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 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. (AM1).

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
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 programing language: Variable types**,** Write an equation**,** Input and output commands, and flow charts.	6
C programing language: Decision making (if-else rule)	8
C programing language: Loops (for - while rules), and nested loops	9
C programing language: Write different programs	10
C programing 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) & **Multimedia**: (Audio)	13
Practical Exam	14

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO2	√		√	√		√						
CLO3	√		√	√		√						
CLO13	√		√	√	√					√		√

6. Teaching and Learning methods of Disabled Students

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

7. Students' Assessment

7.1 Students' Assessment Method

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

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Assignments	4,5,11,13
2	Quizzes	5,13
3	Report	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	Reports / sheets	40%	40	5%	5
	Quizzes			%5	5
	Mid-term exam			%20	20
Practical	Practical exam /Simulation			%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

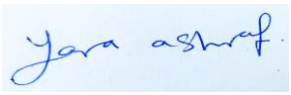
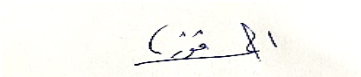
10. Matrix of Course Content with Course LO's

WEEK No.	Topics	Aim	LO's
1	**Computer hardware:** Types of Computers, Central Processing Unit**,** Arithmetic and logic unit, and Control unit.	1	CLO13
2	**Computer hardware:** Input devices- output devices.	1	CLO13
3	**Computer hardware:** Memory types- Registers.	1	CLO13
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 programing language:** Variable types**,** Write an equation**,** Input and output commands, and flow charts.	1	CLO2, CLO13
8	**C programing language:** Decision making (if-else rule)	1	CLO2, CLO13
9	**C programing language:** Loops (for - while rules), and nested loops	1	CLO2, CLO13
10	**C programing language:** Write different programs	1	CLO2, CLO13
11	**C programing 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, CLO13
13	**Multimedia**: (images – videos) & **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 programing, and mathematics.
		CLO.3	Solve problems in data representation, network and multimedia by applying engineering fundamentals.

PLO.8	Communicate effectively - graphically, verbally and in writing - with a range of audiences using contemporary tools.	CLO.13	Communicate effectively – graphically, and in writing using contemporary tools

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

Course Specification

Course Code: ECE1211 **Course Title: Electronic Engineering**

5. 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	ECE1211			
Prerequisite	--			
Year/level	First year / Second Semester (2nd Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

6. Course Aims

No.	Aim
1	Identify Engineering fundamentals based on physical science. (AM1)
2	Analyze the electronic components and devices, and become familiar with circuits using these electronic components.(AM5)

7. Learning Outcomes (LOs)

CLO.1	Identify Engineering fundamentals based on physical science.
CLO.3	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO.22	Analyze an electronic system or component for a specific application; and identify the tools required to optimize this design.

8. Course Contents

Topics	Week
Semiconductor physics: Semiconductor physics	1
Semiconductor physics: Diodes physics	2
Diodes applications: Half wave circuits	3
Diodes applications: Full wave circuits and power supply	4
Diodes applications: Clipper circuits	5
Diodes applications: Clampers	6
Midterm	7
Diodes applications: Clampers and voltage doubler circuits.	8
Zener diodes and its applications.	9
Bipolar junction transistor: Physics	10
Bipolar junction transistor: DC Biasing configuration (1)	11
Bipolar junction transistor: DC Biasing configuration (2)	12
Unipolar Junction transistor: physics, DC biasing	13
Practical Exam	14
Final Exam	15

9. 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.3	√	√			√				√			
CLO.22	√	√			√		√		√			

10. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional tutorials	√

11. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Written exam	CLO.1, CLO.3, CLO22
2	Assignments	CLO.1, CLO.3, CLO22
3	Simulation/Self learning	CLO.22

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Assignments	6-13
2	Mid-term Exam	7
3	Simulation	14
4	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Assignements	40%	40	10%	10
	Simulation			10%	10
	Mid-term exam			20%	20
Final Exam		60%	60		60
Total			100		100

12. List of References

[1] B. Razavi, "Fundamentals of Microelectronics," third edition, 2021.
[2] T. L. Floyd, "Electronic devices: electron flow version", 9th edition ed., New Jersey: Prentice Hall, 2012.

13. Facilities required for teaching and learning

Lecture
Simulation
White board

14. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Semiconductor physics: Semiconductor physics	1	CLO.1
2	Semiconductor physics: Diodes physics	1	CLO.1
3	Diodes applications: Full wave circuits	2	CLO.3, CLO.22
4	Diodes applications: Half wave circuits and power supply	2	CLO.3, CLO.22
5	Diodes applications: Clipper circuits	2	CLO.3, CLO.22
6	Diodes applications: Clampers	2	CLO.3, CLO.22
7	Midterm		
8	Diodes applications: Clampers and voltage doubler circuits.	2	CLO.3, CLO.22
9	Zener diodes and its applications.	2	CLO.3, CLO.22
10	Bipolar junction transistor: Physics	1	CLO.1
11	Bipolar junction transistor: DC Biasing configuration (1)	2	CLO.3, CLO.22
12	Bipolar junction transistor: DC Biasing configuration (2)	2	CLO.3, CLO.22
13	Unipolar Junction transistor: physics, DC biasing	1,2	CLO.1, CLO.3, CLO.22

15. 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.1	Identify Engineering fundamentals based on physical science.
		CLO.3	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
PL12	Design model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	CLO.22	Analyze an electronic system or component for a specific application; and identify the tools required to optimize this design.

Title	Name	Signature
Course coordinator	**Dr. Amira Nabil**	Amira NabiL
Head of Department	**Ass. Pro. Ahmed Fawzy**	
Date of Approval	**16/09/2024**	

Course Specification

Course Code: EPE1211 **Course Title: Electric Circuits (2)**

16. Basic information

Program Title	Electronic and Communication Eng. Department			
Department offering the program	Electronic and Communication Eng. Department			
Department offering the course	Electrical Power Engineering Depart.			
Course Code	EPE1211			
Prerequisties	EPE1111			
Year/level	First year / Second Semester (2nd Level)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2	0	5

17. Course Aims

No.	Aim
1	Analyze results of numerical solutions to different circuits and appreciate their limitation. (AM2)

18. Learning Outcomes (LOs)

CLO10	Supervise the concepts of complex power applications in electrical AC circuits.
CLO11	Monitor the concept and methodologies of different three phase AC systems.
CLO21	Model types of filters and different ways of two port network.
CLO22	Analayze the main principles of transient and resonance analysis.

