman**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

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

4. Basic information

Program Title	Electronic and Communication Eng. Department			
Department offering the program	Electronic and Communication Eng. Department			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	MCE0202			
Prerequisite	None			
Year/level	Prep year / second Semester (First Level)			
Specialization	**Minor**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	0	2	5

5. Course Aims

No.	Aim
1	Identify, analyse, and solve practical problems, making use of appropriate engineering tools, programs and techniques. (AM3)

6. 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	8
Joining processes	9
Fundamentals of Machining processes	10
Machining processses	11
Wood machining	12
History of technology- Fourth industrial revolutions	13
Practical Exam	14
Final Exam	15

7. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
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	Quizzes	CLO6, CLO12,
2	Mid-term Exam	CLO6
3	Oral/Practical Exam	CLO6, CLO12,
4	Final Exam	CLO6, CLO12

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Quizzes	6 and 10
2	Mid-term Exam	7
3	Oral/ Practical Exam	14
4	Final Exam	15

7.3 Weighting of Assessments			
	Assessment Method	**Weights%**	**Weights**
Teacher Opinion	Quizzes	10%	10
	Mid-term exam	20%	20
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

Week No.	Topics	Aim	LO's
1	Material properties **Labs:** Casting processes workshop	1	CLO6
2	Material classification **Labs:** Casting processes workshop	1	CLO6
3	Casting fundamentals **Labs:** Forming workshop	1	CLO6
4	Fundamentals of forming processes **Labs:** Forming workshop	1	CLO6
5	Bulk forming proceses **Lab**: Welding workshop	1	CLO6
6	Sheet metal processes **Lab**: Welding workshop	1	CLO6, CLO12
7	Mid term	1	Clo6
8	Polymer forming processes **Lab**: Carpentary workshop	1	CLO6, CLO12
9	Joining processes **Lab**: Carpentary workshop	1	CLO6, CLO12,
10	Fundamentals of Machining processes **Lab**: Machine workshop	1	CLO6, CLO12,
11	Machining processes **Lab**: Machine workshop	1	CLO6, CLO12,
12	Wood machining **Lab**: Machine workshop	1	CLO6, CLO12,
13	History of technology- Fourth industrial revolutions **Lab:** Machine workshop	1	CLO6, CLO12,
14	Practical Exam	1	CLO6, CLO12,
15	Final Exam	1	CLO6, CLO12,

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PLO3	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
PLO7	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

• Title	• Name	• Signature
Course coordinator	**Dr. Ehab Nosser**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

Course Code: PHM0201 **Course Title: Math (2)**

8. Basic information

Program Title	Electronic and Communication Eng. Department			
Department offering the program	Electronic and Communication Eng. Department			
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

9. Course Aims

No.	Aim
1	Solve and analysis communication and electronic engineering problems based on physical sciences and mathematics. (AM1)

10.	Learning Outcomes (LOs)
CLO4	Develop appropriate 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 solve it.	6
Properties of Eigenvalues and eigenvectors of matrices method of solve it.	8
Integration by the method of Parts- Theory of equations.	9
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- Wails' formula - infinite series	13
Revision	14
Final Exam	15

5-Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO4	√	√			√		√	√				
CLO5	√	√			√	√	√	√				√

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	Reports	CLO5
2	Sheets	CLO4,CLO5
3	Quizzes	CLO5
4	Mid-term Exam	CLO5
5	Final Exam	CLO4,CLO5

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Reports	Bi-weekly
2	Sheets	weekly
3	Quizzes	Bi-weekly
4	Mid-term Exam	7
5	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	10%	15
	Quizzes	13.33%	20
	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

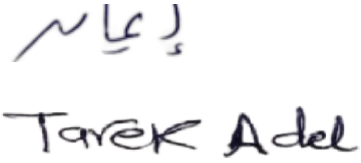
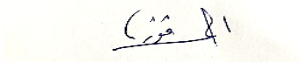
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	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	Mid term	1	CLO4,CLO5
8	Properties of Eigenvalues and eigenvectors of matrices method of solve it.	1	CLO4,CLO5
9	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- Wails' formula - infinite series	1	CLO4,CLO5
14	Revision	1	CLO4,CLO5
15	Revision	1	CLO4,CLO5

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 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** **Dr . Tarek Adel**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

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

11. Basic information

Program Title	Electronic and Communication Eng. Department			
Department offering the program	Electronic and Communication Eng. Department			
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

12. Course Aims

No.	Aim
1	Solve and analysis communication and electronic engineering problems based on physical sciences and mathematics. (AM1)

13. 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 and Heat and thermodynamics: Heat transfer, Kinetic theory of gases, First law of thermodynamics
CLO5	Conduct appropriate experimentation to recognize the electric field, magnetic field ,AC nd Heat and thermodynamics: Heat transfer, Kinetic theory of gases, First law of thermodynamics.

