

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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	--			
Year/level	Prep. Year / First Level			
Specialization	Major			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	1		3

2. 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 the errors, and draw their flow chart. (AM3).

3. 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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

4. 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
C programming language: Decision making (if-else rule)	7
C programming language: Loops (for - while rules), and nested loops	8
Mid term Exam	9
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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department Course Specification- 2022-2023	

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
2	Quizzes	CLO3
3	Report	CLO2, CLO13
4	Practical	CLO2, CLO13
4	Assignments	CLO2, CLO3, CLO13

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Sheets	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

White board

Data show

Laboratory Usage

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

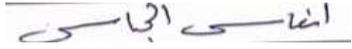
10. Matrix of Course Content with Course LO's

No.	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,CLO13
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,CLO13
9	Midterm		
10	C programming language: Write different programs	1	CLO2,CLO13
11	C programming language: Find and correct the errors in a program. Find the output of any program.	1	CLO2,CLO13
12	Introduction to network: Network classifications according to the network media, architecture, size and topology.	1	CLO3
13	Multimedia: (images – videos)	1	CLO3,
13	Multimedia: (Audio)	1	CLO3
14	Practical Exam	1	CLO2,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 programming, 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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

Title	Name	Signature
Course coordinator	Dr. Enas Mahmoud Elgbbas	
Program coordinator	Assoc. Prof. Dr. Osama ELghandour	
Head of Department	Assoc. Prof. Dr. Osama ELghandour	
Date of Approval	3/09/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

1. 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

2. Course Aims	
No.	Aim
1	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.(AM2)

3. 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, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

4-Course contents	
Topics	Week
Review of English Grammar and Mechanics of Language (Capitalization –Punctuation)	1
Review of English Grammar and Mechanics of Language (Capitalization –Punctuation)	2
Some characteristics of Technical Language (Abbreviation)	3
How to write numbers, units, equations, symbols, and units of measure	4
How to write numbers, units, equations, symbols, and units of measure	5
Technical words problems: such as jargons, Big words, Wordy phrases, Redundancies, Clichés, Nouns as adjectives, and Misused and troublesome words and phrases	6
Technical words problems: such as jargons, Big words, Wordy phrases, Redundancies, Clichés, Nouns as adjectives, and Misused and troublesome words and phrases	7
Technical words problems: such as jargons, Big words, Wordy phrases, Redundancies, Clichés, Nouns as adjectives, and Misused and troublesome words and phrases	8
Mid Term Exam	9
Rules and Principals of technical writing	10
Rules and Principals of technical writing	11
Good technical writing	12
Good technical writing	13
Applications of technical writing <ul style="list-style-type: none"> • Letters • reports • manuals • proposals • presentations 	14
Applications of technical writing <ul style="list-style-type: none"> • Letters • reports • manuals • proposals • presentations 	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	Attendance	-----
2	Reports	CLO12,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	Quizzes	-
5	Mid-term Exam	9
6	Final Exam	16

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

7.3 Weighting of Assessments			
	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	30%	30
	Attendance	10%	10
	Quizzes		
	Mid-term exam		
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.)

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Review of English Grammar and Mechanics of Language (Capitalization –Punctuation)	1	CLO12,CLO13
2	Review of English Grammar and Mechanics of Language (Capitalization –Punctuation)	1	CLO12,CLO13
3	Some characteristics of Technical Language (Abbreviation)	1	CLO12,CLO13
4	How to write numbers, units, equations, symbols, and units of measure	1	CLO12,CLO13
5	How to write numbers, units, equations, symbols, and units of measure	1	CLO12,CLO13
6	Technical words problems: such as jargons, Big words, Wordy phrases, Redundancies, Clichés, Nouns as adjectives, and Misused and troublesome words and phrases	1	CLO12,CLO13
7	Technical words problems: such as jargons, Big words, Wordy phrases, Redundancies, Clichés, Nouns as adjectives, and Misused and troublesome words and phrases	1	CLO12,CLO13
8	Technical words problems: such as jargons, Big words, Wordy phrases, Redundancies, Clichés, Nouns as adjectives, and Misused and troublesome words and phrases	1	CLO12,CLO13
10	Rules and Principals of technical writing	1	CLO12,CLO13
11	Rules and Principals of technical writing	1	CLO12,CLO13
12	Good technical writing	1	CLO12,CLO13
13	Good technical writing	1	CLO12,CLO13
14	Applications of technical writing <ul style="list-style-type: none"> • Letters • reports • manuals • proposals presentations	1	CLO12,CLO13
15	Applications of technical writing <ul style="list-style-type: none"> • Letters • reports • manuals • proposals presentations	1	CLO12,CLO13

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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	
Program coordinator	Ass.Prof.dr.Osama Elghandour	
Head of Department	Ass.Prof.dr.Osama Elghandour	
Date of Approval	3/9/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

