

Mathematics 1 (MTH101)

1- Basic Information:

Program Title	All programs		
Department Offering the Program	Basic Science and Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Mathematics1		
Course Code	MTH101		
Year/Level	Level: 1		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims

No.	Aims
1	Master a broad range of Mathematics engineering knowledge and specialized skills of Algebra and Calculus, as well as the ability to apply acquired knowledge of Algebra and Calculus in real-world situations by applying theories and abstract thinking in analytic critical and systemic thinking to identify, diagnose, and solve mathematical engineering problems of varying systems models.

3- Competencies (LO'S) :

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1 Explain the relevant mathematical engineering principles and theories in the Algebra and Calculus. 2 Use the mathematical engineering principles and theories that apply in the most fundamental problems. 3 Explain the basic concepts of derivative and algebra.



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4. Course Contents:

No.	Topics	Lecture	Tutorial	Practical
1	Vectors - Vectors Algebra- partial fractions	4	4	-
2	The Concept of functions	2	2	-
3	Equations theory –Mathematical Deduction	4	4	-
4	Basic Trigonometric functions and its inverse- Exponential and Logarithmic functions - Hyperbolic functions and its inverse - Connection (definition- theories)- Maclaurin expansion- The Taylor series	4	4	-
5	Numerical solutions methods	4	4	-
6	Limits, derivatives and curves drawing	4	4	-
7	Introduction of Partial Derivatives	4	4	-
8	Linear equations systems – Gauss Jordan method for deletion.	2	2	-
Total		28	28	-

5. Teaching and learning methods:

Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
Vectors - Vectors Algebra- partial fractions	X	X			X	X	X							
The Concept of functions	X	X			X	X	X							
Equations theory – Mathematical	X	X			X	X	X							



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Deduction														
Basic Trigonometric functions and its inverse Exponential and Logarithmic functions Hyperbolic functions and its inverse Connection (definition – theories) Maclaurin expansion The Taylor series	X	X			X	X	X							
Numerical solutions methods	X	X			X	X	X							
Limits, derivatives and curves drawing	X	X			X	X	X							
Introduction of Partial Derivatives	X	X			X	X	X							
Linear equations systems – Gauss Jordan method for deletion.	X	X			X	X	X							

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity
students

- Assign a portion of the office hours for those students.
- Give them specific tasks.
- Repeat the explanation of some of the material and tutorials.



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	- Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	1,2
2	Student load (quizzes, sheets, report)	A1	2
3	Final term examination	A1	1,2,3

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Richard W. Fisher "No-Nonsense Algebra, 2nd Edition" Math Essentials; 2nd edition (2018).
2	Sherman K. Stein "Calculus in the First Three Dimensions" Dover Publications; Second Edition, (2018).

9. Facilities required for teaching and learning:

Facility			
1	Lecture classroom	3	White board
2	Seminar	4	Data Show system

10. Matrix of Competencies and LO's:



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No	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Vectors - Vectors Algebra- partial fractions	1	x																			
2	The Concep t of functio ns	1	x																			
3	Equatio ns theory – Mathe matical Deducti on	1	x																			
4	Basic Trigono metric functio ns and its inverse - Expone ntial and Logarit	1	x																			



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	hmic functio ns Hyperb olic functio ns and its inverse Connec tion (definiti on – theories) Maclau rin expansi on The Taylor series																			
5	Numeri cal solution s method	1	x																	
6	Limits, derivati ves and curves drawing	1	x																	
7	Introdu ction of Partial Derivati	1	x																	



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	ves																					
8	Linear equations systems – Gauss Jordan method for deletion	1	x																			

Course Coordinator: Dr / Reda Abdo

Head of Department: Asso.prof.Amal Bahiry

Date of Approval: 2023

Mechanics 1 (ENG 101)

1- Basic Information:

Program Title	All programs		
Department Offering the Program	Basic Science and Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Mechanics 1		
Course Code	ENG101		
Year/Level	Level: 1		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
1	Master a broad range of statics knowledge to apply it on force system, distributed forces, and moment of inertia.
3	Use the techniques, skills, and current engineering tools required for engineering practice of Statics applications by taking full responsibility for one's own learning



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	and development, participating in lifelong learning and consider the impact of statics study in real world, and its strong relation with environment and almost of all the technology fields upgrades.

3-Competencies (LO'S):

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1 Define concepts and theories of space vectors, momentums, equivalent couples, and equation of equilibrium for rigid body. 2 Recognize methodologies of solving equilibrium under the effect of forces. 3 Solve engineering problems, such as finding the center of mass (group of particles – flat surfaces).

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Introduction to statics.- Fundamental concept-Basic quantities of unit dimension- System of units Space,- Trigonometry and U.S. Customary units, Force- Statics of particle, Statics of Rigid Body, Free body diagrams.- Types of forces, Types of system of forces	2	2	-
2	Statics of particles- Forces on a particle, Addition of vectors, Resultant of several concurrent forces.	2	2	-
3	Resolution of a forces into components Rectangular components of a forces, (unit vectors).- Addition of forces by summing X and Y components.- Equilibrium of a particle, and Newton's first law of motion.	2	2	-
4	Problem involving the equilibrium of a practice-free body diagram.- Rectangular components of a forces in space, force defined by its magnitude and two points on its line of action.- Addition of concurrent forces in space, equilibrium of a particle in space.	2	2	-
5	Rigid bodies: equivalent systems of forces.-	2	2	-



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	External and internal forces, principle of transmissibility and equivalent forces, vector product of two vectors, vector product expressed in terms of rectangular components			
6	Moment of a force about a point.- Varignon's theorem, rectangular components of the moment of a force, equivalent systems of forces.	4	4	-
7	Equilibrium of rigid bodies- Free- body diagram.- Equilibrium of a rigid body in two dimensions.	2	2	-
8	Equilibrium of three- dimension force body. Reduction of a system of forces to one force and one couple. Equilibrium of a rigid body in three dimensions. Reactions at supports and connections for a two-dimensional and for a three- dimensional structure.	4	4	-
9	Centroids and centers of gravity.- Centre of gravity of a two- dimensional body, centroids of area and lines, first moments of areas and lines, composite plates and wires.	4	4	-
10	Analysis of structures- Definition of truss- Simple trusses- Analysis of trusses by the method of joints	4	4	-
Total		28	28	-

5. Teaching and learning methods:

Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab



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Introduction to statics. Fundamental concept Basic quantities of unit dimension- System of units Space, Trigonometry and U.S. Customary units, Force. Statics of particle, Statics of Rigid Body, Free body diagrams. Types of forces, Types of system of forces	X	X				X								
Statics of particles Forces on a particle, Addition of vectors, Resultant of several concurrent forces.	X	X				X								
Resolution of a forces into components Rectangular components of a forces, (unit vectors). Addition of forces by summing X and Y components. Equilibrium of a particle, and Newton's first law	X	X					X							



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of motion.														
Problem involving the equilibrium of a practice- free body diagram. Rectangular components of a forces in space, force defined by its magnitude and two points on its line of action. Addition of concurrent forces in space, equilibrium of a particle in space.	X	X			X									
Rigid bodies: equivalent systems of forces. External and internal forces, principle of transmissibility and equivalent forces, vector product of two vectors, vector product expressed in terms of rectangular components	X	X			X	X								
Moment of a force about a point. Varignon's theorem,					X									



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rectangular components of the moment of a force, equivalent systems of forces.	X	X												
Equilibrium of rigid bodies Free- body diagram. Equilibrium of a rigid body in two dimensions.	X	X			X									
Equilibrium of three- dimension force body. Reduction of a system of forces to one force and one couple. Equilibrium of a rigid body in three dimensions. Reactions at supports and connections for a two- dimensional and for a three- dimensional structure.	X	X				X								
Centroids and centers of gravity. Centre of gravity of a two- dimensional body, centroids of area and lines, first moments of areas and lines,	X	X			X	X								



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composite plates and wires.														
Analysis of structures														
Definition of truss														
Simple trusses	X	X			X									
Analysis of trusses by the method of join														

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	1,2
2	Student load (quizzes, sheets, report)	A1	1,2
3	Final term examination	A1	1,2,3

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:



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No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	M. Abdullah Al Faruque, Bahar Zoghi, Sylvester A. Kalevela "Engineering statics" 1st edition, CRC Press (2019).
2	Bogachev, V., Smolyanov, Oleg G. "Topological Vector Spaces and Their Applications" Springer International Publishing (2017).

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	Seminar
3	White board
4	Data Show system

10. Matrix of Competencies and Amis:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Introduction to statics. Fundamental concept Basic quantities	1	X																			



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	es of unit dimensi on- System of units Space, Trigono metry and U.S. Custom ary units, Force. Statics of particle, Statics of Rigid Body, Free body diagram s. Types of forces, Types of system of forces																			
2	Statics of particle s	1	X																	



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	Forces on a particle, Addition of vectors, Resultant of several concurrent forces.																			
3	Resolution of a forces into components Rectangular components of a forces, (unit vectors) Addition of forces by summing X and Y components. Equilibrium	3	X																	



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	ium of a particle, and Newton's first law of motion.																			
4	Problem involving the equilibrium of a practice - free body diagram . Rectangular components of a forces in space, force defined by its magnitude and two points on its line of action. Addition of	3	X																	



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	concurr ent forces in space, equibr ium of a particle in space.																			
5	Rigid bodies: equival ent systems of forces. Externa l and internal forces, principl e of transmi ssibility and equival ent forces, vector product of two vectors, vector product express ed in	1	X																	



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	terms of rectangular components																			
6	Moment of a force about a point. Varignon's theorem, rectangular components of the moment of a force, equivalent systems of forces.	1	X																	
7	Equilibrium of rigid bodies Free-body diagram . Equilibrium of a	3	X																	



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	rigid body in two dimensions.																			
8	Equilibrium of three-dimensional force body. Reduction of a system of forces to one force and one couple. Equilibrium of a rigid body in three dimensions. Reactions at supports and connections for a two-dimensional and for	3	X																	



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	a three-dimensional structure.																			
9	Centroids and centers of gravity. Centre of gravity of a two-dimensional body, centroids of area and lines, first moments of areas and lines, composite plates and wires.	1	X																	
10	Analysis of structure	3	X																	



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es Definiti on of truss Simple trusses Analysi s of trusses by the method of joints																				

Course Coordinator: Dr / Moataz Mostafa

Head of Department: Asso.prof.Amal Bahiry

Date of Approval: 2023

Physics1 (PHY101)

1- Basic Information:

Program Title		All programs	
Department Offering the Program		Basic Science and Engineering Department	
Department Responsible for the Course		Basic Science and Engineering Department	
Course Title		Physics1	
Course Code		PHY101	
Year/Level		level 1	
Specialization		Major	
Authorization Date of Course Specification		2023	
Pre- request		-	
Teaching hours	Lectures	Tutorial	Practical
	2	2	2

2- Course Aims:

No.	Aims
1	Mastery of a broad range of engineering physics knowledge and specialized skills, as well as the ability to apply acquired knowledge in real-world situations by applying theories in critical and systemic analytical thinking to identify, diagnose, and solve engineering problems of varying complexity and variance.
4	Use the experimental techniques, skills, and current engineering tools required for engineering practice by taking full responsibility for one's own learning and development, participating in lifelong learning, and demonstrating the ability to pursue postgraduate and research studies.

3- Competencies (LO'S):

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1 Explain concepts and theories of mathematics for physical quantities, unit's dimensional analysis, and basics of thermodynamics. 2 Recognize methodologies of solving problems for stress-strain diagram, and fluids study. 3 Select the appropriate solutions for properties of materials through Brittle and Ductile material.
A2. Develop and conduct appropriate experimentation	1 Describe quality assurance systems, codes of practice and standards, health and safety requirements, and environmental issues.



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and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	
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.	1. Collaborate effectively within multidisciplinary team. 2. Work in stressful environment and within constraints.
A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	1 Conduct troubleshooting in chemical engineering plants.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Physics and Measurement Practical: measurement methods	4	4	2
2	Mechanical properties for materials Practical: Hooks' Law	4	4	2
3	Oscillations Practical: simple pendulum.	4	4	2
4	Sounds.	2	2	4



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	Practical: Resonance in the Air columns.			
5	Fluids. Practical: Viscosity.	4	4	4
6	Heat transfer Practical: Heat& Specific Heat& thermo-electrical equivalent& the latent heat of melting ice.	2	2	6
7	The kinetic theory of gases and the work in thermodynamics Practical: melting point of solid materials.	2	2	4
8	The laws of thermodynamic Practical: heating and cooling curves.	4	4	2
9	Temperature and thermal expansion Practical: coefficient of linear thermal expansion.	2	2	2
Total		28	28	28

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab



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1	Physics and Measurement Practical: measurement methods	X	X				X								X
2	Mechanical properties for materials Practical: Hooks' Law	X	X			X									X
3	Oscillations Practical: simple pendulum.	X	X					X							X
4	Sounds. Practical: Resonance in the Air columns.	X	X				X								X
5	Fluids. Practical: Viscosity.	X	X					X							X
6	Heat transfer Practical: Heat& Specific Heat& thermo- electrical equivalent& the latent heat of melting ice.	X	X			X									X
7	The kinetic theory of gases and the work in thermodynamic s Practical: melting point	X	X												X



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	of solid materials.														
8	The laws of thermodynamic Practical: heating and cooling curves.	X	X				X								X
9	Temperature and thermal expansion Practical: coefficient of linear thermal expansion.	X	X				X								X

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1,A2, A6	A1(1,2),A2(1),A6(1)
2	Student load (quizzes, sheets, report)	A1, A3 A2, A6	A1(1,2),A2(1),A3(1),A6(1)
3	Practical exam	A1 A3	A3(1,2),A6(1)
4	Final term examination	A1,A6	A1(3), A6(1)



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7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7.3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Peter J. Williams ; Firas Mansour ; Robert L. Hawkes ; (Nuclear physicist) Javed Iqbal ; Marina Milner-Bolotin. Physics for scientists and engineers : an interactive approach, Nelson Education Ltd., Year: 2019
2	David Halliday, Robert Resnick, Jearl Walker. Fundamentals of Physics, 9th Edition, Binder Ready Version, 2019
3	Serway, Raymond A., and John W. Jewett. Physics for scientists and engineers. Cengage learning, 2018.
4	Hibbeler, Russell C. "Mechanics of materials." (2018).

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	Laboratory
3	
4	White board
5	Data show system

10. Matrix of Competencies and Aims:

No	To p i c	Ai m s	Competencies



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			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Physics and Measurement Practical : measurement methods	1 , 4	X	X	X			X														
2	Mechanical properties for materials Practical : Hooks' Law	1 , 4	X	X	X			X														
3	Oscillations Practical : simple pendulum.	1 , 4	X	X	X			X														
4	Sounds. Practical : Resonance in the Air columns.	1 , 4	X	X	X			X														
5	Fluids. Practical :	1 , 4	X	X	X			X														



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	Viscosity.																			
6	Heat transfer Practical : Heat & Specific Heat & thermo-electrical equivalent & the latent heat of melting ice.	1, 4	X	X	X			X												
7	The kinetic theory of gases and the work in thermodynamics Practical : melting point of solid materials .	1, 4	X	X	X			X												
8	The laws of thermodynamic Practical : heating and	1, 4	X	X	X			X												



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	cooling curves.																			
9	Tempera ture and thermal expansio n Practical : coefficie nt of linear thermal expansio n.	1 , 4	X	X	X			X												

Course Coordinator: Dr. Ahmed Lotfy, Asso.prof.Amal Bahiry

Head of Department: Asso.prof.Amal Bahiry

Date of Approval: 2023

General Chemistry CHE 101

1- Basic Information:

Program Title	All programs		
Department Offering the Program	Basic Science and Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	General Chemistry		
Course Code	CHE 101		
Year/Level	Level:1		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	-	2

2- Course Aims:

No.	Aims
1	Master a wide spectrum of engineering knowledge and specialized skills for applying acquired knowledge using theories and abstract thinking in real life situations.
8	Consider the impact of chemical process industries on society, economics, and the environment using fundamental knowledge of chemical process industries.