19. Course Contents

Topics	Week
Complex Power Calculations in AC Circuits.	1
Apparent Power, Power Factor, Circuits with Nonlinear Resistance.	2
Three Phase AC Analysis.	3
Balanced Three Phase Systems.	4
Unbalanced Three Phase Systems.	5
Transient Analysis.	6
Transient Analysis of First Order Circuits.	8
Transient Analysis of Second Order Circuits.	9
Resonance Circuits	10
Series and Parallel Resonance Circuits	11
General Resonance Circuits.	12
Two Port Networks and types of filters	13
Revision.	14

20. 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
CLO10	√	√			√						√	
CLO11	√	√				√	√					√
CLO21	√	√					√				√	√
CLO22	√	√			√	√						

21. Teaching and Learning methods of Disabled Students

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

22. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Reports	CLO10, CLO21.
2	Sheets	CLO10, CLO11, CLO21, CLO22.
3	Quizzes	CLO11, CLO22.
4	Mid-term Exam	CLO10, CLO11.
5	Final Exam	CLO10, CLO11, CLO21, CLO22.

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

23. List of References

[1] JHON O'MALLY, ''Basic Circuit Analysis Theory and Problems'', second edition, , 1992.
[2]' Electric circuit theory and technology'', second edition, Jhon Bird, 2003.
[3] ''Fundamentals of Electric Circuits'', Charles Alexannder, fifth edition, 2012.

24. Facilities required for teaching and learning

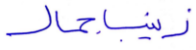
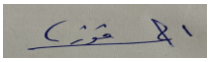
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Data show

25. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	Complex Power Calculations in AC Circuits.	1	CLO10.
2	Apparent Power, Power Factor, Circuits with Nonlinear Resistance.	1	CLO10.
3	Three Phase AC Analysis.	1	CLO11.
4	Balanced Three Phase Systems.	1	CLO11.
5	Unbalanced Three Phase Systems.	1	CLO11.
6	Transient Analysis.	1	CLO22.
8	Transient Analysis of First Order Circuits.	1	CLO22.
9	Transient Analysis of Second Order Circuits.	1	CLO22.
10	Resonance Circuits	1	CLO22.
11	Series and Parallel Resonance Circuits	1	CLO22.
12	General Resonance Circuits.	1	CLO22.
13	Two Port Networks and types of filters	1	CLO21.
14	Revision.	1	CLO10, CLO11, CLO21, CLO22.

26. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	CLO10	Supervise the concepts of complex power applications in electrical AC circuits.
		CLO11	Monitor the concept and methodologies of different three phase AC systems.
PL12	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	CLO21	Model types of filters and different ways of two port network.
		CLO22	Analayze the main principles of transient and resonance analysis.

Title	Name	Signature
Course coordinator	**Dr. Zeinab Gamal Hassan**	
Head of Department	**Assoc. Prof.Dr. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

Course Code: EPE1212 Course Title: Electrical measurements

27. Basic information

Program Title	Electrical Power Engineering Depart.			
Department offering the program	Electrical Power Engineering Depart.			
Department offering the course	Electrical Power Engineering Depart.			
Course Code	**EPE1212**			
Prerequisite	---			
Year/level	Year 1/ Level 2 (2nd Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2	0	5

28. Course Aims

No.	Aim
1	Apply knowledge of mathematics, science and engineering concepts to the solution of Electrical measurements problems. (AM1)

29. Course Learning Outcomes (CLOs)

CLO22	analyze measuring devices for a specific application;
CLO25	Estimate the performance of various electrical quantities in the power systems.

4.Material covered /week	
Topics	**Week**
Introduction to electrical measurements, errors	1
Accuracy and precision.	2
PMMCI construction and operation	3
DC ammeters, extension for range and Ayrton shunt.	4
DC voltmeters, & extension for range.	5
Resistance measurements, Wheatstone bridge, & AC bridges	6
AC measurements	8&9
Oscilloscopes	10
Sensors and transducers	11&12
Potentiometers and voltage measurements	13
Revision	14

5.Teaching and Learning methods

Course learning Outcomes (CLOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO22	√		√	√		√		√		√		√
CLO25	√		√	√		√		√		√		√

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	CLOs
1	Reports	CLO 22
2	Sheets	CLO 22- CLO 25
3	Quizzes	CLO 22
4	Mid-term Exam	CLO 22
5	Final Exam	CLO 22- CLO 25

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

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

8. List of References

-David A. Bell, "Electronic Instrumentation & Measurements" - PHI, 2nd Edition, 2003.
- John G. Webster, Halit Eren, "Measurements, Instrumentation, and Sensors Handbook", CRC press, 2017.
E. W. Golding and F. C. Widdis, Electrical Measurements and Measuring Instruments, 7th ed. New York, NY: Springer, 2021.

-J. Fraden, Handbook of Modern Sensors: Physics, Designs, and Applications, 5th ed. New York, NY: Springer, 2022.
-A. S. Morris and R. Langari, Measurement and Instrumentation: Theory and Application, 3rd ed. Oxford, UK: Elsevier, 2020.

9. Facilities required for teaching and learning

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

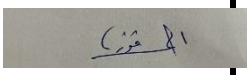
10. Matrix of Course Content with Course LO's

Week no#	Topics	Aim	LO's
1	Introduction to electrical measurements, errors	1	CLO25
2	Accuracy and precision.	1	CLO25
3	PMMCI construction and operation	1	CLO22,CLO25
4	DC ammeters, extension for range and Ayrton shunt.	1	CLO22,CLO25
5	DC voltmeters, & extension for range.	1	CLO22,CLO25
6	Resistance measurements, Wheatstone bridge, & AC bridges	1	CLO22,CLO25
8 & 9	**AC measurements**	1	CLO22,CLO25
10	**Oscilloscopes**	1	CLO22,CLO25
11&12	**Sensors and transducers**	1	CLO22,CLO25
13	**Potentiometers and voltage measurements**	1	CLO22,CLO25
14	**Revision**	1	CLO22,CLO25

10. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL12	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	CLO22	analyze measuring devices for a specific application;
PL14	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation and	CLO25	Estimate the performance of various electrical quantities in the power systems.

	evaluate its suitability for a specific application.		