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 0101			
Prerequisites	None			
Year/level	Prep year / first Semester (First Level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	4	0	6

2. Course Aims	
No.	Aim
1	Apply the basic knowledge and skills of the concepts and principles of engineering drawing and fundamental of drawing projections. The basic principles of drawing with several applications are also studied.(AM1)

3. 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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

4- Course 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
Mid Term Exam	9
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

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	Attendance	-----
2	Reports	Clo1, Clo2, Clo13, Clo14
3	Quizzes	-----
4	Mid-term Exam	Clo1, Clo2, Clo13, Clo14
5	Final Exam	Clo1, Clo2, Clo13, Clo14

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

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

8. List of References
<p>[1] K. L. Narayana, P. Kanniah, and K. Venkata Reddy ' Machine Drawing' New Age International (P) Ltd., 2006.</p> <p>[2] C. Simmons, D. Maguive, and N. Phelps, 'Manual of Engineering Drawing', Elsevier Ltd., 2009.</p> <p>[3] N. D. Bhatt, Engineering Drawing, Charotar Publiction; 54th Edition 2022, ISBN-10 : 9385039709</p> <p>[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)</p>

9. Facilities required for teaching and learning
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

10. Matrix of Course Content with Course LO's

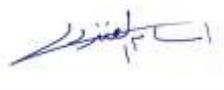
No.	Topics	Aim	LO's
1	Introduction of principles of engineering lines used in drawing.	1	Clo1, Clo2
2	Geometric construction theories of view derivation	1	Clo1, Clo2, Clo14
3	Orthographic projection of engineering bodies.	1	Clo1, Clo13.
4	Orthographic projection of engineering bodies.	1	Clo1, Clo13,Clo14
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
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, Clo2, 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. Tutorials: Mid term	1	Clo13, Clo14
15	Drawing of the third projection with the knowledge of the other projectors.	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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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	
Program coordinator	Ass.Prof. Dr. Osama Elghandour	
Head of Department	Ass.Prof. Dr. Osama Elghandour	
Date of Approval	3/9/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

Course Specification

Course Code: PHM0101

Course Title: Mathematics (1)

1. 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

2. Course Aims

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

3. 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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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 / Activities	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.
 [5] James.S,Daniel.K. “Calculus”.Cengage learning,9th Edition ,2020.

9. Facilities required for teaching and learning

Lecture/Classroom

White board

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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

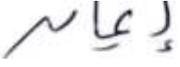
10. Matrix of Course Content with Course LO's

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 curve fitting-Parabola.	1	CLO1,CLO2,CLO3
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	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, 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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

Title	Name	Signature
Course coordinator	Dr. Eman Abdelaziz	
Program coordinator	Ass.Prof.Dr Osama Elghandour	
Head of Department	Ass.Prof.Dr Osama Elghandour	
Date of Approval	3/9/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

1. 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

2. 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)

3. 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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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	7
Capillarity and applications of surface tension	8
Mid Term Exam	9
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, fifth district	
	Electronics and Communication Eng. Department Course Specification- 2022-2023	

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	√	√	√		√		√					
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	Attendance	-----
2	Sheets	CLO1,CLO2,CL O3
3	Quizzes	CLO1
4	Mid-term Exam	CLO1,CLO2
5	Oral/ Practical Exam	CLO3
6	Final Exam	CLO1,CLO2,CL O3

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department Course Specification- 2022-2023	

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	-
2	Sheets	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	Reports / sheets / Activities	-	-
	Attendance	-	-
	Quizzes	6.6%	10
	Mid-term exam	13.3%	20
Practical / Oral	Practical Attendance	3.33%	5
	Lab. Reports	3.33%	5
	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" ,5th Edition,2013
 [2] Kittel 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.)

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

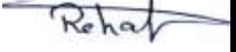
10. Matrix of Course Content with Course LO's

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 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 applying engineering fundamentals, basic science, and mathematics.	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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

Title	Name	Signature
Course coordinator	Ass.Prof.Dr. Rehab Ali	
Program coordinator	Ass.Prof. Dr. Osama Elghandour	
Head of Department	Ass.Prof. Dr. Osama Elghandour	
Date of Approval	3/9/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

1. 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 (1 st Level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2	0	4

2. 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)

3. 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



4. 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
Mid Term Exam	9
Condition for of a rigid boy in two dimensions, free body diagrams, equations of equilibrium.	10
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

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	√	√					√					√
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	Attendance	-----
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 / Activities	5%	5
	Attendance	5%	5
	Quizzes	10%	10
	Mid-term exam	20%	20
Final Exam		60%	60
Total		100%	100