3- Competencies(LO'S) :

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals and basic science.	1. Describe the relevant Chemical principles and theories in the discipline. 2. Identify the chemical engineering principles and theories that apply to the topic. 3. Solve chemical engineering problems by applying chemical engineering fundamentals.
A2. Develop and conduct	1. Describe quality assurance systems, codes of practice and standards, health and safety



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appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	requirements, and environmental issues.
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.	1. Collaborate effectively within multidisciplinary team. 2. Work in stressful environment and within constraints.
A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	1. Conduct troubleshooting in chemical engineering plants.
A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	1. Acquire chemical engineering principles for professionally merge , understanding, and feedback to improve design, products for many chemical engineering industries.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Gaseous status. Practical: Chemistry Laboratory Equipment, Titrimetric Analysis.	4	-	4



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2	Chemical thermodynamics. Practical: Preparation of standard solution of Na_2CO_3 (0.1N), Determination of normality of hcl by using standard solution of oxalic acid.	4	-	4
3	Properties of solutions. Practical: Determination of normality of acetic acid by using standard solution of sodium hydroxide, Determination of normality of sodium carbonate by using standard solution of hcl.	4	-	4
4	Material balance in combustion processes. Practical: Standardization of potassium permanganate with oxalic acid.	2	-	2
5	Dynamic balance in physical and chemical operations. Practical: Determination of nitrites, precipitation titrations.	4	-	4
6	Kinetic chemical interactions. Practical: Preparation of 0.05N of sodium chloride.	2	-	2
7	Electrochemistry, corrosion and corrosion control. Practical: Determination of chloride ion by using Mohr method.	2	-	2
8	Fertilizers. Practical: Determining Molecule Weight by Freezing Point Depression Method.	2	-	2
9	Manufacturing and chemistry of Cement. Practical: Determining Molecule Weight by Freezing Point Depression Method.	2	-	2
10	Water processes. Practical: determination of water hardness by complex metric titration.	2	-	2
Total		28	-	28

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Cooperative	Discovering	Modeling	Lab
1	Gaseous status. Practical: Chemistry Laboratory Equipment, Titrimetric Analysis.	X	X			X							X
2	Chemical thermodynamics · Practical: Preparation of standard solution of Na_2CO_3 (0.1N), Determination of normality of Hcl by using standard solution of oxalic acid.	X	X			X							X
3	Properties of solutions. Practical: Determination of normality of acetic acid by using standard	X	X				X						X



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	solution of sodium hydroxide, Determination of normality of sodium carbonate by using standard solution of Hcl.														
4	Material balance in combustion processes. Practical: Standardization of potassium permanganate with oxalic acid.	X	X				X								X
5	Dynamic balance in physical and chemical operations. Practical: Determination of nitrites, precipitation titrations.	X	X				X								X
6	Kinetic chemical interactions. Practical: Preparation of 0.05N of sodium chloride.	X	X				X								X
7	Electrochemistry, corrosion and	X	X				X								X



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	corrosion control. Practical: Determination of chloride ion by using Mohr method.														
8	Fertilizers. Practical: Determining Molecule Weight by Freezing Point Depression Method.	x	x				X								X
9	Manufacturing and chemistry of Cement. Practical: Determining Molecule Weight by Freezing Point Depression Method.	x	x			X									X
10	Water processes. Practical: determination of water hardness by complex metric titration.	x	x			X									X

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student



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For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation Method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1, A3 A2, A6	A1(1,2,3),A2(1),A3(1,2),A6(1)
2	Student load (quizzes, sheets, report)	A1, A3 A2, A6	A1(1,2,3),A2(1),A3(1,2),A6(1)
3	Practical Examination	A1,A10, A3 A2, A6	A1(1,2,3),A2(1),A3(1,2),A6(1),A10(1)
4	Final term examination	A1,A10	A1(1,2,3), A10(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Theodore L. Brown, et al, Chemistry the Central Science, Prentice Hall Int. (Pearson International 14 edition), 2017.



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2	Peter Atkins , Julio de Paula, James Keeler " Atkins' Physical Chemistry 11ed" Oxford University Press; 11th edition (2018)

9. Facilities required for teaching and learning:

No.	Facility	No.	Facility
1	Lecture classroom	4	Data show system
2		5	Sound system
3	White board	6	Laboratory

10. Matrix of Competencies and LO's:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Gaseous status. Practical: Chemistr y Laborato ry Equipme nt, Titrimetr ic Analysis.	1	X	X	X			X												
2	Chemical thermody namics. Practical: Preparati on of standard solution of Na ₂ CO ₃ (0.1N),	1	X	X	X			X				X								



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	Determin ation of normalit y of Hcl by using standard solution of oxalic acid.																			
3	Propertie s of solutions. Practical: Determin ation of normalit y of acetic acid by using standard solution of sodium hydroxid e, Determin ation of normalit y of sodium carbonat e by using standard solution of Hcl.	1	X	X	X			X												



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4	Material balance in combustion processes. Practical: Standardization of potassium permanganate with oxalic acid.	1	X	X	X			X												
5	Dynamic balance in physical and chemical operations. Practical: Determination of nitrites, precipitation titrations.	1	X	X	X			X												
6	Kinetic chemical interactions. Practical:	1	X	X	X															



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	Preparation of 0.05N of sodium chloride.																			
7	Electrochemistry, corrosion and corrosion control. Practical: Determination of chloride ion by using Mohr method.	1, 8																		
8	Fertilizers. Practical: Determining Molecule Weight by Freezing Point Depression Method.	8	X	X	X			X												
9	Manufacturing and chemistry of Cement.	8	X	X	X			X												



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	Practical: Determin ing Molecule Weight by Freezing Point Depressi on Method.																			
10	Water processes . Practical: determin ation of water hardness by complex metric titration.	8																		

Course Coordinator: Asso.prof. Khaled Samir / Dr Soheer Abobaker

Head of Department: Asso.prof. HEND Elsayed Gadow

Date of Approval: 2023

Engineering Drawing and Projection (ENG103)

1- Basic Information:

Program Title		All programs	
Department Offering the Program		Basic Science and Engineering Department	
Department Responsible for the Course		Basic Science and Engineering Department	
Course Title		Engineering Drawing and Projection	
Course Code		ENG103	
Year/Level		level 1	
Specialization		Major	
Authorization Date of Course Specification		2023	
Pre- request		-	
Teaching hours	Lectures	Tutorial	Practical
	1	-	4

2- Course Aims:

No.	Aims
1	Master a broad range of engineering drawing knowledge and specialized skills, as well as the ability to apply acquired knowledge in real-world situations.
2	Work in and manage a diverse team of professionals from various engineering disciplines, taking responsibility for own and team performance; and Behave professionally and adhere to engineering ethics and standards.
4	Use the techniques, skills, and current engineering tools required for engineering practice by taking full responsibility for one's own learning and development, participating in lifelong learning, and demonstrating the ability to pursue postgraduate and research studies.

3- Competencies(LO'S) :

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1 Explain the basic principles of engineering drawing.
	2 Explain the scientific principles and theories that apply to the topic.
	3 Using scientific concepts and tools that are



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	relevant to the profession.
	4 Applying engineering drawing basics that are relevant to the subject.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Techniques and skills of engineering drawing	1	-	4
2	Engineering operations	1	-	4
3	Orthogonal projection – Secondary orthogonal	2	-	8
4	Intersections	1	-	4
5	projections of simple bodies	1	-	4
6	rules of writing dimensions	1	-	4
7	Deduction of missing projections	1	-	4
8	Drawing of engineering sections.	1	-	4
9	Steel frames	2	-	8
10	Introduction to AutoCAD Fundamentals of engineering drafting by way of computer aided drawing (CAD) software. Basic features and capabilities of CAD software and drafting fundamentals including orthographic projection, and isometric pictorials, part dimensioning in 2 dimensional drawings.	3	-	12
Total		14		56

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Techniques and skills of engineering drawing	x	x												
2	Engineering operations					X									
3	Orthogonal projection – Secondary orthogonal	x				X									
4	Intersections	x	x			X									
5	Projections of simple bodies	X				X									
6	Rules of writing dimensions	x	x			X									
7	Deduction of missing projections	x	x			X									
8	Drawing of engineering sections.	x				X									
9	Steel frames	x	X			X									
10	Introduction to AutoCAD	X													x



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Fundamentals of engineering drafting by way of computer aided drawing (CAD) software. Basic features and capabilities of CAD software and drafting fundamentals including orthographic projection, and isometric pictorials, part dimensioning in 2 dimensional drawings.															

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding	-Hand out project assignments to those students.



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Students	-Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	1,2,3
2	Student load (quizzes, sheets, report)	A1	1,2
3	Final exam	A1	3,4

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	K. V. NATARAJAN "ENGINEERING GRAPHICS Paperback" DHANALAKSHMI PUBLISHERS (2018)
2	Lakhwinder Pal Singh, Harwinder Singh "Engineering Drawing: Principles and Applications" Cambridge University Press; First edition (2019)

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	Computer lab
3	Seminar
4	White board



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5	Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Techniques and skills of engineering drawing	1, 4	X																			
2	Engineering operations	1, 4	X																			
3	Orthogonal projection – Secondary orthogonal	1, 4	X																			
4	Intersections	1, 4	X																			
5	Projections of simple bodies	1, 4	X																			
6	Rules of writing dimensions	1, 4	X																			



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7	Deduction of missing projections	1, 4	X																	
8	Drawing of engineering sections.	1, 4	X																	
9	Steel frames	1, 4	X																	
10	Introduction to AutoCAD Fundamentals of engineering drafting by way of computer aided drawing (CAD) software. Basic features and capabilities of CAD software and		X																	

drafting fundamentals including orthographic projection, and isometric pictorials, part dimensioning in 2 dimensional drawings																				

Course Coordinator: Dr. Moataz Mostafa

Head of Department: Asso.prof.Amal Bahiry

Date of Approval: 2023

Introductions to Computer Systems (ENG104)

1- Basic Information:

Program Title	All programs			
Department Offering the Program	Basic Science and Engineering Department			
Department Responsible for the Course	Basic Science and Engineering Department			
Course Title	Introductions to Computer Systems			
Course Code	ENG104			
Year/Level	Level 1			
Specialization	Major			
Authorization Date of Course Specification	2023			
Pre- request	-			
Teaching hours	Lectures	Tutorial	Practical	

	1	-	2

2- Course Aims:

No.	Aims
1	Master a wide range of engineering knowledge and specialized skills, as well as the ability to apply that information in real-world situations using theories and analytical thinking.
7	Use techniques, skills and modern engineering tools necessary for engineering practice;

3- Competencies Learning Outcomes (LO'S) :

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1 Identify the concepts and theories of science necessary for engineering system 2 Applying engineering basics that are relevant to the subject.
A5. Practice research techniques and methods of investigation as an inherent part of learning.	1 Assess different ideas, views, and knowledge from a range of sources.

4. Course Contents:

No.	Topics	Lecture	Practical	Tutorial
1	Computer architecture. practical: Visual Studio C# Interface Writing simple statements	1	2	-
2	Computer systems Practical: Variables, Data type	2	4	-
3	Files systems Practical: Input & Output	1	2	-
4	Computer networks Practical: Conditional Statements	2	4	-
5	Internet networks Practical: Arrays	2	4	-
6	Data systems and information technology Practical: Loop Statement (For, while & do - while)	2	4	-
7	Computer graphics – Multimedia systems Practical: Loop Statement (For, while & do - while)	1	2	-



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8	Methods of solving problems and logical design for the programs and matrices. Practical: Nested loop	2	4	-
9	Engineering applications in programming using one structured programming language. Practical: Engineering Case Study.	1	2	-
Total		14	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Computer architecture. practical: Visual Studio C# Interface Writing simple statements	X	X	X											X
2	Computer systems Practical: Variables, Data type	X	X			X									X
3	Files systems Practical: Input & Output	X	X			X									X
4	Computer networks Practical:	X		X											X



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	Conditional Statements														
5	Internet networks Practical: Arrays	X	X												X
6	Data systems and information technology Practical: Loop Statement (For, while & do - while)	X	X												X
7	Computer graphics – Multimedia systems Practical: Loop Statement (For, while & do - while)	X	X			X									X
8	Methods of solving problems and logical design for the programs and matrices. Practical: Nested loop	X	X				X								X
9	Engineering applications in programming using one structured	X	X												X



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programming language. Practical: Engineering Case Study.														

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	1,2
2	Student load (quizzes, sheets, report)	A5	1
3	Practical Examination	A1,A5	A1(1,2),A5(1)
4	Final term examination	A1,A5	A1(1,2),A6(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights



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1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Darrell Hajek , Cesar Herrera "Introduction to Computers" CreateSpace Independent Publishing Platform (May 8, 2018).
2	Ludwik Czaja "Introduction to Distributed Computer systems: Principles and features" Springer; 1st ed. 2018.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	Computer lab
3	
4	White board
5	Data show system
6	Wireless internet

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Computer architecture. practical: Visual Studio	1, 7					X			X								X		



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	C# Interface Writing simple statemen ts																			
2	Compute r systems Practical: Variable s, Data type	1 , 7				X			X								X			
3	Files systems Practical: Input & Output	1 , 7				X			X								X			
4	Compute r networks Practical: Conditio nal Statemen ts	1 , 7				X			X								X			
5	Internet networks Practical: Arrays	1 , 7				X			X								X			
6	Data systems and informati on technolo gy Practical:	1 , 7				X			X								X			



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	Loop Statemen t (For, while & do - while)																			
7	Compute r graphics – Multime dia systems Practical: Loop Statemen t (For, while & do - while)	1 , 7					X			X							X			
8	Methods of solving problems and logical design for the programs and matrices. Practical: Nested loop	1 , 7					X			X							X			
9	Engineer ing applicati	1 , 7					X			X							X			



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ons in program ming using one structure d program ming language . Practical: Engineer ing Case Study.																				

Course Coordinator: Dr. Amira El Sonbaty
Head of Department: prof. Mohamed Fouad
Date of Approval: 2023

Mathematics 2 (MTH102)

1- Basic Information:

Program Title		All programs		
Department Offering the Program		Basic Science and Engineering Department		
Department Responsible for the Course		Basic Science and Engineering Department		
Course Title		Mathematics 2		
Course Code		MTH102		
Year/Level		Level: 1		
Specialization		Major		
Authorization Date of Course Specification		2023		
Pre- request		-		
Teaching hours		Lectures	Tutorial	Practical



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	2	2	-

2- Course Aims:

No.	Aims
1	Master a broad range of fundamental Mathematical engineering knowledge and specialized skills of Analytical geometry and Integration, as well as the ability to apply acquired knowledge of Analytical geometry and Integration in real-world situations as determine the plain areas , circular volumes, plain technical length and circular surfaces by applying theories and abstract thinking in analytic critical and systemic thinking to identify, diagnose, and solve mathematical engineering problems by using different methods.

3- Competencies: Learning Outcomes (LO'S)

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1. Explain the relevant mathematical engineering principles and theories in the Analytical geometry and Integration. 2. Use the mathematical engineering principles and theories that apply in the most fundamental problems . 3. Explain the basic concepts of Analytical geometry and Integration 4. Use the basics of integration and Geometry that are applicable to the field.