Title	Name	Signature
Course coordinator	**Dr. Dina Rostom**	
Head of Department	**Associate Prof. Dr. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

Course Code: HUM1103 **Course Title: Engineering economy**

30. Basic information

Program Title	Electronic and Communication Engineering Depart.			
Department offering the program	Electronic and Communication Engineering Depart.			
Department offering the course	Electrical Power Engineering Depart.			
Course Code	HUM1103			
Prerequisite	None			
Year/level	First year / second Semester (Second level)			
Specialization	**Minor**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	1	0	3

31. Course Aims

No.	Aim
1	Understanding the basic terminology, concepts, and principles of Engineering Economy. Train the student in how to find engineering information, both in traditional ways and on the Internet. This is achieved through Understanding the time value of money, Break-even point (BEP), Rate of Return, Replacement policy, Depreciation rates, Inflation, and concepts of cost accounting. Analyze the breakeven point (BEP), assess the benefit/cost, make decision, and choose between alternatives, estimate Rate of Return, and calculate rate of depreciation of assets. (AM6)

32. Learning Outcomes (LOs)

CLO 6	Applying principle in estimating cost, the international codes, standards, electrical requirements, professional ethics, and the effect of income tax and depreciation in creating electrical engineering economic decision.
CLO 8	practice techniques and methods of sensitivity analysis and predicted value decisions.

4. Course Contents

Week	Topics
1	Introduction & Application on Engineering Economy
2	Engineering Costs.
3	Cost Estimating.
4	Proplems on Cost Estimating.
5	The time value of money.
6	Problems on Interest and equivalence.
7	Midterm Exam
8	Analysis of Alternatives.
9	Comparison of Alternatives.
10	Replacement analysis.
11	Problems on Replacement analysis.
12	Benefit-cost analysis
13	Problems on Benefit-cost analysis.
14	Revision
15	Final Exam

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO 6	√	√	√	√		√	√			√	√	√
CLO 8	√	√	√	√		√	√			√	√	√

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	CLO 6,CLO8
2	Sheets	CLO 6,CLO8
3	Quizzes	CLO 6,CLO8
4	Mid-term Exam	CLO 6,CLO8
5	Final Exam	CLO 6,CLO8

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%	10
	Quizzes	10%	10
	Mid-term exam	20%	20
Final Exam		60%	60
Total		100%	100

8. List of References

[1] W. G. Sullivan, E. M. Wicks, and C. P. Koelling, *Engineering Economy*. Upper Saddle River, NJ: Pearson, 2015.

[2]. D. G. NEWMAN, J. P. LAVELLE, and T. G. ESCHENBACH, Engineering Economic Analysis Donald G. Newman, Ted G. Eschenbach, Jerome P. Lavelle. New York ; Oxford: Oxford University Press, 2016.

9. Facilities required for teaching and learning

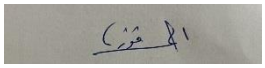
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Introduction & Application on Engineering Economy	1	CLO 6
2	Engineering Costs.	1	CLO 6 ,CLO8
3	Cost Estimating.	1	CLO 6 ,CLO8
4	Proplems on Cost Estimating	1	CLO 6 ,CLO8
5	The time value of money.	1	CLO 6 ,CLO8
6	Problems on the time value of money.	1	CLO 6 ,CLO8
7	Midterm Exam	1	CLO 6 ,CLO8
8	Analysis of Alternatives	1	CLO 6 ,CLO8
9	Comparison of Alternatives	1	CLO 6 ,CLO8
10	Replacement analysis	1	CLO 6 ,CLO8
11	Problems on Replacement analysis	1	CLO 6 ,CLO8
12	Benefit-cost analysis	1	CLO 6 ,CLO8
13	Problems on Benefit-cost analysis.	1	CLO 6 ,CLO8
14	Revision	1	CLO 6 ,CLO8
15	Final Exam	1	CLO 6 ,CLO8

11. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PL3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.	CLO 6	Applying principle in estimating cost, the international codes, standards, electrical requirements, professional ethics, and the effect of income tax and depreciation in creating electrical engineering economic decision.
PL5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO 8	practice techniques and methods of sensitivity analysis and predicted value decisions.

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

Course Specification

Course Code: PHM 1211 **Course Title: Mathematics (4)**

33. Basic information

Program Title	Electronic and Communication Eng. Department			
Department offering the program	Electronic and Communication Eng. Department			
Department offering the course	Physics and Mathematical Engineering			
Course Code	PHM 1211			
prerequisite	Mathematics 1,2			
Year/level	First year / Second Semester (second Level)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

34. Course Aims

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

35. Learning Outcomes (LOs)

CLO4	Develop the concepts and theories of Fourier series, classification of PDEs and interpolation for electrical systems.
CLO5	Conduct solution method for Partial differential equation, and vector analysis for different systems.
CLO22	Analyze methods of Laplace transform, Inverse Laplace for different system and expansion function.

4-course contents	
Topics	**Week**
Expansion functions	1
Interpolation-Fourier Series	2
Interpolation-Fourier Series	3
Curve fitting- classification and solve partial DifferentialEquations(PDEs).	4
Curve fitting- Wave Equation.	5
Laplace transform-inverse laplace transform.	6
inverse laplace transform.- Wave Equation	8
inverse laplace transform.- Heat Equation	9
Application on inverse Laplace-Vector anaylsis	10
Application on inverse Laplace-Vector anaylsis	11
Heaviside unit step(laplace transform)-Vector anaylsis	12
Heaviside unit step(inverse laplace transform)--Vector anaylsis	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	√	√			√	√	√	√				
CLO22	√	√			√	√	√	√				

36. Teaching and Learning methods of Disabled Students

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

37. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Reports	CLO4,CLO,CLO22
2	Sheets	CLO4,CLO,CLO22
3	Quizzes	CLO22
4	Mid-term Exam	CLO4, CLO22
5	Final Exam	CLO4,CLO5,CLO22

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 Assessment Schedule			
	Assessment Method	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets	10%	15
	Quiz 1 / Quiz 2	13.33%	20
	Mid-term exam	26.6%	40
Final Exam		50%	75
Total		100%	150

8-List of References

[1] Erwin Kreyszig, Kreyszig Textbook: "Advanced Engineering Mathematics, 10th Edition- slader, 2018.
[2] Dennis G. Zill and Michael R. Cullen, "Differential Equations with Boundary Problem", seven edition, PWS Publishers; published simultaneously in Canada 2015.
[3] William E. Boyce, Richard:" Elementary Differential Equations and Boundary Value Problems", 8th Edition Wiley, Publisher John Wiley & Sons, Inc., 2014.