4-Course contents	
Topics	**Week**
Coulombs Law	1
Potential difference	2
Electric current	3
Capacitors	4
Magnetic Field	5
Inductance	6
Alternating current	8
RLc Circuit	9
Temperature measurement and Specific Heat.	10
Heat transfer and Properties of gases and Vapors	11
Thermodynamics	12
Heat Engines- Entropy	13
Practical Exam	14
Final Exam	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO4	√	√	√		√	√	√	√				
CLO5	√	√	√		√		√	√				

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	Reports	Clo4
2	Sheets	Clo4,clo5
3	Quizzes	Clo4,clo5
4	Mid-term Exam	Clo5
5	Oral/ Practical Exam	Clo4,clo5
6	Final Exam	Clo4,clo5

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Reports	Bi-Weekly
2	Sheets	Weekly
3	Quizzes	Bi-Weekly
4	Mid-term Exam	7
5	Oral/ Practical Exam	14
6	Final Exam	15

7.3 Weighting of Assessments			
	Assessment Method	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets / Activities	-	-
	Quizzes	6.6%	10
	Mid-term exam	13.3%	20
	Lab. Reports	6.6%	10
	Lab. Activities / Projects		
	Final oral / practical exam	13.3%	20
Final Exam		60%	90
Total		100%	150

8. List of References

[1] Serway R. A., Jewett J. W. "Physics" ,5 th 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

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	Mid Term		CLO5
8	Alternating current **Labs:** RLC(inductor)	1	Clo4,clo5
9	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- Entropy **Labs:** Thermocouple	1	Clo4,clo5
14	Practical Exam	1	Clo4,clo5
15	Finial Exam	1	Clo4,clo5

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.Eman Abdelaziz** **Dr. Yasser Abd elkhalq**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**169/2024**	

Course Specification

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

14. Basic information

Program Title	Communication and Electronics Engineering Depart.			
Department offering the program	Communication and Electronics Engineering Depart.			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	PHM 0203			
Prerequisites	None			
Year/level	Prep year / second semester (1st Level)			
Specialization	**Minor**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2	0	4

15. Course Aims

No.	Aim
1	Solve and analysis communication and electronic engineering problems based on physical sciences and mathematics. (AM1)

16. 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.

17. Course Contents

Topics	Week
- Kinematics of particles. - Rectilinear motion of particles (Position, Velocity and acceleration) - two dimension.	1
- 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	8
- Kinetics of particles: work and energy - The work of a force - Principle of work and energy	9
- Power and efficiency - Conservative force and potential energy	10
- Conservation of energy	11
Kinetics of particles: - Principle of linear impulse and momentum - Conservation of linear momentum for a system of particles	12
- Impact	13
Revision	14
Final Exam	15

18. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO1	√	√					√					√
CLO2	√	√				√	√	√			√	
CLO3	√	√				√	√	√			√	
ClO4	√	√						√				√

6. Teaching and Learning methods of Disabled Students

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

19. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Reports	CLO1, CLO2.

2	Sheets	CLO1, CLO2, CLO3, CLO4.
3	Quizzes	CLO1, CLO3.
4	Mid-term Exam	CLO1, CLO3.
5	Final Exam	CLO1, CLO2, CLO3, CLO4.

7.2 Assessment Schedule

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

7.3 weighting of Assessment

	Assessment Method	Weights %	Weights
Teacher Opinion	Reports / sheets	10%	10
	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.)

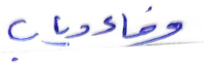
10. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	- Kinematics of particles. - Rectilinear motion of particles (Position, Velocity and acceleration) - two dimension.	1	CLO1
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	Mid term	1	CLO1, CLO3
8	- Kinetics of particles. (Force and acceleration) - Newton's Second law of motion. - Equations of motion : rectangular coordinates	1	CLO2, CLO3
9	- Kinetics of particles: work and energy - The work of a force Principle of work and energy	1	CLO3
10	- Power and efficiency - Conservative force and potential energy	1	CLO3
11	- Conservation of energy	1	CLO1- CLO3

12	Kinetics of particles: - Principle of linear impulse and momentum - Conservation of linear momentum for a system of particles	1	CLO4
13	- Impact	1	CLO1-CLO4
14	- Revision	1	CLO1, CLO2, CLO3,
15	- Final Exam		CLO1, CLO2, CLO3,

11. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PLO1	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.
PLO2	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**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

Course Code: PHM0204 **Course Title: Chemistry**

20. Basic information

Program Title	Electronic and communication Engineering Department			
Department offering the program	Electronic and communication Engineering Department			
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

21. Course Aims

No.	Aim
1	Acquire scientific research skills and perform continuous development through self-learning and knowledge. (AM1)

22. Learning Outcomes (LOs)

CLO1	Identify the equations of physical chemistry.
Clo3	Solve quantitive 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.	8
Application on thermochemistry.	9
Laws of thermodynamics.	10
Application on thermodynamics.	11
Chemistry of Cement.	12
Water hardness and its treatment.	13
Practical exam	14
Final exam	15

5-Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
Clo1	√	√			√	√	√	√				
Clo3	√	√			√	√	√	√				
Clo5	√	√	√				√	√				
Clo6	√	√					√	√				

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	Reports	Clo1,clo3
2	sheets	Clo1,clo3
3	Quizzes	Clo1
4	Mid-term Exam	Clo6
5	Oral/ Practical Exam	Clo5
6	Final Exam	Clo1,clo3,clo6

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Reports	Bi- weekly
2	sheets	weekly
3	Quizzes	Bi- weekly
4	Mid-term Exam	7
5	Oral/ Practical Exam	14
6	Final Exam	15

7.3 Weighting of Assessments			
	Assessment Method	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets / Activities	5%	5
	Quizzes	5%	5
	Mid-term exam	10%	10
	Lab. Reports	10%	10
	Lab. Activities / Projects	-	-
	Final oral / practical exam	10%	10
Final Exam		60%	60
Total		100%	100

8. List of References

[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

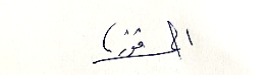
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

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
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	Mid term		CLO6,CLO3
8	Thermochemistry. **Lab4**:Determination of total hardness of water.	1	CLO1,CLO5
9	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	Practical exam	1	CLO3,CLO5
15	Final exam	1	CLO1,CLO3,CLO5,CLO6

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 quantitive 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.
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

Title	Name	Signature
Course coordinator	**Ass.Prof.Dr. Rehab Ali**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	