4. Course Contents:

No.	Topic	Lecture	Tutorial	Practical
1	Basic concepts- equations of second degree and double equation for two straight lines Movement and rotation of axes	4	4	-
2	Circle– conical sectors	6	6	-
3	- Analytical geometry in space - Cartesian coordinates - Cylindrical-spherical -plane in space	2	2	-
4	Equations of surfaces in second order – rotation and movement of axes in space.	2	2	-
5	Indefinite integration (basic functions – theories) – method of integration	6	6	-
6	Definite integration (definition – properties - theories)	4	4	-



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	Applications of definite integration (plain areas – circular volumes – plain technical length)			
7	Areas – Circular surfaces	2	2	-
8	Numerical integration.	2	2	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Basic concepts - equations of second degree and double equation for two straight lines Movement and rotation of axes	X	X			X									
2	Circle– conical sectors	X	X				X								



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3	- Analytical geometry in space - Cartesian coordinates - Cylindrical-spherical - plane in space	X	X					X							
4	Equations of surfaces in second order – rotation and movement of axes in space.	X	X			X		X							
5	Indefinite integration (basic functions – theories) – method of integration	X	X			X	X								
6	Definite integration (definition – properties - theories) Applications of definite integration (plain areas – circular volumes – plain technical length)	X	X			X									
7	Areas – Circular surfaces	X					X	X							



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8	Numerical integration.	X	X			X									

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	1,2
2	Student load (quizzes, sheets, report)	A1	3,4
3	Final term examination	A1	1,2,3,4

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term	60%



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	examination	
Total		100%

8. List of References:

No.	Reference List
1	P.N.Chatterjee "Analytical Geometry Paperback" Anu Books (2019)
2	Gerardus Blokdyk "System Integration A Complete Guide" 5STARCOOKS (2019).
3	Chris McMullen "Essential Calculus Skills Practice Workbook with Full Solutions" Zishka Publishing (2018).

9. Facilities required for teaching and learning:

Facility			
1	Lecture classroom	3	White board
2	Seminar	4	Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Position, Displacement, Velocity, and Acceleration of Particle	1	X																			
2	Plane Motion path of Particle	1	X																			
3	Description of plane Motion using Cartesian	1	X																			



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	axes																					
4	Projectiles	1	X																			
5	Relative motion between particles	1	X																			
6	Motion for particle in circular path	1	X																			
7	Newton's second law of motion	1	X																			
8	Principle of work and energy of motion	1	X																			
9	Principle of conservation of mechanical energy	1	X																			
10	Principle of impulse and momentum of		X																			

rigid body																				

Course Coordinator: Dr / Reda Abdo

Head of Department: Asso.prof.Amal Bahiry

Date of Approval: 2023

Mechanics 2 (ENG 102)

1- Basic Information:

Program Title		All programs		
Department Offering the Program		Basic Science and Engineering Department		
Department Responsible for the Course		Basic Science and Engineering Department		
Course Title		Mechanics 2		
Course Code		ENG 102		
Year/Level		Level: 1		
Specialization		Major		
Authorization Date of Course Specification		2023		
Pre- request		-		
Teaching hours	Lectures	Tutorial	Practical	
	2	2	-	

2- Course Aims:

No.	Aims
1	Master a broad range of Mechanics knowledge and specialized skills, as well as the ability to apply acquired knowledge in real-world situations by applying theories in analytic critical and systemic thinking to identify, diagnose, and solve engineering problems of varying complexity and variation.

3- Competencies Learning Outcomes (LO'S) :

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1 Define position, velocity and acceleration of particles and principles of conservation of mechanical energy
	2 Recognize methodologies of solving engineering problems including principles of work and energy
	3 Solve engineering problems to determine the velocity and position of projectile
	4 Apply knowledge of principle of work and principle of work and energy of motion and principle of conservation of mechanical energy



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	and momentum of rigid body.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Position, Displacement, Velocity, and Acceleration of particle	4	4	-
2	Plane Motion Path of Particle	2	2	-
3	Description of plane motion using Cartesian axes	2	2	-
4	Projectiles	2	2	-
5	Relative motion between particles	2	2	-
6	Motion for particle in circular path	2	2	-
7	Newton's second law of motion	4	4	-
8	Principle of work and energy of motion	4	4	-
9	Principle of conservation of mechanical energy	2	2	-
10	Principle of Impulse and Momentum of rigid body	4	4	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Position, Displacement, Velocity, and Acceleration	X	X			X									



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	of Particle														
2	Plane Motion path of Particle	X	X			X									
3	Description of plane Motion using Cartesian axes	X	X	X											
4	Projectiles	X	X					X							
5	Relative motion between particles	X	X			X									
6	Motion for particle in circular path	X	X			X									
7	Newton's second law of motion	X	X				X								
8	Principle of work and energy of motion	X	X	X											
9	Principle of conservation of mechanical energy	X	X			X									
10	Principle of impulse and momentum of rigid body	X	X				X								

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials



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2	Online lectures and assignments
6.2. Teaching and learning method for low capacity and outstanding Student	
For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	1,2,3
2	Student load (quizzes, sheets, report)	A1	3,4
3	Final term examination	A1	1,2,3,4

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Marcelo R. M. Crespo da Silva "Fundamentals of Dynamics and Analysis of Motion" 2nd edition, Dover Publications; (2019).



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2	C. Hibbeler, Russell "Engineering Mechanics: Dynamics in SI Units, Global Edition" 14th edition, P&C ECS; 15th edition 2018).

9. Facilities required for teaching and learning:

Facility			
1	Lecture classroom	3	White board
2	Seminar	4	Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Position, Displacement, Velocity, and Acceleration of Particle	1	X																			
2	Plane Motion path of Particle	1	X																			
3	Description of plane Motion using	1	X																			



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	Cartesian axes																					
4	Projectiles	1	X																			
5	Relative motion between particles	1	X																			
6	Motion for particle in circular path	1	X																			
7	Newton's second law of motion	1	X																			
8	Principle of work and energy of motion	1	X																			
9	Principle of conservation of mechanical energy	1	X																			
10	Principle of impulse and momentum of		X																			

rigid body																			

Course Coordinator: Dr / Motaz Mostafa

Head of Department: Asso.prof.Amal Bahiry

Date of Approval: 2023

Physics 2 (PHY102)

1- Basic Information:

Program Title		All programs	
Department Offering the Program		Basic Science and Engineering Department	
Department Responsible for the Course		Basic Science and Engineering Department	
Course Title		Physics 2	
Course Code		PHY 102	
Year/Level		level 1	
Specialization		Major	
Authorization Date of Course Specification		2023	
Pre- request		-	
Teaching hours	Lectures	Tutorial	Practical
	2	2	2

2- Course Aims:

No.	Aims
1	Master a broad range of engineering physics knowledge and specialized skills, as well as the ability to apply acquired knowledge in real-world situations by applying theories in analytic critical and systemic thinking to identify, diagnose, and solve engineering problems of varying complexity and variation.

3- Competencies Learning Outcomes (LO'S) :

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1. Define concepts and theories of physics necessary for engineering system analysis. 2. Study solving engineering problems including Einstein's quantum hypothesis, laws



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	of reflection and refraction, interference and diffraction. 3. Define measurement devices in electrical conductivity, basic characteristics, and properties. 4. Select the appropriate solutions for engineering problems including Newton's Rings and design of optical fibers.
A2. 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.	1. Describe quality assurance systems, codes of practice and standards, health and safety requirements, and environmental issues.
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.	1. Collaborate effectively within multidisciplinary team. 2. Work in stressful environment and within constraints.
A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	1 Conduct troubleshooting in chemical engineering plants.



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4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Basic of electricity. Practical: measurement devices in electrical conductivity.	2	2	4
2	Columb's law and Gauss's law. Practical: sensitivity of galvanometer.	4	4	2
3	capacitors and capacitance. Practical: capacitors and capacitance	2	2	2
4	Currents and Resistance. Practical: ohm's law - series connection & parallel connection & resistance colour code & meter bridge - voltmeter resistance.	4	4	10
5	Magnetic field and magnetic force. Practical: the inverse square law in magnetism.	4	4	2
6	The nature and propagation of light. Practical: the glass prism.	4	4	2
7	Optical fiber. Practical: the glass prism.	2	2	2
8	Introduction to Quantum theory.	2	2	0
9	Laser. Practical:	2	2	0
10	Lenses and mirrors. Practical: spherometer- mirrors and lenses.	2	2	4
Total		28	28	28

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Basic of electricity. Practical: measurement devices in electrical conductivity.	X	X			X									X
2	Column's law and Gauss's law. Practical: sensitivity of galvanometer.	X	X				X								X
3	capacitors and capacitance. Practical: capacitors and capacitance	X	X					X							X
4	Currents and Resistance. Practical: ohm's law - series	X	X			X	X								X



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	connection &parallel connection& resistance colour code& meter bridge - voltmeter resistance.														
5	Magnetic field and magnetic force. Practical: the inverse square law in magnetism.	X	X			X									X
6	The nature and propagation of light. Practical: the glass prism.	X	X				X								X
7	Optical fiber. Practical: the glass prism.	X	X					X							X
8	Introduction to Quantum theory.	X	X				X								X
9	Laser. Practical:	X	X					X							X
10	Lenses and mirrors. Practical: spherometer- mirrors and lenses.	X	X				X								X

6. Teaching and Learning Methods of Disable Students:



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6.1. Teaching and Learning Methods of Disable Students:	
1	Additional Tutorials
2	Online lectures and assignments
6.2. Teaching and learning method for low capacity and outstanding Student	
For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1,A2, A6	A1(1,2,3),A2(1),A6(1)
2	Student load (quizzes, sheets, report)	A1, A3 A2, A6	A1(1,2,3),A2(1),A3(1,2),A6(1)
3	Final term examination	A1 A3	A1(1,2,3),A2(1),A3(1,2),A6(1)
4	Practical exam	A1,A6	A1(1,2,3,4),A2(1),A3(1,2),A6(1)

7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:



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No.	Reference List
1	Shankar, Ramamurti. Fundamentals of Physics II. Yale University Press, 2023.
2	Peter J. Williams ; Firas Mansour ; Robert L. Hawkes ; (Nuclear physicist) Javed Iqbal ; Marina Milner-Bolotin. Physics for scientists and engineers : an interactive approach, Nelson Education Ltd., Year: 2019
3	David Halliday, Robert Resnick, Jearl Walker. Fundamentals of Physics, 9th Edition, Binder Ready Version, 2019
4	Serway, Raymond A., and John W. Jewett. Physics for scientists and engineers. Cengage learning, 2018.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	Laboratory
3	
4	White board
5	Data show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Basic of electricity. Practical: measurement devices in electrical conductivity.	1	X																	
2	Column's law and Gauss's	1	X																	



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	law. Practical: sensitiv y of galvano meter.																			
3	capacitor s and capacitan ce. Practical: capacitor s and capacitan ce	1	X																	
4	Currents and Resistan ce. Practical: ohm's law - series connecti on &parallel connecti on& resistanc e colour code& meter bridge - voltmete r resistanc e.	1	X																	



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5	Magnetic field and magnetic force. Practical: the inverse square law in magnetism.	1	X																	
6	The nature and propagation of light. Practical: the glass prism.	1	X																	
7	Optical fiber. Practical: the glass prism.	1	X																	
8	Introduction to Quantum theory.	1	X																	
9	Laser. Practical:	1	X																	
10	Lenses and mirrors. Practical:		X																	



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spherometer-mirrors and lenses.																				

Course Coordinator: Asso.prof. Amal Bahiry / **Dr/Ahmed Lotfy**

Head of Department: Asso.prof. Amal Bahiry

Date of Approval: 2023

Production Engineering (ENG105)

1- Basic Information:

Program Title	All Programs		
Department Offering the Program	Basic Science and Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Production Engineering		
Course Code	ENG105		
Year/Level	Level 1		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	3	-	2

2- Course Aims:

No.	Aims
1	Master a broad range of production engineering knowledge and specialized skills, as well as the ability to apply acquired knowledge in real-world situations.
2	Work in and manage a diverse team of professionals from various engineering disciplines, taking responsibility for own and team performance; and Behave professionally and adhere to engineering ethics and standards.
3	Use the techniques, skills, and current engineering tools required for engineering practice by taking full responsibility for one's own learning and development, participating in lifelong learning, and demonstrating the ability to pursue postgraduate and research studies.

3- Competencies Learning Outcomes (LO'S) :

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1. Explain the basic principles of production engineering. 2. List the characteristics of engineering materials related to production engineering.



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	3. Evaluate the characteristics and performance of engineering materials related to production engineering
A3. Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic and environmental.	1. Apply engineering knowledge to improve products of modern tools, systems and procedure, to make the engineering process more balanced costs, benefits, safety, quality and reliability and environmental impact. 2. Apply safe systems including the use laboratory and field equipment competently
A6. Plan, supervise and monitor of production process, taking into consideration other trades requirements.	1. Show the conventional procedures and characterization of common engineering materials and components. 2. Acquire production skills.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	The engineering substances and its properties Practical: engineering materials	3	-	2
2	Heating and cooling diagrams Practical: iron and steel production	3		2
3	Heating equilibrium diagrams Practical : heat treatment	3	-	2
4	Alloys - Casting operation (sand casting and the preparation of the mold) Practical: metal casting & mold for a sand casting& carpenter workshop	6	-	4
5	Forming processes (cold and hot forming: forging rolling – Wire drawing – Blanking and piercing - Deep drawing - The extrusion) Practical: metal forming	6	--	4
6	Processes of metal connections (the riveting – welding with its types sticking) Practical: metal joining process	6	--	2



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7	Cutting machining: Lathing - Shaping – Drilling –Milling - Grinding – Work Piece fixation - Cutting tools fixation - Specifications of the operating machine) Practical: carpenter workshop	6	-	2
8	Methods of solving problems Practical: metal machining	3	-	2
9	Measuring tools (venire caliper – micrometers and its types) Practical: measurement tools	3	-	4
10	Production cycle production efficiency - Industrial safety Practical training in the different workshops	3	-	4
Total		42	-	28

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	The engineering substances and its properties Practical: engineering materials	X	X			X									X
2	Heating and cooling diagrams	X	X												X



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	Practical: iron and steel production														
3	Heating equilibrium diagrams Practical : heat treatment	X	X	X											X
4	Alloys - Casting operation (sand casting and the preparation of the mold) Practical: metal casting & mold for a sand casting& carpenter workshop	X													X
5	Forming processes (cold and hot forming: forging rolling – Wire drawing – Blanking and piercing - Deep drawing - The extrusion) Practical: metal forming	X	X												X



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6	Processes of metal connections (the riveting – welding with its types sticking) Practical: metal joining process	X	X												X
7	Cutting machining: Lathing - Shaping – Drilling – Milling - Grinding – Work Piece fixation - Cutting tools fixation - Specifications of the operating machine) Practical: carpenter workshop	X	X												X
8	Methods of solving problems Practical: metal machining	X	X			X	X								X
9	Measuring tools (venire caliper –	X	X												X



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	micrometers and its types) Practical: measurement tools														
10	Production cycle production efficiency - Industrial safety Practical training in the different workshops	X	X			X									X

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1,A3	A1(1,2,3),A3(1,2)
2	Student load (quizzes, sheets, report)	A1,A3	A1(1,2,3),A3(1,2)
3	Practical Exam	A3,A6	A1(1,2,3),A6(1,2)
4	Final term examination	A1,A3,A6	A1(1,2,3),A3(1,2),A6(1,2)



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7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7.3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Shanker, Kripa, Shankar, Ravi, Sindhvani, Rahu "Advances in Industrial and Production Engineering" 1st edition, Springer Nature Singapore Pte Ltd. (2018).
2	Jeff Hansen "Manufacturing and Production Engineering: Planning and Control" Willford Press (2018).