9-Facilities required for teaching and learning

Lecture/Classroom

White board

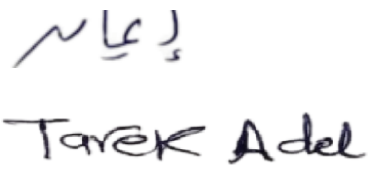
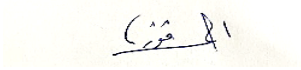
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10-Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Expansion functions	1	CLO4
2	Interpolation-Fourier Series	1	CLO4
3	Interpolation-Fourier Series	1	CLO4
4	Curve fitting- classification and solve partial DifferentialEquations(PDEs).	1	CLO4
5	Curve fitting- Wave Equation.	1	Clo4,clo5
6	Laplace transform-inverse laplace transform.	1	Clo22
7	Mid Term	1	CLO4, CLO22
8	inverse laplace transform.- Wave Equation	1	Clo22,clo5
9	inverse laplace transform.- Heat Equation	1	Clo22,clo5
10	Application on inverse Laplace-Vector anaylsis	1	Clo22,clo5
11	Application on inverse Laplace-Vector anaylsis	1	Clo22,clo5
12	Heaviside unit step(laplace transform)-Vector anaylsis	1	Clo22,clo5
13	Heaviside unit step(inverse laplace transform)--Vector anaylsis	1	Clo22,clo5
14	Revision	1	Clo22,clo5
15	Final Exam	1	Clo22

38. 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 the concepts and theories of Fourier series, classification of PDEs and interpolation for electrical systems.
		CLO5	Conduct solution method for Partial differential equation, and vector analysis for different systems.
PL12	Design, model and analyze an electrical/electronic/digital system or component For a specific application: and identify the tools required to optimize this design.	CLO22	Analyze methods of Laplace transform, Inverse Laplace for different system.

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: CVE 1111 **Course Title: Civil Engineering**

1. Basic information

Program Title	Electronic and Communication Eng. Department			
Department offering the program	Electronic and Communication Eng. Department			
Department offering the course	Civil Engineering Department			
Course Code	CVE 1111			
Year/level	First year / Second level (1nst Semester)			
Specialization	**Minor**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2	0	5

2. Course Aims

No.	Aim
AM5	Make it possible for graduates to pursue continuing education in highway engineering and self-learning. (AM5)
AM7	Work with contemporary field instruments, design and perform experiments, asnd analyze and interpret results. (AM7).

3. Learning Outcomes (LOs)

CLO3	Develop and conduct appropriate experimentation and/or simulation to draw conclusions.
CLO12	Practice research techniques and methods of investigation as an inherent part of learning.
CLO15	Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams.

4. Course Contents

Topics	Week
Introduction to an indeterminate structures	1
Stability and Reactions of Structures.	2
Reactions	3
Internal Forces of Beams.	4
Internal Forces of Frames.	5
Internal Forces of Trusses.	6
Introduction of surveying	8
Linear measuring and Travers	9
Different kinds of scales	10
Bearing and Angles computations	11
Example on the leveling	12
Theodolite	13
Revision	14

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO3	√			√								
CLO12	√			√		√						
CLO15	√			√		√						

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	CLO15
3	Quizzes	CLO3, 12
4	Mid-term Exam	CLO3, 12
5	Revision	CLO31, 12, 15
6	Final Exam	CLO31, 12, 15

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Sheets	Bi-weekly
2	Quizzes	4 & 10
3	Mid-term Exam	7
4	Revision	14
5	Final Exam	15

7.3 Weighting of Assessments

	Assessment Method	**Weights%**	**Weights**	**Weights%**	**Weights**
Teacher Opinion	sheets	40%	40	10%	10
	Quizzes			10%	10
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance				
	Lab. Reports				
	Lab. Activities / Projects				
	practical exam				
Final Exam		60%	60	60%	60
Total		100%	100	100%	100

8. List of References

[1] Farkas, József, and Károly Jármai. Analysis and optimum design of metal structures. CRC Press, 2020.

[2] Megson, Thomas Henry Gordon. Structural and stress analysis. Butterworth-Heinemann, 2019.

[3] Kassimali, Aslam. Structural analysis. Cengage Learning, 2018.

[4] Theory of Structures-Part 1-EL-Dakhakhni.

[5] www.Arabian-eng.com.

[6] Structural Analysis –R.C. Hibbeler.

[7] Plane Surveying prof. Abd-elhameed Abo- Mariam.

9. Facilities required for teaching and learning

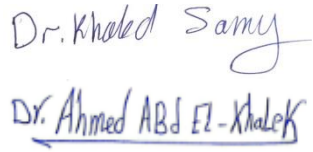
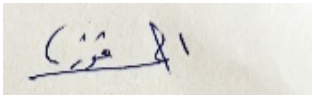
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)
Moodle and Microsoft teams
Data show
Laboratory Usage

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	Los
1	Introduction to an indeterminate structures	AM5	CLO3
2	Stability and Reactions of Structures.	AM5	CLO3, CLO12
3	Reactions	AM5	CLO3, CLO12
4	Internal Forces of Beams.	AM5	CLO3, CLO12
5	Internal Forces of Frames.	AM5	CLO3, CLO12
8	Internal Forces of Trusses.	AM5	CLO3, CLO12
9	Introduction of surveying	AM5	CLO3
10	Different kinds of scales	AM5	CLO3, CLO12, CLO15
11	Bearing and Angles computations	AM5, AM7	CLO3, CLO12
12	Example on the leveling	AM5, AM7	CLO3, CLO12, CLO15
13	Theodolite	AM5, AM7	CLO3, CLO12
14	Revision	AM5, AM7	CLO3, CLO12, CLO15

11. Matrix of Program LOs with Course Los

Program Los		Course Los	
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.	CLO3	Develop and conduct appropriate experimentation and/or simulation to draw conclusions.
PLO5	Practice research techniques and investigative methods as an inherent part of learning.	CLO12	Practice research techniques and methods of investigation as an inherent part of learning.
PLO7	Function efficiently as an individual and as a member of multi - disciplinary and multi-cultural teams.	CLO15	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.