8. List of References
<ul style="list-style-type: none"> • [1] Engineering Mechanics: Statics (11th Edition) R.C. HIBBELER , 2008 • [2]Engineering Mechanics: Statics (13th Edition) R.C. HIBBELER , 2010 • [3]Engineering Mechanics: Statics (15th Edition) R.C. HIBBELER , 2021`

9. Facilities required for teaching and learning
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

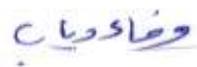
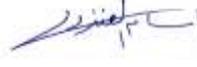
10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	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	
PLO1	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, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

Title	Name	Signature
Course coordinator	Dr. Wafaa Diab	
Program coordinator	Ass.Prof.Dr.Osama Elgandour	
Head of Department	Ass.Prof.Dr.Osama Elgandour	
Date of Approval	3/9/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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	Apply the basic knowledge and skills of the concepts and principles of engineering drawing and fundamental of drawing projections. The basic principles of drawing with several applications are also studied.(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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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
Mid Term Exam	9
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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department Course Specification- 2022-2023	

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	Attendance	-----
2	Reports	CLO4,CLO5,CL O13,CLO14
3	Quizzes	-----
4	Mid-term Exam	CLO4,CLO5,CL O13
5	Final Exam	CLO4,CLO5,CL O13,CLO14

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

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

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.)

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department Course Specification- 2022-2023	

10. Matrix of Course Content with Course LO's

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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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	
Program coordinator	Ass.Prof. Dr. Osama Elghandour	
Head of Department	Ass.Prof. Dr. Osama Elghandour	
Date of Approval	3/9/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

Course Specification

Course Code: MCE0202

Course Title: Production Technology and History

1. 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
	4	2	1	7

2. Course Aims

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

3. 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

4. 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	Attendance	CLO12
2	Quiz 1 / Quiz 2	CLO6, CLO12,
3	Mid-term Exam	CLO6
4	Oral/Practical Exam	CLO6, CLO12,
5	Final Exam	CLO6, CLO12

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

7.2 Assessment Schedule		
No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports / Sheets	-
3	Quiz 1 / Quiz 2	6 and 10
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	Quiz 1	5	5
	Attendance	5 %	5
	Mid-term exam	20%	20
Practical exam	Oral	%10	10
Final Exam		60%	60
Total		100%	100

8. List of References
<p>[1] Manufacturing, Engineering and Technology, Serope Kalpakjian, Addison-Wesley.2013</p> <p>[2] Bruce J. Black, " Workshop Processes, Practices, and Materials" Fourth Edition, Elsevir 2010.</p> <p>[3]R.Singh, "Introduction to Basic Manufacturing Processes and Workshop Technology" New Age International (P) Limited Publishers, New Delhi 2006.</p> <p>[4] Dvivedi, A. K. S. H. A. Y., Sachdeva, A., Sindhvani, R., & Sahu, R. Recent trends in industrial and production engineering. Springer Singapore(2022)..</p>

9. Facilities required for teaching and learning
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department Course Specification- 2022-2023	

10. Matrix of Course Content with Course LO's

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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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. Mohamed Awed	
Program coordinator	Ass.Prof.Dr.Osama Elghandour	
Head of Department	Ass.Prof.Dr.Osama Elghandour	
Date of Approval	3/9/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

1. 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

2. Course Aims

No.	Aim
1	Apply knowledge of mathematics and engineering concepts of hyperbolic and inverse functions, derivative and identify all techniques of integration and Teach the students the algebra of matrices, solving linear systems, theory of equations and algebra of infinite series. (AM1)

3. 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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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.	7
Integration by the method of Parts- Theory of equations.	8
Mid Term Exam	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- infinite series	13
Wails' formula- infinite series	14
Revision	15

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department Course Specification- 2022-2023	

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	×

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-----
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

	Assessment Method	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	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.
- [5] James.S,Daniel.K. "Calculus".Cengage learning,9th Edition,2020.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

9. Facilities required for teaching and learning

Lecture/Classroom

White board

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

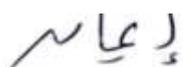
10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Introduction 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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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	
Program coordinator	Ass.Prof.Dr.Osama Elghandour	
Head of Department	Ass.Prof.Dr.Osama Elghandour	
Date of Approval	3/9/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

1. 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

2. Course Aims	
No.	Aim
1	Describe <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)

3. 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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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
Mid Term Exam	9
Temperature measurement and Specific Heat.	10
Heat transfer and Properties of gases and Vapors	11
Thermodynamics	12
Heat Engines	13
Entropy	14
Revision	15

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department Course Specification- 2022-2023	

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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	-
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	Reports / sheets / Activities	-	-
	Attendance	-	-
	Quizzes	6.6%	10
	Mid-term exam	13.3%	20
Practical / Oral	Practical Attendance	3.33%	5
	Lab. Reports	3.33%	5
	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", 5th Edition, 2013
 [2] Kittel 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.)