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	Production engineering workshops
2	
3	White board
4	Data show system
5	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Competencies



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			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	The engineering substances and its properties Practical: engineering materials	1, 2, 3	X	X	X			X														
2	Heating and cooling diagrams Practical: iron and steel production	1, 2, 3	X	X	X			X														
3	Heating equilibrium diagrams Practical : heat treatment	1, 2, 3	X	X	X			X														
4	Alloys - Casting operation (sand casting and the	1, 2, 3	X	X	X			X														



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	preparati on of the mold) Practical: metal casting & mold for a sand casting& carpenter worksho p																			
5	Forming processes (cold and hot forming: forging rolling – Wire drawing – Blanking and piercing - Deep drawing - The extrusion) Practical: metal forming	1 , 2 , 3	X	X	X			X												
6	Processe s of metal	1 , 2	X	X	X			X												



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	connections (the riveting – welding with its types sticking) Practical: metal joining process	, 3																		
7	Cutting machinin g: Lathing - Shaping – Drilling –Milling - Grinding – Work Piece fixation - Cutting tools fixation - Specifica tions of the operating machine) Practical: carpenter worksho p	1 , 2 , 3	X	X	X			X												



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8	Methods of solving problems Practical: metal machining	1, 2, 3	X	X	X			X												
9	Measuring tools (venire caliper – micrometers and its types) Practical: measurement tools	1, 2, 3	X	X	X			X												
10	Production cycle production efficiency - Industrial safety Practical training in the different workshops	1, 2, 3	X	X	X			X												

Course Coordinator: Dr. Abdu El-Naquib

Head of Department: Asso.prof.Amal Behary

Date of Approval: 2023

Introduction to Engineering and Environment

(ENG106)

1- Basic Information:

Program Title	All programs		
Department Offering the Program	Basic Science and Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Introduction to Engineering and Environment		
Course Code	ENG106		
Year/Level	level 1		
Specialization	Basics		
Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	-	-

2- Course Aims:

No.	Aims
3	Recognize his or her role in promoting engineering and contributing to the profession's and community's development; by appreciating the importance of the environment, both physical and natural, and working to promote sustainability concepts

3- Competencies Learning Outcomes (LO'S):

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1 Explain the scientific principles and theories that apply to the topic. 2 Explain the basic principles of engineering. 3 Use scientific concepts and theories that are relevant to the profession. 4 Solve complex engineering problems by applying engineering fundamentals.
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	1 Understand the professional ethics and impacts of engineering solutions on society and environment. 2 Recognizes the environmental and economic impact of various industries, waste



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principles and contexts of sustainable design and development.	minimization, and industrial facility remediation. 3 Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact. 4 Incorporate economic, societal, global, environmental, and risk management factors into design.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Engineering concepts: What is engineering – international classification for the engineering jobs – Relation between engineering development and environment economic and social development – Engineering branches – Ethics of the engineering jobs.	10	-	-
2	Introduction to environmental science: the importance of studying environmental science	2	-	-
3	Modern technology and its effect on the environment – Quality of the environment and development elements	4	-	-
4	Sources of environmental pollution and method of control (air pollution – water pollution – solid wastes pollution – economics of environmental pollution control – legislations for the environment protection.	12	-	-
Total		28	-	-



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5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Engineering concepts: What is engineering – international classification for the engineering jobs – relation between engineering development and environment economic and social development – engineering branches – ethics of the engineering jobs.	X	X								X				



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2	Introduction to environmental science: the importance of studying environmental science	X	X								X				
3	Modern technology and its effect on the environment – quality of the environment and development elements	X	X	X							X				
4	Sources of environmental pollution and method of control (air pollution – water pollution – solid wastes pollution – noise) – economics of environmental pollution control – legislations for the environment	X	X	X							X				



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	protection.														

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Mid Term Examination	A1,A3	A1(1,2,3),A3(1,2)
2	Semester work(quizzes, sheets, report)	A3	A3(1,2,3,4)
3	Final Term Examination	A1,A3	A1(1,2,3,4),A3(1,2,3,4)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%



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3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	د. جمال صالح السلامة من الكوارث الطبيعية والمخاطر البشرية، دار الشروق، 2019
2	Raju, Fundamental of air pollution, Oxyford&IBH, 2019.

9. Facilities required for teaching and learning:

No.	Facility
1	Seminar
2	Lecture Classroom
3	White Board
4	Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Engineering concepts: What is engineering – international classification for the engineering jobs – relation between	3	X		X															



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	engineering development and environment economic and social development – engineering branches – ethics of the engineering jobs.																			
2	Introduction to environmental science: the importance of studying environmental science	3	X		X															
3	Modern technology and its effect on the environment –	3	X		X															



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	quality of the environment and development elements																			
4	Sources of environmental pollution and method of control (air pollution – water pollution – solid wastes pollution –noise) – economics of environmental pollution control – legislations for the environment protection.	3	X		X															

Course Coordinator: prof. Osamy Rageh / Dr. Ramadan Elkateb

Head of Department: Asso.prof.Amal Bahiry

Date of Approval: 2023

Technical English Language 1 (LNG101)

1- Basic Information:

Program Title	All Programs		
Department Offering the Program	Basic Science and Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Technical English Language 1		
Course Code	LNG101		
Year/Level	level 1		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	1	-	2

2- Course Aims:

No.	Aims
5	Communicate effectively with a variety of audiences using a variety of forms, methods, and languages; cope with academic and professional issues in a critical and creative manner; and display leadership, business administration, and entrepreneurial abilities.

3- Competencies Learning Outcomes (LO'S):

Competencies	Learning Outcomes (LO'S)
A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	1. Communicate effectively with a range of audiences using contemporary tools.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Engineering Lab. : skills in English	3	-	6



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	Lesson 1 Bob's day at work & Lesson 2 Bob returns home with bad news			
2	A private flat Lab. : skills in English Lesson 3 Ted's day at school	1	-	2
3	Book shelves Lab. : skills in English Lesson 4 Nicole's day at school	1	-	2
4	Bridges Lab. : skills in English Lesson 5 Ted goes out for the evening Grammar Topics	2	-	4
5	Reinforced concrete Lab. : skills in English Lesson 6 Susan stays home and bake cookies & Lesson 7 Susan hires Bob to run her own business	2	-	4
6	Surveying Lab. : skills in English Lesson 8 Ted forms a rock band & Lesson 9 Nicole for president	2	-	4
7	Hydraulic works Lab. : skills in English Lesson 10 Bob visits the village market	2	-	4
8	Soil mechanics and foundations Lab. : skills in English Grammar topics	1	-	2
Total		14	-	28

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Engineering Lab. : skills in English Lesson 1 Bob's day at work & Lesson 2 Bob returns home with bad news	X	X		X										X
2	A private flat Lab. : skills in English Lesson 3 Ted's day at school	X	X												X
3	Book shelves Lab. : skills in English Lesson 4 Nicole's day at school	X	X												X
4	Bridges Lab. : skills in English Lesson 5 Ted	X	X		X										X



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	goes out for the evening Grammar Topics														
5	Reinforced concrete Lab. : skills in English Lesson 6 Susan stays home and bake cookies & Lesson 7 Susan hires Bob to run her own business	X	X		X										X
6	Surveying Lab. : skills in English Lesson 8 Ted forms a rock band & Lesson 9 Nicole for president	X	X												X
7	Hydraulic works Lab. : skills in English Lesson 10 Bob visits the village market	X	X												X
8	Soil mechanics and	X	X												X



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foundations Lab. : skills in English Grammar topics															

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A8	1
2	Student load (quizzes, sheets, report)	A8	1
3	Practical exam	A8	1
4	Final term examination	A8	1

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights



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1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	David Bonamy "Technical English" Longman Publishing Group 2018
2	Paul J. Hamel "English for Better Jobs 1: Language for Working and Living" Create Space Independent Publishing Platform; 1st edition (2019)
3	Mahmood Reza Atai, Alireza Zaré Alanagh, Morteza Nasiri and Reza Taherkhani "English for The Students of Engineering" 1st edition, SAMT Publication (2023).

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	Computer lab.
3	Seminar
4	White board
5	Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Engineering Lab. : skills in English Lesson 1 Bob's day at work & Lesson 2	5								X												

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	Lab. : skills in English Lesson 6 Susan stays home and bake cookies & Lesson 7 Susan hires Bob to run her own business																			
6	Surveyin g Lab. : skills in English Lesson 8 Ted forms a rock band & Lesson 9 Nicole for president	5							X											
7	Hydrauli c works Lab. : skills in English Lesson	5							X											

	10 Bob visits the village market																			
8	Soil mechanics and foundations Lab. : skills in English Grammar topics	5							X											

Course Coordinator: Dr / Doaa Elshrbiny

Head of Department: Asso.prof.Amal Behriy

Date of Approval: 2023

Mathematics 3 (MTH201)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Mathematics 3		
Course Code	MTH 201		
Year/Level	Level: 2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	MTH 101		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
1	Master a broad range of fundamental Mathematical engineering knowledge and solve of ordinary differential equations and partial differentiation applications , as well as the ability to apply acquired knowledge of ordinary differential equations and partial differentiation applications in real-world situations by applying theories and abstract thinking in analytic critical and systemic thinking to identify, diagnose, and solve multi integrations of mathematical engineering .

3- Competencies Learning Outcomes (LO'S):

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1. Understand the relevant engineering mathematical of ordinary differential equations and applications of Partial differentiation equations. 2. Describe the effect of mathematical engineering principles and theories that apply in the most fundamental problems . 3. Define the basic concepts of ordinary differential equations and Partial differentiation equations 4. Applying the basics of ordinary differential equations and applications of Partial differentiation equations in engineering problems.

4. Course Contents:

No.	Topic	Lectures	Tutorial	Practical
1	Functions of several variables Limits of functions of several variables. Continuity in multivariable functions	2	4	-
2	Partial derivatives of higher order extreme for functions of two variables	4	4	-
3	Double integral Triple integral Line integral in space, Green's theorem Surface integral Gauss and stokes's theory	10	4	-

4	Basic concepts Formation of the differential equations Separable differential equations Homogenous differential equations Exact differential equation linear differential equation Bernoulli's equation the linear differential operator	4	12	-
5	Second order homogeneous differential equations with constant coefficients Non-homogeneous linear differential equations	4	2	-
6	Convergence of la-place transform Important properties of la-place transform Laplace transform of derivatives Inverse la-place transform	4	2	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Functions of several variable Limits of functions of several variable • Continuity in multivariable	X	X			X	X								



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	functions														
2	Partial derivatives of higher order extreme for functions of two variables	X	X			X		X							
3	Double integral Triple integral Line integral in space, Green's theorem Surface integral • Gauss and stokes's theory	X	X			X	X								
4	Basic concepts Formation of the differential equations Separable differential equations Homogenous differential equations Exact differential	X	X			X		X							



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	equation linear differential equation Bernoulli's equation the linear differential operator														
5	Second order homogeneous differential equations with constant coefficients • Non- homogeneous linear differential equations	X	X			X	X								
6	Convergence of la-place transform Important properties of la-place transform Laplace transform of derivatives • Inverse la-place transform	X	X			X	X								

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials



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2	Online lectures and assignments
6.2. Teaching and learning method for low capacity and outstanding Student	
For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	1,2
2	Student load (quizzes, sheets, report)	A1	2,3
3	Final term examination	A1	1,2,3,4

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Harumi Hattori " Partial Differential Equations: Methods, Applications and Theories" WSPC; 2nd edition (2019).



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2	Schaeffer, David, Cain, John Wesley "Ordinary Differential Equations: Basics and Beyond" 2 nd edition, Springer-Verlag New York (2020).
3	Yuefan Deng "Lectures, Problems and Solutions for Ordinary Differential Equations" 2nd edition, WSPC; Second Edition (2017).

9. Facilities required for teaching and learning:

Facility			
1	Lecture classroom	3	White board
2	Seminar	4	Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Functions of several variables Limits of functions of several variables. • Continuity in multivariable functions	1	X																	
2	Partial derivatives of higher order extreme for functions of two	1	X																	



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	variables																				
3	Double integral Triple integral Line integral in space, Green's theorem Surface integral • Gauss and stokes's theory	1	X																		
4	• Basic concepts Formation of the differential equations • Separable differential equations •	1	X																		



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بدمياط الجديدة

	Homogeneous differential equations																			
	Exact differential equation																			
	Linear differential equation																			
	Bernoulli's equation the linear differential operator																			
5	Second order homogeneous differential equations with constant	1	X																	



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	coefficients • Non-homogeneous linear differential equations																			
6	Convergence of Laplace transform Important properties of Laplace transform Laplace transform of derivatives • Inverse Laplace transform	1	X																	

m																				

Course Coordinator: Dr / Reda Abdo

Head of Department: Asso.prof.Amal Behiry

Date of Approval: 2023

Electronics 1 (CEE 201)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Electronics 1		
Course Code	CEE 201		
Year/Level	Level 2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	3	2	-

2- Course Aims:

No.	Aims
2	Apply analytic critical and systemic thinking to discover, analyze, and solve a wide range of engineering problems.
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.

3- Competencies (LO'S):

Competency	Learning Outcomes (LO'S)
B2	1: Assess and evaluate the characteristics and performance of components, systems and processes.

C2	1: Select appropriate solutions for engineering problems based on analytical thinking.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	SEMICONDUCTOR BASICS: (doping n type and p type materials, pn junction, depletion region, barrier potentials)	9	4	-
2	SEMICONDUCTOR DIODE: (pn junction diode, current equations, diffusion and drift current densities, forward and reverse bias characteristics, switching characteristics)	12	8	-
3	SPECIAL SEMICONDUCTOR DIODE: (Schottky barrier diode, Zener diode, Varactor diode, Tunnel diode, LASER diode, LED, LCD, Photo transistor and solar cell).	9	4	-
4	BIPOLAR JUNCTION: (PNP-NPN junctions, Early effect, current equations, input and output characteristics of CE, CB and CC)	12	8	-
5	FIELD EFFECT TRANSISTORS: (JFETs, drain and transfer characteristics, current equations, pinch-off voltage and its significance, MOSFET characteristics, threshold voltage, channel length modulation, D-MOSFET, E- MOSFET, current equations, equivalent circuit model and its parameters).	6	4	-
Total		48	28	-

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	SEMICONDUCTOR BASICS: (doping n type and p type materials, pn junction, depletion region, barrier potentials)	X	X												
2	SEMICONDUCTOR DIODE: (pn junction diode, current equations, diffusion and drift current densities, forward and reverse bias characteristics, switching characteristics)	X	X												
3	SPECIAL SEMICONDUCTOR DIODE: (Schottky barrier diode, Zener diode, Varactor	X	X												



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	diode, Tunnel diode, LASER diode, LED, LCD, Photo transistor and solar cell).														
4	BIPOLAR JUNCTION: (PNP-NPN junctions, Early effect, current equations, input and output characteristics of CE, CB and CC)	X	X												
5	FIELD EFFECT TRANSISTORS: (JFETs, drain and transfer characteristics, current equations, pinch-off voltage and its significance, MOSFET characteristics, threshold voltage, channel length modulation, D-MOSFET, E-MOSFET, current equations, equivalent circuit model and its parameters).	X	X												

6. Teaching and Learning Methods of Disable Students:



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6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Los
1	Periodic exam	B2(1),C2(1)
2	Student load	B2(1),C2(1)
3	Final term examination	B2(1),C2(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:



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No.	Reference List
1	Adel Sedra, Smith, " Microelectronic Circuits ", seven Edition Oxford, New york, 2019
2	Thomas L. Floyd, " Electronic devices ", Ninth Edition, Prentice Hall Boston Columbus Indianapolis New York San Francisco, 2018
3	Adel, Sedra " Microelectronic devices and Circuits", Ninth Edition, Boston Columbus Indianapolis New York San Francisco, 2020

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	SEMIC ONDUCTOR BASICS : (doping n type and p type materials , pn junction, depletion region, barrier potential s)	2 , 1 1	X																	



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2	SEMICONDUCTOR DIODE: (pn junction diode, current equations, diffusion and drift current densities, forward and reverse bias characteristics, switching characteristics)	2, 1, 1	X																
3	SPECIAL SEMICONDUCTOR DIODE: (Schottky barrier diode, Zener diode, Varactor diode,	2, 1, 1	X																



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	Tunnel diode, LASER diode, LED, LCD, Photo transistor and solar cell).																			
4	BIPOLAR JUNCTION: (PNP-NPN junctions , Early effect, current equations, input and output characteristics of CE, CB and CC)	2 , 1 1	X																	
5	FIELD EFFECT TRANSISTORS : (JFETs, drain and transfer	2 , 1 1	X																	



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characteristics, current equations, pinch-off voltage and its significance, MOSFET characteristics, threshold voltage, channel length modulation, D-MOSFET, E-MOSFET, current equations, equivalent circuit model and its parameters).																				