Title	Name	Signature
Course coordinator	**Dr. Khale d Samy Aballah** **Dr. Ahmed Abd El-khalek**	
Head of Department	**Ass.Prof. Dr. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

Course Code: EPE1111 **Course Title: Electric Circuits (1)**

12. Basic information

Program Title	Electronic and Communication Eng. Department			
Department offering the program	Electronic and Communication Eng. Department			
Department offering the course	Electrical Power Engineering Depart.			
Course Code	EPE1111			
Prerequisties	----------			
Year/level	First year / First Semester (2nd Level)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2	0	5

13. Course Aims

No.	Aim
1	Enrich the student knowledge about dc and ac circuits' theories to develop the student ability to analyze and solve dc and ac circuits. (AM1)

14. Learning Outcomes (LOs)

CLO15	Aquire the concepts of electrical DC and AC circuit analysis.
CLO16	Apply the methodologies of DC theories solution.
CLO17	Select the main principles and methodologies of AC circuits.
CLO19	Analyze AC theories using different methods of solutions.

15.	Course Contents
Topics	**Week**
Introduction to DC Circuit Analysis	1
Components of Electrical Circuits	2
Basic Concepts of DC Circuits	3
Nodal Analysis	4
Mesh Theory	5
Source Transformation Theory	6
Super Position Theory	8
Thevenin's theory	9
Norton's Theory.	10
Calculation of maximum power using Thevenin's and Norton's Theories.	11
Introduction and Basic concepts to AC Circuit analysis	12
Nodal and Mesh Analysis in AC Circuits	13
Revision and Examples on different AC circuits	14

16. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO15	√		√	√							√	
CLO16	√	√		√		√	√			√		
CLO17	√	√		√			√			√	√	
CLO19	√		√	√		√						

17. Teaching and Learning methods of Disabled Students

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

18. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Reports	CLO16, CLO17.
2	Sheets	CLO15, CLO16, CLO17, CLO19.
3	Quizzes	CLO16, CLO17.
4	Mid-term Exam	CLO15, CLO16.
5	Final Exam	CLO15, CLO16, CLO17, CLO19.

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

19. List of References

[1] JHON O'MALLY, Basic Circuit Analysis Theory and Problems, second edition, 1992.
[2] J. David Irwin & R. Mark Nelms, "Basic engineering Circuit Analysis", 10th Edition, John Wiley & Sons, 2011.
[3] James W. Nilsson, "Electric Circuits", 8th Edition, Pearso prentice Hall, 2008..

20. Facilities required for teaching and learning

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

21. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	Introduction to DC Circuit Analysis	1	CLO15.
2	Components of Electrical Circuits	1	CLO15.
3	Basic Concepts of DC Circuits	1	CLO15.
4	Nodal Analysis	1	CLO16.
5	Mesh Theory	1	CLO16.
6	Source Transformation Theory	1	CLO16.
8	Super Position Theory	1	CLO16.
9	Thevenin's theory	1	CLO16.
10	Norton's Theory.	1	CLO16.
11	Calculation of maximum power using Thevenin's and Norton's Theories.	1	CLO16.
12	Introduction and Basic concepts to AC Circuit analysis	1	CLO17.
13	Nodal and Mesh Analysis in AC Circuits	1	CLO19.
14	Revision and Examples on different AC circuits	1	CLO15, CLO16, CLO17, CLO19.

22. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO15	Aquire the concepts of electrical DC and AC circuit analysis.
		CLO16	Apply the methodologies DC theories and study the criterion of solution.
PL11	Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems.	CLO17	Select the main principles and methodologies of AC circuits.
		CLO19	Analyze AC theories using different methods of solutions.

Title	Name	Signature
Course coordinator	**Dr. Zeinab Gamal Hassan**	
Head of Department	**Assoc. Prof.Dr. Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

Course Code: HUM1102 **Course Title: Technical Writing**

23. Basic information

Program Title	Electronic and Communication Engineering Depart.			
Department offering the program	Electronic and Communication Engineering Depart.			
Department offering the course	Electrical power Engineering Department			
Course Code	HUM1102			
Prerequisite	-----			
Year/level	First Year / First Semester (Second level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	1	0	3

24. Course Aims

No.	Aim
1	adapt successfully to apply techniques, skills and some english grammar and rules necessary for effectively writing different types of technical documents such as reports, proposal, letters and presentations. (AM6)

25. Learning Outcomes (LOs)

CLO 13	Communicate technical writing thoughts clearly and efficiently. Additionally, presentation and communication skills
CLO 14	Use skilled technical writing methodology with interest and clarity design, and correctly layout of written materials,

4 Course Contents

Week	Topics
1	Introduction
2	Planning the technical report
3	Type of technical report and Parts of the technical report
4	The text of the Technical Report
5	Creating good tables and Instructional figures
6	Rules for Literature citations & Completion of the Technical Report
7	Midterm Exam
8	Using word processing and desktop publishing (DTP) systems
9	Useful behavior for working on your project
10	Presenting the Technical Report
11	Planning time of presentation & Presenting the Technical Report using power point presentation
12	Informal Reports and writing manual
13	Solving problems with Sentence Construction
14	Revision
15	Final exam

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO 13	√	√	√	√		√	√	√		√	√	
CLO 14	√	√	√	√		√	√	√		√	√	

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	CLO 13 , CLO 14
2	Sheets	CLO 13 , CLO 14
3	Quizzes	CLO 13 , CLO 14
4	Mid-term Exam	CLO 13 , CLO 14
5	Final Exam	CLO 13 , CLO 14

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%	10
	Quizzes	10%	10
	Mid-term exam	20%	20
Final Exam		60%	60
Total		100%	100

8. List of References

[1] *How to Write Technical Reports Understandable Structure, Good Design, Convincing Presentation*. Berlin, Heidelberg: Springer Berlin Heidelberg, 2019.
[2] P.A. Laplante, "Technical Writing: A Practical Guide for Engineers, Scientists, and Nontechnical Professionals", CRC Press, 2018.