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

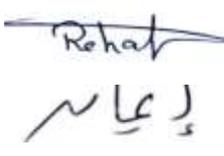
10. Matrix of Course Content with Course LO's

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	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, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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	Ass.Prof. Osama Elgandour	
Head of Department	Ass.Prof. Osama Elgandour	
Date of Approval	3/9/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

Course Specification

Course Code: PHM 0203

Course Title: mechanics (2)

1. 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	PHM 0203			
Prerequisites	None			
Year/level	Prep year / second semester (1 st Level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2	0	4

2. 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)

3. 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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

4. Course Contents

Topics	Week
<ul style="list-style-type: none"> - Kinematics of particles. - Rectilinear motion of particles (Position, Velocity and acceleration) - two dimension. 	1
<ul style="list-style-type: none"> - Rectilinear motion of particles (Position, Velocity and acceleration) - three dimension. 	2
<ul style="list-style-type: none"> - Curvilinear motion: cylindrical coordinates 	3
<ul style="list-style-type: none"> - Curvilinear motion: normal and tangential (intrinsic) coordinates 	4
<ul style="list-style-type: none"> - Motion of a projectile 	5
<ul style="list-style-type: none"> - relative motion 	6
<ul style="list-style-type: none"> - 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
Mid Term Exam	9
Equations of motion : cylindrical coordinates	10
<ul style="list-style-type: none"> - Kinetics of particles: work and energy - The work of a force - Principle of work and energy 	11
<ul style="list-style-type: none"> - Power and efficiency - Conservative force and potential energy 	12
<ul style="list-style-type: none"> - Conservation of energy 	13
Kinetics of particles: <ul style="list-style-type: none"> - Principle of linear impulse and momentum - Conservation of linear momentum for a system of particles 	14
<ul style="list-style-type: none"> - Impact 	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	√	√					√					√
CLO2	√	√				√	√	√			√	
CLO3	√	√				√	√	√			√	
CLO4	√	√						√				√

6. Teaching and Learning methods of Disabled Students

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

6. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Attendance	-----
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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

8. List of References
<ul style="list-style-type: none"> • [1] Engineering Mechanics: dynamics (11th Edition) R.C. HIBBELER, 2008 • [2] Engineering Mechanics: dynamics (13th Edition) R.C. HIBBELER, 2010 • [3] Engineering Mechanics: dynamics (15th Edition) R.C. HIBBELER, 2021 • [4] 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.)

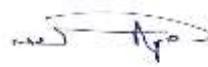
10. Matrix of Course Content with Course LO's			
No.	Topics	Aim	LO's
1	- Kinematics of particles. - Rectilinear motion of particles (Position, Velocity and acceleration) - two dimension.	1	CLO1
2	- Rectilinear motion of particles (Position, Velocity and acceleration) - three dimension.	1	CLO1
3	- Curvilinear 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	- 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

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.

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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	3/9/2022	



	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

Course Specification	
Course Code: PHM0204	Course Title: Chemistry

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	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	Apply essential knowledge of basic principles, laws and theories of physical Chemistry, 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.
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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department Course Specification- 2022-2023	

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
Mid Term Exam	9
Laws of thermodynamics.	10
Application on thermodynamics.	11
Chemistry of Cement.	12
Water hardness and its treatment.	13
Water hardness and its treatment.	14
Revision	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	Attendance	-----
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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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	Reports / sheets / Activities	5%	5
	Attendance	-	-
	Quizzes	5%	5
	Mid-term exam	10%	10
Practical / Oral	Practical Attendance	5%	5
	Lab. Reports	5%	5
	Lab. Activities / Projects	-	-
	Final oral / practical exam	10%	10
Final Exam		60%	60
Total		100%	100

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

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

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

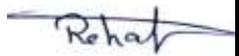
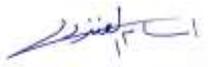
No.	Topics	Aim	LO's
1	States of matter Lab1: Introduction	1	CLO1,CLO5
2	Gases. Lab2: Determination of the concentration of sodium hydroxide solution using standard solution of hydrochloric acid.	1	CLO5,CLO6
3	Work done of gases. Lab2: Determination of the concentration of sodium hydroxide solution using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

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.
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
--------------	-------------	------------------

	Ministry of Higher Education	
	Higher Institute of Engineering and technology, fifth district	
	Electronics and Communication Eng. Department	
Course Specification- 2022-2023		

Course coordinator	Ass.Prof. Dr. Rehab Ali Dr. Nagwa Hussen	
Program coordinator	Ass.Prof.Dr.Osama Elgandour	
Head of Department	Ass.Prof.Dr.Osama Elgandour	
Date of Approval	3/9/2022	