Course Coordinator: Dr. Ahmed Kabeel

Head of Department: Prof. Mohamed Fouad

Date of Approval: 2023

Computer Programming

(ENG 201)

1- Basic Information:

Program Title	Communication and Electronics Engineering program		
Department Offering the Program	Communication and Electronics Engineering Department		
Department Responsible for the Course	Basic science and Engineering Department		
Course Title	Computer Programming		
Course Code	ENG 201		
Year/Level	Level2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
		-	2

2- Course Aims:

No.	Aims
2	Apply analytic critical and systemic thinking to identify, diagnose and solve engineering problems with a wide range of complexity and variation;

3- Cometencies (LO'S):

Cometency	Cometencies (LO'S)
A1	1. Applying engineering basics that are relevant to the computer programing (java) 2. Solve engineering problems by applying different engineering algorithms . 3. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals.
A2	1 Describe & Design an appropriate system by applying “ java “ language programming. 2. Analyze and interpret data problems to identify java programs 3. Choose relevant computer-based software for modelling and analysis java programs

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Lecture: Basic concepts of programming. Practical: problem analysis& Developing the	2	-	2



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	programs charts& Structured programming			
2	Lecture: Introduction Java Applications Practical: Form of the Program& fundamentals of Java programming language and its syntax& Primitive data types, operators, variables & Joptionpane& scanner Classes.	4	-	4
3	Lecture: Branching [Control Statements]. Practical: programs about (If statement, If -Else, Nested IF, Switch)	2	-	2
4	Lecture: [Iterations] Control Statements. Practical: solved problems about (Repetition statements: for, while, do-while& Nested loop &Continue, Break.)	4	-	4
5	Lecture: Concepts of object-Oriented programming Practical: Examples of Classes, Inheritance Concept.	2	-	2
6	Lecture: Methods in java. Practical: problems of (Declare method& Message passing& Method overloading)	2	-	2
7	Lecture: Arrays and Array list Practical: Create Array& Matrix& Array List.	4	-	4
8	Lecture: Introduction to java Applets. Practical: java Applets programs.	4	-	4
9	Lecture: Graphical user interface (GUI). Practical: GUI exercises.	4	-	4
Total		28	-	28

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Basic concepts of programming. Practical: problem analysis & Developing the programs charts& Structured programming	X	X	X			X		X			X		X	X
2	Introduction Java Applications Practical: Form of the Program& fundamentals of Java programming language and its syntax& Primitive data types, operators, variables&	X	X	X			X		X			X		X	X



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	Joptionpane& scanner Classes.														
3	Branching [Control Statements]. Practical: programs about (If statement, If - Else, Nested IF, Switch)	X	X	X			X		X			X		X	X
4	[Iterations] Control Statements. Practical: solved problems about (Repetition statements: for, while, do-while& Nested loop &Continue, Break.)	X	X	X			X		X			X		X	X
5	Concepts of object- Oriented programming Practical: Examples of Classes, Inheritance Concept.	X	X	X			X		X			X		X	X



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6	Methods in java. Practical: problems of (Declare method& Message passing& Method overloading)	X	X	X			X		X			X		X	X
7	Arrays and Array list Practical: Create Array& Matrix& Array List.	X	X	X			X		X			X		X	X
8	Introduction to java Applets. Practical: java Applets programs.	X	X	X			X		X			X		X	X
9	Graphical user interface (GUI). Practical: GUI exercises.	X	X	X			X		X			X		X	X

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students

- Assign a portion of the office hours for those students.
- Give them specific tasks.
- Repeat the explanation of some of the material and tutorials.



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	- Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation methods:

No.	Evaluation Method	LO's
1	Periodic exam	A1(1,2)
2	Student load (report, quizzes)	A1(3),A2(1,2)
3	Final term examination	A1(1,2,3),A2(1,2)
4	Practical	A2(3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	E Balagurusamy, "Programming with Java," McGraw-Hill Education · 2019
2	Andreas Göransson, Eric Foster-Johnson, David Cuartielles, " The Java Workshop: Learn object-oriented programming: , Packt Publishing Ltd, 2019
3	Raymond Gallardo, Sharon Zakhour, et al, "Th,e Java Tutorials", Addison-Wesley Professional, 7 editions,2018
4	David J. Eck, "Introduction to Programming Using JAVA",2017
5	Patrick Niemeyer, Daniel Leuck", Learning Java, 4th Edition", O'Reilly Media; 5



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	edition (July 2, 2020)

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture Classrooms with Sound Systems.
2	Computer Laboratories
3	
4	White board
5	Data show system
6	Wire and Wireless Internet Connections
7	Moodle

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Basic concepts of programming. Practical: problem analysis & Developing the programs charts & Structured programming	2	X				X															
2	Introduction Java	2	X				X															



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3	5Applications Practical: Form of the Program & fundamentals of Java programming language and its syntax & Primitive data types, operators, variables & Joptionpane & scanner Classes.																			
	Branching [Control Statements]. Practical: programs about (If statement, If -	2	X				X													



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	Else, Nested IF, Switch)																					
4	[Iterations] Control Statemen ts. Practica l: solved problems about (Repetiti on statemen ts: for, while, do- while& Nested loop &Contin ue, Break.)	2	X				X															
5	Concepts of object- Oriented program ming Practica l: Example s of Classes, Inheritan	2	X				X															



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	ce Concept.																				
6	Methods in java. Practica l: problems of (Declare method& Message passing& Method overloadi ng)	2	X				X														
7	Arrays and Array list Practica l: Create Array& Matrix& Array List.	2	X				X														
8	Introduct ion to java Applets. Practica l: java Applets programs .	2	X				X														
9	Graphica l user interface	2	X				X														

(GUI). Practica I: GUI exercises																				

Course Coordinator: Dr. Amira Elsonbaty
Head of Department: Prof. Mohamed Fouad
Date of Approval: 2023

Engineering Thermodynamics (ENG 202)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Engineering Thermodynamics		
Course Code	ENG 202		
Year/Level	level 2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	ENG 102		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
1	Master a broad range of engineering thermodynamics knowledge and specialized skills, as well as the ability to apply acquired knowledge in real-world situations by applying thermodynamics laws to identify, diagnose, and solve engineering problems of varying complexity and variation.

3- Competencies Learning Outcomes (LO'S)

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science	1. Demonstrate the thermodynamics laws that apply to the engineering problems.



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and mathematics.	2. Explain the basic principles of engineering thermodynamics. 3. Study the concepts and theories of mathematical, science necessary for engineering thermodynamic properties for different types of systems. 4. Select the appropriate solutions for engineering problems and system design, gas power cycles, vapor cycles. 5. Using scientific concepts and thermodynamics laws that are relevant to the real life. 6. Modify engineering knowledge and understanding to improve design, products and services, gas power cycles, vapor cycles. 7. Solve complex engineering problems by applying the concepts and the thermodynamics laws.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Fundamental concepts - Properties of a pure substance	2	2	-
2	Equation of state - thermodynamic systems - Work and heat	2	2	-
3	First law of thermodynamics; Applications to Systems and Control Volumes	6	6	-
4	Second Law of Thermodynamics; Principle of Carnot cycles	4	4	-
5	Heat engines, Refrigerators and heat pumps - Principle of the increase of entropy	4	4	-
6	Applications to systems and control volumes - Irreversibility and availability	6	6	-
7	Power and refrigeration cycles	4	4	-



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No.	Topics	Lectures	Tutorial	Practical
	Total	28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Fundamental concepts - Properties of a pure substance	X	X			X									
2	Equation of state - thermodynamic systems - Work and heat	X	X			X	X								
3	First law of thermodynamics ; Applications to Systems and Control Volumes	X	X			X	X								
4	Second Law of Thermodynamic s; Principle of Carnot cycles	X	X			X	X								
5	Heat engines, Refrigerators and heat pumps - Principle of the	X	X			X									



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	increase of entropy														
6	Applications to systems and control volumes - Irreversibility and availability	X	X			X									
7	Power and refrigeration cycles	X	X			X									

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	1,2,3
2	Student load (quizzes, sheets, report)	A1	4,5
3	Final term examination	A1	6,7

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th



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7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	P. K. Nag "Engineering Thermodynamics 6th Edition" McGraw Hill Education; Sixth edition (2017).
2	Michael J. Moran, Howard N. Shapiro, Daisie D. Boettner, Margaret B. Bailey "Fundamentals of Engineering Thermodynamics" 9th edition Wiley (2018)

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Fundamental concepts - Properties of a pure substance	1	X																	



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2	Equation of state - thermodynamic systems - Work and heat	1	X																	
3	First law of thermodynamics; Applications to Systems and Control Volumes	1	X																	
4	Second Law of Thermodynamics; Principle of Carnot cycles	1	X																	
5	Heat engines, Refrigerators and heat pumps - Principle of the increase of entropy	1	X																	



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6	Applications to systems and control volumes - Irreversibility and availability	1	X																	
7	Power and refrigeration cycles	1	X																	

Course Coordinator: Prof. Abdelnaby Kabeel

Head of Department: Asso.prof.Amal Behiry

Date of Approval: 2023

Electrical Engineering Fundamentals (ENG 204)

1- Basic Information:

Program Title	Communication and Electronics Engineering program
Department Offering the Program	Communication and Electronics Engineering Department
Department Responsible for the Course	Basic Science and Engineering Department
Course Title	Electrical Engineering Fundamentals
Course Code	ENG 204
Year/Level	Level 2
Specialization	Major

Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	3	2	-

2- Course Aims:

No.	Aims
2	Apply analytic critical and systemic thinking to discover, analyze, and solve a wide range of electrical engineering problems;
7	Proper utilization of modern electrical engineering techniques, skills, and tools
11	Computer systems in Electrical, Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.

3. Cometencies (LO'S):

Cometency	Learning Outcomes (LO'S)
A1.	1 Identify the mathematical principles and theories that are relevant to the electrical circuit. 2 Solve engineering problems by applying mathematics and science concepts and theories appropriate to the discipline to identify, formulate and solve complex electrical engineering problems. 3 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals electrical
A2	1. Analyze and interpret dat
B1.	1. Describe principles of design including elements design, process and/or a system related to specific disciplines 2. Recognize methodologies of solving engineering problems 3. Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.



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4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Direct Current	3	2	-
2	Theory of electric circuits	8	6	-
3	Delta and Star connections	2	1	-
4	Sine A.C and D.C circuits	8	5	-
5	Time vectors diagram	3	2	-
6	Electric power and power factor in A.C circuits	3	2	-
7	3-Phase current - Electric machines - D.C machines	6	4	-
8	Transformers	3	2	-
9	Induction and synchronous machines	3	2	-
10	Fractional power machine	3	2	-
Total		42	28	-

5. Teaching and learning methods:

Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
Direct Current	X				X		X		X	X				
Theory of electric circuits	X				X		X		X	X				
Delta and Star connections	X				X		X		X	X				



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Sine A.C and D.C circuits	X				X		X		X	X				
Time vectors diagram	X				X		X		X	X				
Electric power and power factor in A.C circuits	X				X		X		X	X				
3-Phase current - Electric machines - D.C machines	X				X		X		X	X				
Transformers	X				X		X		X	X				
Induction and synchronous machines	X								X	X				
Fractional power machine	X								X	X				
Direct Current	X								X	X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the



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	internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	A ₁ (1-2-3), A ₂ (3)
2	Student load (quizzes, sheets, report)	A ₂ (1)
3	Final term examination	A ₂ (1). B ₁ (1,2,3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Fundamentals of electric circuits alexander sadiku 4th edition.2019.
2	Fundamentals of Electrical Circuit Analysis, March 2018

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system



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10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Direct Current	2, 7, 11	X	X									X									
2	Theory of electric circuits	2, 7, 11	X	X									X									
3	Delta and Star connections	2, 7, 11	X	X									X									
4	Sine A.C and D.C circuits	2, 7, 11	X	X									X									
5	Time vectors diagram	2, 7, 11	X	X									X									



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		1																				
6	Electric power and power factor in A.C circuits	2, 7, 11	X	X								X										
7	3-Phase current - Electric machines - D.C machines	2, 7, 11	X	X								X										
8	Transformers	2, 7, 11	X	X								X										
9	Induction and synchronous machines	2, 7, 11	X	X								X										
10	Fractional power machine	2, 7, 11	X	X								X										

Course Coordinator: Dr Rabab Reda
Head of Department: prof. Mohamed Fouad
Date of Approval: 2023

Technical English Language 2 (LNG201)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Technical English Language 2		
Course Code	LNG201		
Year/Level	level 2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	LNG101		
Teaching hours	Lectures	Tutorial	Practical
	1	-	2

2- Course Aims:

No.	Aims
5	Communicate effectively with a variety of audiences using a variety of forms, methods, and languages; cope with academic and professional issues in a critical and creative manner; and display leadership, business administration, and entrepreneurial abilities.

3- Competencies :

Competencies	Learning Outcomes (LO'S)
A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	1. Communicate effectively. 2. Demonstrate efficient IT capabilities.
A10. Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	1. Search for information to engage in lifelong self-learning discipline.



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	2. Professionally merge the language skills in self learning

4. Course Contents:

No	Content	Lecture	Tutorial	Practical
1	Water Lab skills in English : Lesson 1 Bob drives a hard bargain& Lesson 2 Bob's big coolie order& grammar topics	2	-	4
2	Chemical and physical properties. Lab skills in English Lesson 3 Amber comes over to bake cookies & Lesson 4Amber and Ted heat up the kitchen& grammar topics	2	-	4
3	Water cycle Lab skills in English lesson 5 Nicole practices her election speech& grammar topics	1	-	2
4	Human uses Lab skills in English : Grammar topics	2	-	4
5	Heat transfer Lab skills in English lesson 6 Bob brings the cookies to the village market& lesson 7 Carol tells Bob the good news& grammar topics	2	-	4
6	Graphic language Lab skills in English : lesson 8 Every one bakes cookies & lesson 9 Nicole's close election & grammar topics	2	-	4
7	Energy Lab Skills in English lesson 10 Bob gets any angry call from Carol & Grammar topics	2	-	4
8	Automatic Control Lab Skills in English Grammar topics	1		2
Total		14	-	28

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Water Lab skills in English : Lesson 1 Bob drives a hard bargain & Lesson 2 Bob's big coolie order & grammar topics	X	X		X										X
2	Chemical and physical properties. Lab skills in English Lesson 3 Amber comes over to bake cookies & Lesson 4 Amber and Ted heat up the kitchen & grammar topics	X	X		X										X



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3	Water cycle Lab skills in English lesson 5 Nicole practices her election speech & grammar topics	X	X												X
4	Human uses Lab skills in English : Grammar topics	X	X												X
5	Heat transfer Lab skills in English lesson 6 Bob brings the cookies to the village market & lesson 7 Carol tells Bob the good news & grammar topics	X	X												X
6	Graphic language Lab skills in English : lesson 8 Every one bakes cookies & lesson 9	X	X												X



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	Nicole's close election & grammar topics														
7	Energy Lab Skills in English lesson 10 Bob gets any angry call from Carol & Grammar topics	X	X												X
8	Automatic Control Lab Skills in English Grammar topics	X	X												X

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:



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7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A8,A10	A8(1,2,),A10(1,2)
2	Student load (quizzes, sheets, report)	A8	A8(1,2,),A10(1,2)
3	Practical exam	A8,A10	A8(1,2,),A10(1,2)
4	Final term examination	A10	1,2

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	David Bonamy "Technical English" Longman Publishing Group 2018
2	Paul J. Hamel "English for Better Jobs 1: Language for Working and Living" Create Space Independent Publishing Platform; 2 nd st edition (2020)
3	Mahmood Reza Atai, Alireza Zaré Alanagh, Morteza Nasiri and Reza Taherkhani "English for The Students of Engineering" 2nd edition, SAMT Publication (2019).