9. Facilities required for teaching and learning

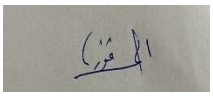
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	Introduction	1	CLO 13
2	Planning the technical report	1	CLO 13 , CLO 14
3	Type of technical report and Parts of the technical report	1	CLO 13
4	The text of the Technical Report	1	CLO 13
5	Creating good tables and Instructional figures	1	CLO 13 , CLO 14
6	Rules for Literature citations & Completion of the Technical Report	1	CLO 13
7	Midterm Exam	1	CLO 13 , CLO 14
8	Using word processing and desktop publishing (DTP) systems	1	CLO 14
9	Useful behavior for working on your project	1	CLO 13 , CLO 14
10	Presenting the Technical Report	1	CLO 13 , CLO 14
11	Planning time of presentation & Presenting the Technical Report using power point presentation	1	CLO 13 , CLO 14
12	Informal Reports and writing manual	1	CLO 13
13	Solving Problems with Sentence Construction	1	CLO 13 , CLO 14
14	Revision	1	CLO 13 , CLO 14
15	Final Exam	1	CLO 13 , CLO 14

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO 13	Communicate technical writing thoughts clearly and efficiently. Additionally, presentation and communication skills
PL9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO 14	Use skilled technical writing methodology with interest and clarity design, and correctly layout of written materials,

Title	Name	Signature
Course coordinator	**Dr. Ehab Issa El Sayed**	
Head of Department	**Dr.Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

Course Code: HUM1102 **Course Title: Technical Writing**

26. Basic information

Program Title	Electronic and Communication Engineering Depart.			
Department offering the program	Electronic and Communication Engineering Depart.			
Department offering the course	Electrical power Engineering Department			
Course Code	HUM1102			
Prerequisite	-----			
Year/level	First Year / First Semester (Second level)			
Specialization	Minor			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	1	0	3

27. Course Aims

No.	Aim
1	adapt successfully to apply techniques, skills and some english grammar and rules necessary for effectively writing different types of technical documents such as reports, proposal, letters and presentations. (AM6)

28. Learning Outcomes (LOs)

CLO 13	Communicate technical writing thoughts clearly and efficiently. Additionally, presentation and communication skills
CLO 14	Use skilled technical writing methodology with interest and clarity design, and correctly layout of written materials,

4 Course Contents

Week	Topics
1	Introduction
2	Planning the technical report
3	Type of technical report and Parts of the technical report
4	The text of the Technical Report
5	Creating good tables and Instructional figures
6	Rules for Literature citations & Completion of the Technical Report
7	Midterm Exam
8	Using word processing and desktop publishing (DTP) systems
9	Useful behavior for working on your project
10	Presenting the Technical Report
11	Planning time of presentation & Presenting the Technical Report using power point presentation
12	Informal Reports and writing manual
13	Solving problems with Sentence Construction
14	Revision
15	Final exam

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Lectures (face to face / online)	Presentation / Movies	Discussions	Tutorials	Practical and lab. experiments	Problem Solving	Brain Storming	Projects and Team Working	Site Visits	Research / Reports	Self-learning	Modeling and Simulation
CLO 13	√	√	√	√		√	√	√		√	√	
CLO 14	√	√	√	√		√	√	√		√	√	

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	CLO 13 , CLO 14
2	Sheets	CLO 13 , CLO 14
3	Quizzes	CLO 13 , CLO 14
4	Mid-term Exam	CLO 13 , CLO 14
5	Final Exam	CLO 13 , CLO 14

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%	10
	Quizzes	10%	10
	Mid-term exam	20%	20
Final Exam		60%	60
Total		100%	100

8. List of References

[1] *How to Write Technical Reports Understandable Structure, Good Design, Convincing Presentation*. Berlin, Heidelberg: Springer Berlin Heidelberg, 2019.
[2] P.A. Laplante, "Technical Writing: A Practical Guide for Engineers, Scientists, and Nontechnical Professionals", CRC Press, 2018.

9. Facilities required for teaching and learning

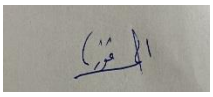
Lecture/Classroom
White board
Lecture room equipped with e-learning tools (computer, internet, mike, headphones, etc.)

10. Matrix of Course Content with Course LO's

Week No.	Topics	Aim	LO's
1	Introduction	1	CLO 13
2	Planning the technical report	1	CLO 13 , CLO 14
3	Type of technical report and Parts of the technical report	1	CLO 13
4	The text of the Technical Report	1	CLO 13
5	Creating good tables and Instructional figures	1	CLO 13 , CLO 14
6	Rules for Literature citations & Completion of the Technical Report	1	CLO 13
7	Midterm Exam	1	CLO 13 , CLO 14
8	Using word processing and desktop publishing (DTP) systems	1	CLO 14
9	Useful behavior for working on your project	1	CLO 13 , CLO 14
10	Presenting the Technical Report	1	CLO 13 , CLO 14
11	Planning time of presentation & Presenting the Technical Report using power point presentation	1	CLO 13 , CLO 14
12	Informal Reports and writing manual	1	CLO 13
13	Solving Problems with Sentence Construction	1	CLO 13 , CLO 14
14	Revision	1	CLO 13 , CLO 14
15	Final Exam	1	CLO 13 , CLO 14

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL8	Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	CLO 13	Communicate technical writing thoughts clearly and efficiently. Additionally, presentation and communication skills
PL9	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO 14	Use skilled technical writing methodology with interest and clarity design, and correctly layout of written materials,

Title	Name	Signature
Course coordinator	**Dr. Ehab Issa El Sayed**	
Head of Department	**Dr.Ahmed Fawzy**	
Date of Approval	**16/9/2024**	

Course Specification

Course Code: PHM1111 **Course Title: Mathematics (3)**

29. Basic information

Program Title	Electronic and Communication Eng. Department			
Department offering the program	Electronic and Communication Eng. Department			
Department offering the course	Physics and Mathematical Engineering			
Course Code	PHM1111			
prerequisite	Mathematics (1&2)			
Year/level	First year / First Semester (second Level)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

30. Course Aims

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

31. Learning Outcomes (LOs)

CLO1	Identify the different classifications of equations, Partial Differentiation and the difference between the double Integral and the triple Integral and the Nonhomogeneous equations, the Method of Undetermined coefficients and the Variation of parameters and Expansion function.
CLO3	Solve complex engineering problems by applying the different methods to solve the second order differential equations and determine the particular solutions, multiple integrals in any other area, Partial Differentiation and Expansion function.
CLO17	Select different methods to evaluate multiple integrals
CLO19	Analyze the different kinds of differential equations of the first order (or second order), operator method and variation of parameters to find the general solution for the second order differential equations.