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	Computer lab.
3	Seminar
4	White board
5	Data Show system



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10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Water Lab skills in English : Lesson 1 Bob drives a hard bargain & Lesson 2 Bob's big coolie order & grammar topics	5								X		X										
2	Chemical and physical properties. Lab skills in English Lesson 3 Amber comes over to bake cookies	5								X		X										



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	& Lesson 4Amber and Ted heat up the kitchen & grammar topics																					
3	Water cycle Lab skills in English lesson 5 Nicole practices her election speech & grammar topics	5							X		X											
4	Human uses Lab skills in English : Grammar topics	5							X		X											
5	Heat transfer Lab skills in English lesson 6 Bob	5							X		X											

160

	any angry call from Carol & Grammar r topics																			
8	Automati c Control Lab Skills in English Grammar r topics	5							X		X									

Course Coordinator: Mr. Doaa Elsherbeny

Head of Department: Asso.prof.Amal Behery

Date of Approval: 2023

Mathematics4 (MTH202)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Mathematics 4		
Course Code	MTH 202		
Year/Level	Level: 2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	MTH 101		
Teaching hours	Lectures	Tutorial	Practical

	2	2	-

2- Course Aims:

No.	Aims
1	Master a broad range of fundamental Mathematical engineering knowledge and specialized skills of Complex Analysis and Special functions, as well as the ability to apply acquired knowledge of Complex Analysis and Special functions in real-world situations as Heat equation and Wave equation by applying theories and abstract thinking in analytic critical and systemic thinking to identify, diagnose, and solve mathematical engineering problems as by using complex series and Fourier series .

3- Competencies Learning Outcomes (LO'S)

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1. Learn the general principles of differential equations and series and it's applications in mathematical engineering. 2. Describe the effect of mathematical engineering principles and theories that apply in the most fundamental problems. 3. Define the basic concepts of series and analytic functions. 4. Use the basics of Complex Analysis and Special functions to solve engineering problems. 5. Apply the methods of solving partial differential equations to generate solutions for heating and wave equations.

4. Course Contents:

No.	Topics	Lecture	Tutorial	Practical
1	Special functions – Fourier series	4	4	-
2	periodic functions and Euler's laws	2	2	-
3	Fourier's integrations	4	4	-
4	solutions of the differential equations by series	2	2	-
5	solving the partial differential equations using variables separation	2	2	-
6	Functions with complex variables	2	2	-
7	complex quantities algebra	2	2	-
8	multiple values functions	2	2	-
9	the analytical functions and Koshi's theorem	2	2	-
10	the complex series and Taylor and Lorant series	2	2	-



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11	the zeros, unique points and the rest	2	2	-
12	the infinite series	2	2	-
Total		28	28	-

5. Teaching and learning methods:

N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Special functions Fourier series	x	x			X	x	X							
2	periodic functions and Euler's laws	x	x			x	x	X							
3	Fourier's integrations	x	x			X	x	X							
4	solutions of the differential equations by series	x	x			X	x	X							
5	solving the partial differential equations using variables separation	x	x			X	x	X							
6	Functions with complex variables	x	x			X	x	X							



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7	complex quantities algebra	x	x			X	x	X							
8	multiple values functions	x	x			X	x	X							
9	the analytical functions and Koshi's theorem	x	x			X	x	X							
10	the complex series and Taylor and Laurant series	x	x			X	x	X							
11	the zeros, unique points and the rest	x	x			X	x	X							
12	the infinite series	x	x			X	x	X							

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:



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7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	1,2,3,4
2	Student load (quizzes, sheets, report)	A1	1,5
3	Final term examination	A1	3,4,5

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Brett Borden and James Luscombe "Fourier series and integrals" Morgan & Claypool Publishers (2017).
2	Chris McMullen "Essential Calculus Skills Practice Workbook with Full Solutions" Zishka Publishing (2018).

9. Facilities required for teaching and learning:

Facility	
1	Lecture classroom
2	Seminar
3	White board
4	Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Competencies



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			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Special functions Fourier series	1	X																			
2	periodic functions and Euler's laws	1	X																			
3	Fourier's integrations	1	X																			
4	solutions of the differential equations by series	1	X																			
5	solving the partial differential equations using variables separation	1	X																			
6	Functions with complex variables	1	X																			



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7	complex quantities algebra	1	X																	
8	multiple values functions	1	X																	
9	the analytical functions and Koshi's theorem	1	X																	
10	the complex series and Taylor and Lorant series																			
11	the zeros, unique points and the rest																			
12	the infinite series																			

Course Coordinator: Dr .Reda Abdo

Head of Department: Asso.prof.Amal Behiry

Date of Approval: 2023



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Electronics and Electrical Measurements (CEE 202)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department
Department Responsible for the Course	Communications and Electronics Engineering Department
Course Title	Electronics and Electrical Measurements
Course Code	CEE 202
Year/Level	Level 2
Specialization	Major
Authorization Date of Course Specification	2023
Prerequisite	-

Teaching hours	Lectures	Tutorial	Practical
	3	2	-

2- Course Aims:

No.	Aims
4	Work as part of and manage a diverse team of professionals from various engineering specializations, taking responsibility for individual and team

	performance

3- Cometencies (LO'S):

Cometencies Learning Outcomes (LO'S)	
B2.	1. Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.
B3.	1. Design and implement: elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.
B4.	1. Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application.
C1.	1. Recognize, explain, analyze, and describe computer elements, computer systems , information technology aspects systems, and Use methodologies of software planning

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Definitions Functions and properties of the measurement equipment's	3	2	-
2	standard measurements and The statistical analysis for the error in the measurement.	6	4	-
3	Waves indicator-signals generator	6	4	-
4	Recording and measurements equipments	6	4	-
5	Digital measuring equipments	9	6	-
6	Energy converters	6	4	-
7	Data transfer systems from digital to numerical and Testing systems with computer control.	6	4	-
Total		42	28	-

5. Teaching and learning methods:



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N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Definitions Functions and properties of the measurement equipment's	X	X				X								X
2	standard measurement s and The statistical analysis for the error in the measurement.	X	X				X								X
3	Waves indicator- signals generator	X	X												X
4	Recording and measurement s equipments	X	X												X
5	Digital measuring equipments	X	X												X



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6	Energy converters	X	X												X
7	Data transfer systems from digital to numerical and Testing systems with computer control.	X	X												X

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7. 1 Student Evaluation methods:

No.	Evaluation Method	Competencies
1	Midterm examination	B2(1)
2	Semester work(quizzes, sheets, report)	B2(1), B3(1)
3	Final term examination	B2(1), B3(1), B4(1), C1(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th



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2	Semester work	7 th - 9 th
3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Thomas L. Floyd, "Electronic devices ", Ninth Edition, Prentice Hall Boston Columbus Indianapolis New York San Francisco, 2020.
2	ELECTRONIC INSTRUMENTATION AND MEASUREMENTS BY DAVID A. BELL 2019.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Function s and propertie s of the	7												X	X	X		X		



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	measure ment equipme nt's																					
2	Standard measure ments and The statistical analysis for the error in the measure ment.	7												X	X	X		X				
3	Waves indicator -signals generator	7												X	X	X		X				
4	Recordin g and measure ments equipme nts	7												X	X	X		X				
5	Digital measurin g equipme nts	7												X	X	X		X				
6	Energy converter s	7												X	X	X		X				
7	Data transfer systems from	7												X	X	X		X				



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digital to numerical and Testing systems with computer control.																				

Course Coordinator: Dr. Rabab Reda

Head of Department: Prof. Mohamed Foad

Date of Approval: 2023

Electronics Tests 1 (CEE 203)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Electronics Tests 1		
Course Code	CEE 203		
Year/Level	Level 2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 201		
Teaching hours	Lectures	Tutorial	Practical
	2	-	2

2- Course Aims:

No.	Aims



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7	Proper utilization of modern engineering techniques, skills, and tools. to Achieving the basic laws and theories of the electrical engineering, the properties of electronic components in practice ,studying, designing and implementing applications to use those components and test those with appropriate laboratory equipment.
13	Allocate projects creatively by analyzing data from intended tests and using cad tools to optimize the intended design

3- COMETENCIES Learning Outcomes (LOs) :

Competency	Learning Outcomes (LOs)
A2	1. 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.
B5	1. Adopt suitable national and international standards and codes to: design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems, and services.
C2	1. Understand basic physical phenomena about state-of-the-art components and systems and the limitations of the performance of components and systems in communications and electronics and engineering.
C4	1. Demonstrate the knowledge about measurement equipment and demonstrate the ability to use them to characterize components and systems in communication and electronics engineering.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Introduce and use laboratory tools and equipment.	2		2
2	Basic electrical circuit and component. - Practical: a. introduction lab safety and tools, b. DC sources and materring c. resistor color codes)	4	-	4
3	Measurements of voltages and current. - Practical: a. Ohm's law b. series and parallel circuits)	2	-	2



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4	Resistance and DC circuit theories - Practical: a. voltage divider. b. super position theorem. c. Thevenin's theorem. d. maximum power transfer theorem.	6	-	6
5	Capacitance and inductance. - Practical: a. Capacitance in DC circuit. b. DC block capacitor. c. low pass filter.	4	-	4
6	Diode operation and voltage characteristic - Practical:	4		4
7	Diode applications - Practical: a. half wave-full wave rectifier. b. clipper and clamper . c. DC power supply	6		6
Total		28		28

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Introduce and use laboratory tools and equipment.	X			X				X						X



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2	Basic electrical circuit and component. - Practical: a. introduction lab safety and tools, b. DC sources and matering c. resistor color codes)	X			X				X						X
3	Measurement s of voltages and current. - Practical: a. Ohm's law b. series and parallel circuits)	X							X						X
4	Resistance and DC circuit theories - Practical: a. voltage divider. b.super position theorem. c. Thevenin's theorem. d. maximum power transfer theorem.	X							X						X



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5	Capacitance and inductance. - Practical: a. Capacitance in DC circuit. b. DC block capacitor. c. low pass filter.	X							X						X
6	Diode operation and voltage characteristic - Practical: a. Diode curves.	X							X						X
7	Diode applications - Practical: a. half wave-full wave rectifier. b. clipper and clamper . c. DC power supply	X							X						X

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments



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6.2. Teaching and learning method for low capacity and outstanding Student	
For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7. 1 Student Evaluation methods:		
No.	Evaluation Method	Competencies
1	Midterm examination	A2(1)
2	Semester work(quizzes, sheets, report)	A2(1), B5(1)
3	Final term examination	A2(1), B5(1), C2(1), C4(1)
7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Fundamentals of Electric Circuits , by Charles k Alexander , Matthew N.O. Sadiku,McGraw hill 5th edition 2023
2	Wasef Naem, Concepts in Electric Circuits, McGraw hill, 3rd, 2018.



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3	Thomas L. Floyd, Electronic devices, electron flow version. Prentice Hall, 12 th ,2020
4	Robert L. Boylestad , Electronic Devices and Circuit Theory: International Edition, Springer, 12th ,2019
5	Maurizio Di Paolo Emilio , Microelectronics: From Fundamentals to Applied Design, , Springer;2nd ed. 2019 Edition

9. Facilities required for teaching and learning:

No.	Facility
1	Classroom
2	Computer and video data show
3	Lab
4	White board
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Introduce and use laboratory tools and equipment.	7		X														X		X
2	Basic electrical circuit and component.	7, 13		X														X		X



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	Practical: a. introduction lab safety and tools, b. DC sources and matering c. resistor color codes)																			
3	Measure ments of voltages and current. - Practical: a. Ohm's law b. series and parallel circuits)	1 3	X													X		X		
4	Measure ments of voltages and current. - Practical: a. Ohm's law	1 3	X													X		X		



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	b. series and parallel circuits)																			
5	Capacitance and inductance. - Practical: a. Capacitance in DC circuit. b. DC block capacitor . c. low pass filter.	1 3		X													X		X	
6	Resistance and DC circuit theory - Practical: a. voltage divider. b. super position theorem. c. Thevenin	1 3																		



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	's theorem. d. maximum power transfer theorem.																			
7	Diode applications - Practical: a. half wave- full wave rectifier. b. clipper and clamper . c. DC power supply	7 , 1 3		X															X	

Course Coordinator: Dr. Hossam Abdelfatah

Head of Department: Prof.Mohamed Fouad

Date of Approval: 2023

Electronics 2 (CEE 204)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department
Department Responsible for the	Communications and Electronics



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Course	Engineering Department		
Course Title	Electronics 2		
Course Code	CEE 204		
Year/Level	Level 2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	3	2	-

2- Course Aims:

No.	Aims
2	Apply analytic critical and systemic thinking to discover, analyze, and solve a wide range of engineering problems.
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.

3- Competencies Learning Outcomes (LOs):

Competency	Learning Outcomes (LO'S)
B2	1: Assess and evaluate the characteristics and performance of components, systems and processes.
C2	1: Select appropriate solutions for engineering problems based on analytical thinking.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	The characteristics and processing of (JFET & MOSFET): (The effect of the surfaces, effect of the narrow canal, different types for MOS, feeding circuits of FET)	12	8	-
2	Digital and analog applications of FET: (single circuits industry, elements of the mobile charge, the integrated circuits with high numbers, the testing of a correlation and assembling of the integrated circuits)	12	8	-
3	The basic regular circuits (The	9	4	-



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	transistors): (nourishing an organizer, the resort the volt, PNP valve)			
4	Design of power circuits	6	4	-
5	THYRISTOR applications: (two directions equipment, the cell of the semi-conductive and its related equipment)	9	4	-
Total		48	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation.



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Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LOs
1	Periodic exam	B2(1),C2(1)
2	Student load	B2(1),C2(1)
3	Final term examination	B2(1),C2(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Thomas L. Floyd, "Electronic devices ", tenth Edition, Prentice Hall Boston Columbus Indianapolis New York San Francisco, 2023.
2	Adel, Sedra" Microelectronic devices and Circuits", tenth Edition, Boston Columbus Indianapolis New York San Francisco, 2018.
3	ROBERT B. L. NASHELSKY, "Electronic devices and Circuit Theory ", Ninth Edition Pearson Education, Inc., Upper Saddle River, New Jersey 07458. Pearson Prentice Hall, 2020.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board



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4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of knowledge and skills of the course:

No.	Topic	Aims	B2	C2
1		2	x	X
2		2,11	x	X
3		2	x	X
4		2,11	x	X
5		2,11	x	X

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	The characteristics and processing of (JFET & MOSFET): (The effect of the surfaces, effect of the narrow	2											X					X				



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	canal, different types for MOS, feeding circuits of FET)																			
2	Digital and analog applicati ons of FET: (single circuits industry, elements of the mobile charge, the integrate d circuits with high numbers, the testing of a correlati on and assembli ng of the integrate d circuits)	2										X						X		



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3	The basic regular circuits (The transistors): (nourishing an organizer, the resort the volt, PNPN valve)	2												X						X				
4	Design of power circuits	2												X						X				
5	THYRISTOR applications: (two directions equipment, the cell of the semi-conductive and its related equipment)	2												X						X				

Course Coordinator: Dr. Ahmed Kabeel

Head of Department: Prof. Mohamed Foad

Date of Approval: 2023

Introductions to Information Technology (ENG 206)

1- Basic Information:

Program Title	Communication and electronics Engineering program		
Department Offering the Program	Communication and electronics Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Introductions to Information Technology		
Course Code	ENG 206- Semester2		
Year/Level	Level 2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	-	2

2- Course Aims:

No.	Aims
7	Use the techniques, skills, and appropriate engineering tools, necessary for engineering practice web design project ,

3- Learning Outcomes (LO'S):

A ₄	1. List the engineering-related business and management principles, websites 2. Define contemporary websites technologies and their applications in relation to engineering field 3. Utilize modern technologies, programs, applications related by websites 4. Search for information and engage in life-long self-learning .
A ₈	1. Communicate effectively.



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	2. Demonstrate efficient IT capabilities.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Lecture: Introduction to information systems & information technology Practical: Introduction of html	2	-	2
2	Lecture: information systems & information technology (Fields- Applications -Examples) Practical: html structure code	2	-	2
3	Lecture: Computer systems Practical: Font Tags	2	-	2
4	Lecture: Hardware used in information systems Practical: Font Tags	2	-	2
5	Lecture: Software used in information systems Practical: paragraph tags	2	-	2
6	Lecture: Introduction of data communication system Practical: order lists	2	-	2
7	Lecture: Introduction of Computer Networking Practical: unordered lists	2	-	2
8-9	Lecture: The internet; the foundations, Resources and uses of the internet, Practical: Image tag	4	-	4
10	Lecture: Privacy Security and Ethics Practical: horizontal & vertical Rules	2	-	2
11	Lecture: Emphasizing practical skills for finding, Reading and authorizing materials Practical: Frames	2	-	2
12	Lecture: Introduction of Artificial Intelligence Practical: Tables	2	-	2
13	Lecture: introduction of cloud computing Practical: Hyper Links	2	-	2
14	Lecture: Html Projects	2	-	2
Total		28	-	28

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Lecture: Introduction to information systems & information technology Practical: Introduction of html	X	X		X		X		X			X		X	X
2	Lecture: information systems & information technology (Fields-Applications - Examples) Practical: html structure code	X	X		X		X		X			X		X	X
3	Lecture: Computer systems Practical: Font Tags	X	X		X		X		X			X		X	X



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4	Lecture: Hardware used in information systems Practical: Font Tags	X	X		X		X		X			X		X	X
5	Lecture: Software used in information systems Practical: paragraph tags	X	X		X		X		X			X		X	X
6	Lecture: Introduction of data communication system Practical: order lists	X	X		X		X		X			X		X	X
7	Lecture: Introduction of Computer Networking Practical: unordered lists	X	X		X		X		X			X		X	X
8- 9	Lecture: The internet; the foundations, Resources and uses of the internet, Practical: Image tag	X	X		X		X		X			X		X	X



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10	Lecture: Privacy Security and Ethics Practical: horizontal &vertical Rules	X	X		X		X		X			X		X	X
11	Lecture: Emphasizing practical skills for finding, Reading and authorizing materials Practical: Frames	X	X		X		X		X			X		X	X
12	Lecture: Introduction of Artificial Intelligence Practical: Tables	X	X		X		X		X			X		X	X
13	Lecture: introduction of cloud computing Practical: Hyper Links	X	X		X		X		X			X		X	X
14	Lecture: Html Projects	X	X		X		X		X			X		X	X



6. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials

6.2. Teaching and learning method for low capacity and outstanding Student

7. Student Evaluation:

7.1 Student Evaluation method:

7.2 Evaluation Schedule:

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2	Semester work	7 th - 9 th
3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference list
1	Information technology : theory and practice sinha, pradeep k. sinha, pritii,2018
2	information technology law, ian j. Lloyd ·,2020

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	Computer lab.
4	White board
5	Data show system
6	Wireless internet
7	Sound system
8	Moodle

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Lecture: Introduct	7				X			X	X										



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	ion to informati on systems & informati on technolo gy Practica l: Introduct ion of html																			
2	Lecture: informati on systems & informati on technolo gy (Fields- Applicati ons - Example s) Practica l: html structure code	7				X			X	X										
3	Lecture: Compute r systems Practica l: Font	7				X			X	X										



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Tags																				
4	Lecture: Hardware used in information systems Practical: Font Tags	7				X			X	X										
5	Lecture: Software used in information systems Practical: paragraph tags	7				X			X	X										
6	Lecture: Introduction of data communication system Practical: order lists	7				X			X	X										
7	Lecture: Introduction of Computer Network	7				X			X	X										



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	ng Practica l: unorder lists																				
8 - 9	Lecture: The internet; the foundatio ns, Resource s and uses of the internet, Practica l: Image tag	7				X			X	X											
1 0	Lecture: Privacy Security and Ethics Practica l: horizonta l &vertical Rules	7				X			X	X											
1 1	Lecture: Emphasi zing practical skills for finding, Reading																				



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	and authorizing materials Practical: Frames																			
1 2	Lecture: Introduction of Artificial Intelligence Practical: Tables																			
1 3	Lecture: introduction of cloud computing Practical: Hyper Links																			
1 2	Lecture: Html Projects																			

Course Coordinator: Dr. Amira Elsonbaty

Head of Department: Prof. Mohamed Fouad

Date of Approval: 202

Technical Report Writing (ENG207)

1- Basic Information:



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Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Technical Report Writing		
Course Code	ENG207		
Year/Level	Level 2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	1	-	2

2- Course Aims:

No.	Aims
5	Communicate effectively with a variety of audiences using a variety of forms, methods, and languages; cope with academic and professional issues in a critical and creative manner; and display leadership, business administration, and entrepreneurial abilities.

3-Competencies :

Competencies	Learning Outcomes (LO'S)
A5. Practice research techniques and methods of investigation as an inherent part of learning.	1. Define technical language and report writing. 2. Write technical language and technical report writing through sequence steps (identify report section, present your report, cite reference and add figures and tables). 3. Assess different ideas, views, and knowledge from a range of sources. 4. Evaluate results of report models by analyzing percentage of plagiarism and rules of scientific report and rules of presentation. 5. Prepare technical reports 6. Search for information to engage in lifelong self-learning discipline.
A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	1. Communicate effectively. 2. Demonstrate efficient IT capabilities.



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4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Introduction to technical writing. ♦ Define a report, Types of reports, Aim ♦ Common concepts: clarity of Writing, Consistency ♦ Supporting Material ♦ Language rules (voice, tense) and Style	2	-	
2	Common components of a technical report ♦ Organization of report sections ♦ Sections function and content	2	-	
3	How to write a technical report ♦ Identify layout, Determine Audience ♦ Assign reference, add non text component ♦ Mechanics of report writing. ♦ Quantitative Writing	2	-	
4	Equations, Tables and Figures	1	-	
5	Literature citations	1	-	
6	Using word processing for Writing Report	1	-	8
7	Creating slides with presentation graphics programs	1	-	4
8	MS Excel Application and power view report command	2	-	8
9	Database Report using MS SQL	2	-	8
Total		14	-	28

5. Teaching and learning methods:



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N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Introduction to technical writing. ♦ Define a report, Types of reports, Aim ♦ Common concepts: clarity of Writing, Consistency ♦ Supporting Material ♦ Language rules (voice, tense) and Style	x	x		x	X									
2	Common components of a technical report ♦ Organization of report sections ♦ Sections function and content	x	x		x	X									
3	How to write a	x	x			X									



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	technical report ♦Identify layout, Determine Audience ♦Assign reference, add non text component ♦Mechanics of report writing. ♦Quantitative Writing														
4	Equations, Tables and Figures	x	x			X									
5	Literature citations	x	x			X									
6	Using word processing for Writing Report	x	x			x									
7	Creating slides with presentation graphics programs	x	x			x									
8	MS Excel Application and power view report command	x	x			x									
9	Database Report using MS SQL	x	x			X									



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6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A5	1,2
2	Student load (quizzes, sheets, report, presentation)	A5,A8	A5(3),A8(1,2)
3	Practical Examination	A5,A8	A5(3),A8(1,2)
4	Final term examination	A5,A8	A5(1,2,3,4),A8(1,2)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%



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8. List of References:

No.	Reference List
1	How to write technical report, 2018 by lutezhhering.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	Computer lab.
4	White board
5	Data show system
6	Wireless internet
7	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Introduction to technical writing	5					X			X												
2	Common components of a technical report	5					X			X												
3	How to write a technical report	5					X			X												
4	Equations, Tables and	5					X			X												



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	Figures																					
5	Literature citations	5					X			X												
6	Using word processing for Writing Report	5					X			X												
7	Creating slides with presentation graphics programs	5					X			X												
8	MS Excel Application and power view report command	5					X			X												
9	Database Report using MS SQL	5					X			X												

Course Coordinator: Dr / Hany Hashish. Dr/ Mohmed Elbandery

Head of Department: Asso.prof.Amal Beherry

Date of Approval: 2023

**Engineering Probability and Statistics
(MTH301)**

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Engineering Probability and Statistics		
Course Code	MTH301		
Year/Level	Level: 3		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
1	The ability to apply probability theories and hypothesis testing in analytic critical and systemic thinking to solve engineering problems of varying complexity and variation.
6	Analyze data from the intended tests to manage resources creatively

3- Competencies :

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1. Describe the relevant mathematical principles and theories in the discipline. 2. Explain the scientific principles and theories that apply to the topic. 3. Use math ideas and theories that are applicable to the field. 4. Applying engineering basics that are relevant to the subject. 5. Identify, formulate, and solve complex engineering problems by applying the concepts and the theories of sciences, appropriate to the



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	discipline.
A2. 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.	1. Applying statistical analyses and objective engineering judgment to draw conclusions.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Probability theory	4	4	-
2	Discrete and continuous probability distributions	6	6	-
3	Statistics in engineering	4	4	-
4	Descriptive Statistics Sampling distributions	2	2	-
5	Estimation and confidence intervals	4	4	-
6	Hypothesis testing	4	4	-
7	Simple regression	4	4	-
Total		28	28	

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Probability	x	x			x	X								



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	theory														
2	Discrete and continuous probability distributions	x	x			x		x							
3	Statistics in engineering	x	x			x	X	x							
4	Descriptive Statistics Sampling distributions	x	x			x	x	x							
5	Estimation and confidence intervals	x	x			x	X	x							
6	Hypothesis testing	x	x			x	X	x							
7	Simple regression	x	x			x	X	x							

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:



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No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1,A2	A1(1,2,3),A2(1)
2	Student load (quizzes, sheets, report)	A1,A2	A1(1,2,3),A2(1)
3	Final term examination	A1,A2	A1(2,3,4,5),A2(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	E. Kreyszig "Advanced Engineering Mathematics" 13th edition, John Wiley and Sons, Inc. 2020
2	Andrew Metcalfe, <u>David Green</u> , <u>Tony Greenfield</u> , <u>Mayhayaudin Mansor</u> , <u>Andrew Smith</u> , <u>Jonathan Tuke</u> " Statistics in Engineering With Examples in MATLAB" 2 nd Edition, Chapman and Hall/CRC (2019).

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Sound system

10. Matrix of Competencies and Aims:



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No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Probability theory	1	X	X																		
2	Discrete and continuous probability distributions	6	X	X																		
3	Statistics in engineering	1	X	X																		
4	Descriptive Statistics Sampling distributions	1	X	X																		
5	Estimation and confidence intervals	1	X	X																		
6	Hypothesis testing	6	X	X																		
7	Simple regression	6	X	X																		

n																				

Course Coordinator: Dr. Samar Madian

Head of Department: Asso.prof.Amal Behery

Date of Approval: 2023

Fundamentals of Electromagnetism (CEE 301)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Fundamentals of Electromagnetism		
Course Code	CEE 301		
Year/Level	Level 3		
Specialization	Major		
Authorization Date of Course Specification	20		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
1	Master a wide range of engineering knowledge and specialized skills, as well as the ability to apply that information in real-world situations using theories and analytical thinking.

3- Competencies (LO'S):

Competency	Competency
C1	1. Apply knowledge of mathematics to assess theories of electromagnetics engineering. 2. Apply knowledge of science to assess theories of electromagnetics engineering. 3. Apply the theories of electromagnetic engineering to assess the applications



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4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Vector analysis ,coordinates systems and transformation – vector calculus	4	2	-
2	Coulombs 's law, continuous charge distribution	4	4	-
3	Electric flux density, Gauss's law-1st Maxwell's equation	4		-
4	Electric potential and it's application-Maxwell's equation-Continuity equation	4	6	-
5	magnetic field theories – Biot savior's law-	2	4	-
6	Amper's law and it's applications	4		-
7	Magnetic flux density-Maxwell's equations-similarity between the magnetic field and the electric field	4	4	-
8	Magnetic scalar and vector potential	2	2	-
Total		28	28	

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab



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1	Vector analysis ,coordinates systems and transformation –vector calculus	X	X									X			X
2	Coulombs 's law, continuous charge distribution	X	X									X			X
3	Electric flux density, Gauss's law-1st Maxwell's equation	X	X									X			X
4	Electric potential and it's application-Maxwell's equation-Continuity equation	X	X									X			X
5	magnetic field theories – Biot savior's law-	X	X									X			X
6	Amper's law and it's applications	X	X									X			X
7	Magnetic flux density-Maxwell's equations-similarity	X	X									X			X



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	between the magnetic field and the electric field														
8	Magnetic scalar and vector potential	X	X									X			X

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
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6.2. Teaching and learning method for low capacity and outstanding Student

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For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	C1(1,2)
2	Student load (quizzes –sheets-reports)	C1(2,3)
3	Final term examination	C1(1,2,3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks



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1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	W.H. Hayt, Jr., "Engineering of Electromagnetics," Amazon, 9th Edition (2018).
2	Matthew N.O. Sadiku., J.Sagliocca and O.Soriyan " Elements of Electromagnetics ," 7 th -edition –Oxford, 2018.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Vector analysis ,coordinates	1																X				



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	systems and transformation – vector calculus																					
2	Coulomb's law, continuous charge distribution	1																X				
3	Electric flux density, Gauss's law-1st Maxwell's equation	1																X				
4	Electric potential and its application- Maxwell's equation- Continuity equation	1																X				
5	magnetic field theories – Biot Savart's	1																X				



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	law-																				
6	Amper's law and it's applications	1																X			
7	Magnetic flux density-Maxwell's equations-similarity between the magnetic field and the electric field	1																X			

Course Coordinator: Dr. Hosam Abdelfatah

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023

Logical and Digital circuits (CEE 302)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Logical and Digital circuits		
Course Code	CEE 302		
Year/Level	Level 3- semester1		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	3	2	-

2- Course Aims:

No.	Aims
2	Apply analytic critical and systemic thinking to Identify Logical and Digital circuits , Diagnose Logical and Digital circuits ,and Design a Logical and Digital circuits .

3- Learning Outcomes (LO'S): By the end of this course, the student able to:

No.	Competency
A3	1. Describe principles of design including elements design, operations related to logic and digital circuits
A9	1. Think creatively in solving problems of design.
C1	1. Select a creative way to solve and design logic and digital circuits.
C2	1. Select appropriate solutions for engineering problems based on logic



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	circuits concepts. 2. Create a process, component or system, to carry out logic and digital designs

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Number systems and conversions	6	4	-
2	Basic logic gates,	6	2	-
3	minimization techniques of Boolean functions	9	6	-
4	combinational circuits, analysis and design	9	10	-
5	memory and programmable logic, analysis and design	6	4	-
6	sequential circuits, analysis and design	6	2	-
Total		42	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Boolean algebra – Logic gates – Logic Minimization _ Logic and digital units concepts	X	X		X	X		X			X				



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2	number systems and data representation – k-maps Boolean algebra– decision elements	X	X		X		X	X				X			
3	combinational and sequential circuits – flip _ flops – minimization techniques, design and construction of logic subsystems	X	X		X	X	X				X	X			
4	such as decoders, multiplexers, adders, and multipliers	X	X		X	X	X	X				X			
5	Combinational logic circuits – sequential logic circuits	X	X		X	X		X			X	X			



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6	Introduction to AID and DIA converters – Introduction to digital Integrated circuits	×	×	×	×						×				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

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For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic works (Periodic exam + Student load)	A3.(1), A9 .(1)
3	Final term examination	A3(1), A9 (1),C1(1),C2(1,2)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation	Weights



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	Method	
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Arshad Iqbal , “Digital Logic Design Multiple Choice Questions and Answers (MCQs)”, Bushra Arshad,2019
2	Sonali Singh , “Learn the Logic Circuits and Logic Design”, BPB Publications,2018
3	Digital Computer Electronics (Malvino), Notas de estudo de Engenharia Informática,2017
4	Mores Mano, Digital logic design, 6th edition 2019.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Number systems and conversions	2			X					X									X	X		
2	logic gates	2			X					X									X	X		



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3	minimization techniques	2			X						X							X	X		
4	combinational circuits	2			X						X							X	X		
5	memory and programmable logic	2			X						X							X	X		
6	sequential circuits	2			X						X							X	X		

Course Coordinator: Prof.Mohamed Fouad

Head of Department: Prof.Mohamed Fouad

Date of Approval: 2023

Fluid Mechanics (ENG 301)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department
Department Responsible for the Course	Basic Science and Engineering Department
Course Title	Fluid Mechanics
Course Code	ENG301
Year/Level	level 3
Specialization	Major
Authorization Date of Course Specification	2023
Pre- request	ENG 102



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Teaching hours	Lectures	Tutorial	Practical
	2	1	1

2- Course Aims:

No.	Aims
1	Master a broad range of Fluid Mechanics knowledge and specialized skills, as well as the ability to understand and apply physical concept knowledge in real-world situations by applying fluid mechanics basic theories. Also, to Apply knowledge of science and engineering concepts to study fluid properties, fluid statics and fluid dynamics and to abstract course knowledge that give him or her, the ability to think, identify, diagnose, and solve engineering problems of varying complexity and variation in real world as an engineer.
4	Use the techniques, skills, and current engineering tools required for engineering practice of fluid mechanics by taking full responsibility for one's own learning and development, participating in lifelong learning, and demonstrating the ability to pursue postgraduate and research studies.
8	Consider the impact of fluid mechanics study in real world, and its strong relation with environment and almost of all the technology fields upgrades.