4- Course Contents	
Topics	**Week**
Partial Derivatives-Ordinary Differential Equations (separable method- Homogenous Eqs)	1
Partial Derivatives – O.D.E (Exact and Integrating method)	2
Applications of Partial Derivatives - First order Differential Equations	3
Applications of Partial Derivatives - Ordinary Differential Equations of n^{th} order.	4
Applications of Partial Derivatives - Ordinary Differential Equations of n^{th} order.	5
Double integral – Orthogonal Eqs.	6
Double integral - Linear Differential Equations with constant coefficients.	8
Double integral - Linear Differential Equations with constant coefficients	9
Triple Integral - Linear Differential Equations with constant coefficients	10
Surface integral (Line integral) - Linear Differential Equations with constant coefficients	11
Surface integral (Green's theorem) - Linear Differential Equations with Variable coefficients (Euler).	12
- Simultaneous Differential Equations.	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
CLO1	√	√			√		√	√				
CLO3	√	√			√	√	√	√				√
CLO17	√	√			√	√	√	√				√
CLO19	√	√			√	√	√	√				√

32. Teaching and Learning methods of Disabled Students

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

33. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Reports	CLO3,CLO17,CLO19
2	Sheets	CLO1,CLO3,CLO17,CLO19
3	Quizzes	CLO3,CLO17
4	Mid-term Exam	CLO3,CLO19
5	Final Exam	CLO1,CLO3,CLO17,CLO19

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 Assessment Schedule			
	Assessment Method	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets	10%	15
	Quizzes	13.33%	20
	Mid-term exam	26.6%	40
Final Exam		50%	75
Total		100%	150

34. List of References

[1] Sheply L. Ross, John Wiley and Sons, "Differential equations 3rd Edition", copy right 1984, by john Wiley & Sons, Inc., published simultaneously in Canada 2017.
[2] Dennis G. Zill and Michael R. Cullen, "Differential Equations with Boundary Problem", seven edition, PWS Publishers; published simultaneously in Canada 2015.
[3] William E. Boyce, Richard:" Elementary Differential Equations and Boundary Value Problems", 8th Edition Wiley, Publisher John Wiley & Sons, Inc., 2014.

35. Facilities required for teaching and learning

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

36. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Partial Derivatives-Ordinary Differential Equations (separable method- Homogenous Eqs)	1	CLO1
2	Partial Derivatives – O.D.E (Exact and Integrating method)	1	CLO3,CLO19
3	Applications of Partial Derivatives - First order Differential Equations	1	CLO3,CLO19
4	Applications of Partial Derivatives - Ordinary Differential Equations of n^{th} order.	1	CLO3,CLO19
5	Applications of Partial Derivatives - Ordinary Differential Equations of n^{th} order.	1	CLO3,CLO19
6	Double integral – Orthogonal Eqs.	1	CLO3,CLO17,CLO19
7	Mid Term		CLO3,CLO19
8	Double integral - Linear Differential Equations with constant coefficients.	1	CLO3,CLO17,CLO19
9	Double integral - Linear Differential Equations with constant coefficients	1	CLO3,CLO17,CLO19
10	Triple Integral - Linear Differential Equations with constant coefficients	1	CLO3,CLO17,CLO19
11	Surface integral (Line integral) - Linear Differential Equations with constant coefficients	1	CLO3,CLO17,CLO19
12	Surface integral (Green's theorem) - Linear Differential Equations with Variable coefficients (Euler).	1	CLO3,CLO17,CLO19
13	- Simultaneous Differential Equations.	1	CLO3,CLO17,CLO19
14	Revision	1	CLO3,CLO17,CLO19
15	Final exam	1	CLO1, CLO3, CLO19

37. 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 different classifications of equations, Partial Differentiation and the difference between the double Integral and the triple Integral and the Nonhomogeneous equations, the Method of Undetermined coefficients and the Variation of parameters and Expansion function.
		CLO3	Solve complex engineering problems by applying the different methods to solve the second order differential equations and determine the particular solutions, multiple integrals in any other area, Partial Differentiation and Expansion function.
PL11	Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of generation, transmission and distribution of electrical power systems	CLO17	Select different methods to evaluate multiple integrals
		CLO19	Analyze the different kinds of differential equations of the first order (or second order), operator method and variation of parameters to find the general solution for the second order differential equations.

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: PHM1112 **Course Title: Physics (3)**

38. 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	EPE1112			
Prerequisites	Physic1&2			
Year/level	First Year / First Semester (First level)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	1	1	6

39. Course Aims

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

40. Learning Outcomes (LOs)

CLO4	Develop basics appropriate to classic, modern physics, quantum physics and their application in electrical physics.
CLO5	Conduct appropriate experimentation to study Optical, modern physics.
CLO22	Analyze method by applying the technology to solve technical problems related to electrical engineering disciplines and conduct laboratory experiments for appropriate simulation of engineering problems and other specialties

4-Course contents	
Topics	**Week**
Simple harmonic motion	1
Relativity	
Damped harmonic motion	2
Relativity (Velocity, Length, Time)	
forced harmonic motion	3
Relativity (Energy & Momentum)	
Waves	4
Black body radiation, photoelectric effect	
Standing waves	5
Uncertainty principle	
Sound waves	6
Compton and De Broglie`s hypothesis.	
Interference (young`s double slit)	8
Quantum numbers	
Interference (Thin film)	9
Wave function	
Types of Polarization	10
Schrodinger equation	
Polarization by reflection and Malu`s law	11
Schrodinger equation	
Diffraction	12
Fiber optics	
Revision	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	√		√		√		√	√				
CLO22	√	√	√		√	√	√	√				

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	CLO22
2	Sheets	CLO4,CLO22
3	Quizzes	CLO22
4	Mid-term Exam	CLO4,CLO22
5	Oral/ Practical Exam	CLO5,CLO22
6	Final Exam	CLO4,CLO5,CLO22

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. R. A. Serway and J.W. Jewett, "Physics for Scientists and Engineers", 6th Edition, Thomson Brooks/Cole 2014.
2. Edward M. Purcell and David J. Morin, “Electricity and Magnetism”, 3rd Edition, Cambridge University, 2013.
3. Larsen and Keller Education, “Solid State Physics”, June 27, 2019

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

Topics	Aim	LO's
Simple harmonic motion- Relativity	1	CLO4, CLO22
Damped harmonic motion - Relativity (Velocity, Length, Time) Lab: Simple Pendulum	1	CLO4, CLO22
forced harmonic motion – Relativity(Energ& Momentum)	1	CLO4,CLO5,CLO22
Waves - Black body radiation, photoelectric effect **Labs: Plank`s constant**	1	CLO4,CLO5,CLO22
Standing waves- Uncertainty Principle	1	CLO4,CLO5,CLO22
Sound waves- Compton and De Broglie`s hypothesis. **Labs. Sound waves**	1	CLO4,CLO5,CLO22
Mid term	1	CLO4, CLO22
Interference (young`s double slit) Quantum numbers	1	CLO4,CLO5,CLO22
Interference (Thin film)- Wave function Lab: young`s double slit	1	CLO4,CLO5,CLO22
Types of Polarization - Schrodinger equation	1	CLO4,CLO5,CLO22
Polarization by reflection and Malu`s law- Schrodinger equation. **Labs. Newton**`s Rings	1	CLO4,CLO5,CLO22
Diffraction-Fiber optics.	1	CLO4,CLO5,CLO22
Wave function, Uncertainty principle and Schrodinger equation. **Lab: Diffraction grating**	1	CLO4,CLO5,CLO22
Practical Exam	1	CLO5,CLO22

Final Exam	1	CLO4,CLO5,CLO22

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 basics appropriate to modern physics, quantum physics and their application in electrical physics.
		CLO5	Conduct appropriate experimentation to study Optical, modern physics.
PL12	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	CLO22	Analyze method by applying the technology to solve technical problems related to electrical engineering disciplines and conduct laboratory experiments for appropriate simulation of engineering problems and other specialties

Title	Name	Signature
Course coordinator	**Dr. Eman Abdelaziz** **Dr. Yasser Abd elkhalq**	
Head of Department	**Ass. Prof. Ahmed Fawzy**	
Date of Approval	**/9/2024**	

Course Specification

Course Code: PHM 1113 **Course Title: mechanics (3)**

41. 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	PHM1113			
prerequisites	Mechanics1&2			
Year/level	First year / Level 2 (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2	0	5

42. Course Aims

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

43. Course Learning Outcomes (CLOs)

CLO15	Acquire new knowledge about Second moment (moment of Inertia) and the Product of Inertia
CLO16	Acquire new knowledge about the translation, Rotation , general plane motion and virtual work
CLO17	Select some examples about centroid and moments of inertia problems, calculate velocity and acceleration of rigid body in different types of motion (translation, rotation ,general plane motion)

44. Course Contents

Topics	Week
- Center of gravity and center of mass for a system of particles, center of gravity and center of mass for a body. -	1
- Composite bodies	2
- Definition of moments of inertia for areas, Moments of inertia for an area by integration.	3
- Parallel –axis theorem for an area, radius of gyration of an area.	4
- Product of inertia for an area.	5
- Moments of intertia of mass	6
- Rigid body motion, translation and rotation about fixed axis, Rolling motion	8
- General plane motion	9
- Force and acceleration methods, equations of motion (translation and rotation about fixed axis) (part1)	10
- Force and acceleration methods, equations of motion (translation and rotation about fixed axis) (part2)	11
- Force and acceleration methods, equations of motion (general plane motion)	12
- Work and energy.	13
- General revision	14
- Final exam	15

45. 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
CLO15	√	√			√							
CLO16	√	√			√				√			
CLO17	√	√			√				√			

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	CLO15, CLO17
2	Sheets	CLO15, CLO16, CLO17
3	Quizzes	CLO15,CLO16
4	Mid-term Exam	CLO15, CLO17
5	Final Exam	CLO15, CLO16, CLO17

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Reports	Bi Weekl
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 -2009
- [3]Erwin Kreyszig, "Advanced Engineering Mathematics" John Wiley & Sons Inc., 10th Edition, 2010.
- [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

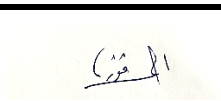
No.	Topics	Aim	LO's
1	- Center of gravity and center of mass for a system of particles, center of gravity and center of mass for a body.	1	CLO15, CLO17
2	- Composite bodies	1	CLO15, CLO17
3	- Definition of moments of inertia for areas, Moments of inertia for an area by integration.	1	CLO15, CLO17
4	- Parallel –axis theorem for an area, radius of gyration of an area.	1	CLO15, CLO17
5	- Product of inertia for an area.	1	CLO15, CLO17
6	- Moments of intertia of mass.	1	CLO15, CLO17
7	- Midterm exam	1	CLO15, CLO17
8	- Rigid body motion, translation and rotation about fixed axis, Rolling motion	1	CLO16, CLO17
9	- General plane motion	1	CLO15, CLO16, CLO17
10	- Force and acceleration methods , equations of motion (translation and rotation about fixed axis) (part1)	1	CLO16, CLO17
11	- Force and acceleration methods , equations of motion (translation and rotation about fixed axis) (part2)	1	CLO16, CLO17

12	- Force and acceleration methods , equations of motion (general plane motion)	1	CLO16, CLO17
13	- Work and energy.	1	CLO16, CLO17
14	- General Revision.	1	CLO15, CLO16,CLO17
15	- Final exam	1	CLO15, CLO16, CLO17

11. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PLO10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	CLO15	Acquire new knowledge about Second moment (moment of Inertia) and the Product of Inertia
		CLO16	Acquire new knowledge about the translation, Rotation , general plane motion and virtual work
PLO11	Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems.	CLO17	Select some examples about centroid and moments of inertia problems, calculate velocity and acceleration of rigid body in different types of motion (translation, rotation ,general plane motion)

Title	Name	Signature
Course coordinator	**Dr. Wafaa Diab**	وفاء دياب

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