3- Competencies Learning Outcomes (LO'S):

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1. Define concepts of energy, momentum equations and dimensional analysis (laminar and turbulent flow). 2. Explain the basic principles of fluid mechanics engineering. 3. Analyze various ideas and views for different forces on immersed bodies. 4. Using scientific concepts and theories that are relevant to the fluid mechanics. 5. Applying engineering basics that are relevant to the subject.
A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and	1. Apply knowledge of Bernoulli and continuity equations for experiments of Venturi meter and losses in pipes. 2. Analyze data in laboratory and in pipes and



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objective engineering judgment to draw conclusions.	pumps field. 3. Conduct basic experiments to learn about the basic characteristics and features of fluids for statics and dynamics branches.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Fluid properties, fluid statics, kinematics	2	2	2
2	Fluid dynamics including energy and Momentum equations	4	2	2
3	Dimensional analysis, Laminar flow, Turbulent flow and its applications	2	2	2
4	Forces on immersed bodies, Introduction to compressible flow	4	2	2
5	Applications to filtration and fluidization	4	2	2
6	Laboratory course in Fluid Mechanics includes experiments on venture-meter, friction losses in pipes	6	2	2
7	Center of pressure, Flow measuring apparatus, multi-pump test (Pump characteristics) and losses in piping systems	6	2	2
Total		28	14	14

5. Teaching and learning methods:



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N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	Fluid properties, fluid statics, kinematics	X	x			X									
2	Fluid dynamics including energy and Momentum equations	X	x			X	x								
3	Dimensional analysis, Laminar flow, Turbulent flow and its applications	X	x			X		x							
4	Forces on immersed bodies, Introduction to compressible flow	X	x			X									
5	Applications to filtration and	X	x			X					X				



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	fluidization														
6	Laboratory course in Fluid Mechanics includes experiments on venture-meter, friction losses in pipes	X	x												X
7	Center of pressure, Flow measuring apparatus, multi-pump test (Pump characteristics) and losses in piping systems	x	x			X									

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.



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7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	(1,2,3,4,5)
2	Student load (quizzes, sheets, report)	A1,A2	A1(1),A2(2)
3	Final term examination	A1,A2	A1(1,2,3,4,5),A2(1,2,3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Gerhart, Philip M., Andrew L. Gerhart, and John I. Hochstein. Munson, Young and Okiishi's Fundamentals of Fluid Mechanics. John Wiley & Sons, 2016.
2	Schetz, J. A., & Fuhs, A. E. (Eds.). (2018). Fundamentals of fluid mechanics. John Wiley & Sons.
3	Young, D. F., Munson, B. R., Okiishi, T. H., & Huebsch, W. W. (2019). A brief introduction to fluid mechanics. John Wiley & Sons.

9. Facilities required for teaching and learning:

Facility	
1	Lecture classroom
2	Seminar
3	Computer lab.
4	White board



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5	Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Fluid properties, fluid statics, kinematics	1	X	X																		
2	Fluid Dynamics including Energy and Momentum equations	1	X	X																		
3	Dimensional analysis, laminar flow, turbulent flow and its applications	1	X	X																		
4	forces on immersed bodies,	4	X	X																		



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	introduction to compressible flow																			
5	Applications to filtration and fluidization	8	X	X																
6	Laboratory course in Fluid Mechanics includes experiments on venturimeter, friction losses in pipes	4, 8	X	X																
7	Center of pressure, flow measuring apparatus, multi-pump test (Pump characteristics) and losses in	4, 8	X	X																

piping systems																				

Course Coordinator: Assoc. Prof .Mohammed Gabr
Head of Department: Asso.prof.Amal Behery
Date of Approval: 2023

Engineering Economy (ENG303)

1-Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Engineering Economy		
Course Code	ENG303		
Year/Level	Level 3		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre-request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	1	-

2-Course Aims:

No.	Aims
2	Work in and manage a diverse team of professionals from various engineering disciplines, taking responsibility for own and team performance; and Behave

	professionally and adhere to engineering ethics and standards.
10	Demonstrate leadership qualities, business management, and skill development.

3- Competencies Learning Outcomes (LO'S)

Competencies	Learning Outcomes (LO'S)
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.	1. List the economic concepts related to characteristics in engineering analysis to improve the engineering process. 2. Recognize business and management principles relevant to engineering for replacement and depreciation of equipment to reduce the cost of operations. 3. Combine different ideas, views, and knowledge from a range of sources to evaluate the characteristics of project economic. 4. Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact. 5. Assess economic, societal, and environmental dimensions and risk management in engineering design.
A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	1. List the engineering-related economy. 2. Innovate economy methodical approaches when dealing with new and advancing technology. 3. Use fundamental economy organizational abilities.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Basic concepts of engineering economy	4	4	-
2	Break even analysis	4	4	-
3	Time value of money	6	6	-
4	Depreciation and replacement analysis	4	4	-
5	Selection between alternatives	6	6	-
6	Productivity	4	4	-
Total		28	28	-

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Basic concepts of engineering economy	x	x			x									
2	Break even analysis	x	x			x	x								
3	Time value of money	x	x			x		X							
4	Depreciation and replacement analysis	x	x			x	x								
5	Selection between alternatives	x	x			x		X							
6	Productivity	x	x			x	X								

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students

- Assign a portion of the office hours for those students.
- Give them specific tasks.
- Repeat the explanation of some of the material and tutorials.
- Assign a teaching assistance to follow up the performance of



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	these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A3	(1,2,3,4,5)
2	Student load (quizzes, sheets, report)	A3	1,2,3
3	Final term examination	A3,A4	A3(1,2,3,4,5),A4(1,2,3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Engineering economic and financial accounting, A.R.Argasri and VVR McGraw-Hill, New Delhi, 2018
2	Industrial Engineering M.I.KHAN, New-Age publishers, New Delhi, 2018
3	Engineering Economics RajanMisra, University science press, New Delhi, 2018

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	Seminar
3	White board



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4 | Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Basic concepts of engineering economy	2, 1, 0			X	X																
2	Break even analysis	2, 1, 0			X	X																
3	Time value of money	2, 1, 0			X	X																
4	Depreciation and replacement analysis	2, 1, 0			X	X																
5	Selection between alternatives	2, 1, 0			X	X																
6	Productivity	2, 1, 0			X	X																

Course Coordinator: Dr. Rania Hamdy, Dr Hany hashish

Head of Department: Asso.prof.Amal Behery

Date of Approval: 2023

Advanced Computer Programming ENG 304

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communication and Electronics Engineering Department		
Department Responsible for the Course	Basic science and Engineering Department		
Course Title	Advanced Computer Programming		
Course Code	ENG 304		
Year/Level	Level: 3		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	-	2

2- Course Aims:

No.	Aims
1	Identify, formulate, and solve the engineering problems through Visual programming languages applications.



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3- Cometencies (LO'S):

Cometencies Learning Outcomes (LO'S)	
A3	1. Describe principles of design including elements design, process related to advanced java programs. 2. Practice the neatness and aesthetics in design and approach. 3. Collaborate effectively within multidisciplinary team
B1	1. Recognize methodologies of solving engineering problems.
C2	1. Select appropriate solutions for engineering problems based on analytical thinking.
C1	1: Recognize engineering problems to identify the best solutions 2: Think creatively and innovatively in problem solving and design

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Object Oriented Programming introduction: Working with Methods, Classes and Objects Java Advanced Class Design: - Class designing - Controlling access to members, Constructor, - Scope of a Parameter - Call by Value & Primitive Parameters - Object Parameters - Use the instance of operator and casting - Use virtual method invocation - Encapsulation Practical: review (basics of java)	6	-	3
2	Object Oriented Programming Concepts Encapsulation and Visibility Modifiers, Formal and Actual Parameters - Working with Inheritance - Polymorphism Practical: - Exercises of structure class & method - Exercises of create object - Exercises of complete oop_ java program - Exercise of Encapsulation - Exercise of inheritance - Exercise of Polymorphism	3	-	6
3	- Overloaded Constructor - Overload methods, - Override methods - Abstract classes, Use	3	-	3



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	enumerated types Practical Exercises of - Overloaded Constructor - Overload methods, -Override methods -Abstract classes, Use enumerated types			
4	JAVA Stream, File and I/O Fundamentals Practical Exercises of -I/O Basics Streams - Byte Streams and Character Streams - Read and write data from the console – Use streams to read and write files - Use the Path class to operate on file and directory paths – Use the Files class to check, delete, copy, or move a file or directory – - Read and change file and directory attributes	3		3
5	Multithreaded Programming: - What is a Process? - What is a Thread? - Where are Threads used in Java? - Defining a Thread - Instantiate a Thread - Start a Threads - Thread Life-cycle - Thread Priorities - Important methods for Threads - Multithreading	3		3
6	Software Reusability Package access Arrays Practical Exercises of Multithreaded Programming Arrays	3	-	3
7	Design Graphical User Interface (GUI): Practical Exercises of -Event handler	6	-	6



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	- text field, list - Multiple Selection lists - Panel, Radio buttons, Checkboxes, layout, Menus, Frames - Popup, Tabbed Pane.			
	Total	28	-	28

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab



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1	Object Oriented Programming introduction: Working with Methods, Classes and Objects Java Advanced Class Design: - Class designing -Controlling access to members, Constructor, -Scope of a Parameter - Call by Value & Primitive Parameters - Object Parameters - Use the instance of operator and casting - Use virtual method invocation - Encapsulation Practical: review (basics of java)	X	X				X		X			X	X	X	X



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2	Object Oriented Programming Concepts Encapsulation and Visibility Modifiers, Formal and Actual Parameters -Working with Inheritance - Polymorphism Practical: -Exercises of structure class & method -Exercises of create object -Exercises of complete oop_ java program -Exercise of Encapsulation -Exercise of inheritance -Exercise of Polymorphism	X	X				X		X			X	X	X	X



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3	-Overloaded Constructor - Overload methods, - Override methods - Abstract classes, Use enumerated types Practical Exercises of - Overloaded Constructor - Overload methods, -Override methods -Abstract classes, Use enumerated types	X	X				X		X			X	X	X	X



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4	JAVA Stream, File and I/O Fundamentals Practical Exercises of -I/O Basics Streams - Byte Streams and Character Streams - Read and write data from the console – Use streams to read and write files - Use the Path class to operate on file and directory paths – Use the Files class to check, delete, copy, or move a file or directory – - Read and change file and directory attributes	X	X				X		X			X	X	X	X



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5	Multithreaded Programming: - What is a Process? - What is a Thread? - Where are Threads used in Java? - Defining a Thread - Instantiate a Thread - Start a Threads - Thread Life-cycle - Thread Priorities - Important methods for Threads - Multithreading	X	X				X		X			X	X	X	X
6	Software Reusability Package access Arrays Practical Exercises of Multithreaded Programming Arrays	X	X				X		X			X	X	X	X



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7	Design Graphical User Interface (GUI): Practical Exercises of -Event handler - text field, list - Multiple Selection lists - Panel, Radio buttons, Checkboxes, layout, Menus, Frames - Popup, Tabbed Pane.	✗	✗					✗		✗			✗	✗	✗	✗

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic works - periodic exam - Student load (Quiz & sheets, reports, projects)	A3.1,A3.2,A3.3



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2	Practical Examination	B1.1,C1.1,C1.2
3	Final term examination	A3.1,A3.2,A3.3, B1.1,C1.1,C1.2,C2.1

7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7.3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Anuradha A. Puntambekar," Advanced Java", Technical Publications,2023
2	Dr. Muneer Ahmad Dar, "JAVA Programming Simplified: From Novice to Professional",BPB Publications,2023
3	Java: How to Program, 11th Edition (Deitel) 11th Edition by Paul Deitel, Harvey Deitel ,2020.
4	JAVA the complete reference, 10th edition, herb schildt,2019.

9. Facilities required for teaching and learning:

No.	Facility	No.	Facility
1	Lecture classroom	4	Data show system
2		5	Sound system
3	White board	6	Moodle

10. Matrix of Competencies and Aims:

No	Topic	Competencies



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			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Object Oriented Programming introduction: Working with Methods, Classes and Objects, Java Advanced Class Design: (Class designin g Controlli ng access to members , Construc tor, Scope of a Paramete r- Call by Value & Primitive	1						X	X					X				X				



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	Parameters-Object Parameters- Use the instance of operator and casting-Use virtual method invocation)																			
2	Object Oriented Programming Concepts (Encapsulation and Visibility Modifiers, Formal and Actual Parameters- Working with Inheritance - Polymorphism)	1					X	X				X				X				



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3	- Overload ed Constructor - Overload methods, - Override methods -Abstract classes, Use enumerat ed types	1 , 2						X	X					X			X			
4	JAVA Stream, File and I/O Fundamentals: - I/O Basics Streams - Byte Streams and Character Streams - Read and write data from the console –Use streams	1 , 2						X	X					X			X			



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	to read and write files - Use the Path class to operate on file and directory paths – Use the Files class to check, delete, copy, or move a file or directory - Read and change file and directory attributes																			
5	Multithreaded Programming: - What is a Process? - What is a Thread? - Where	2					X	X					X				X			



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	are Threads used in Java? - Defining a Thread - Instantiat e a Thread - Start a Threads - Thread Life- cycle - Thread Priorities - Importan t methods for Threads - Multithre ading																					
6	Software Reusabili ty - Package access- Arrays	2						X	X					X				X				
7	Graphica l User Interface (GUI): - Event	2						X	X					X				X				



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handler - text field, list - Multiple Selection lists - Panel, Radio buttons, Checkbo xes, layout, Menus, Frames - Popup, Tabbed Pane.																				

Course Coordinator: Dr. Amira Elsonbaty

Head of Department: prof. Mohamed Fouad

Date of Approval: 2023

Numerical Methods in Engineering (MTH302)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department
Department Responsible for the Course	Basic Science and Engineering Department
Course Title	Numerical Methods in Engineering
Course Code	MTH302
Year/Level	Level: 2
Specialization	Major
Authorization Date of Course Specification	2023



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Pre- request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
1	Master a broad range of engineering knowledge and specialized skills, as well as the ability to apply acquired knowledge in real-world situations by applying numerical theories and abstract thinking in analytic critical and systemic thinking to identify, diagnose, and solve engineering problems of varying complexity and variation.

3- Competencies Learning Outcomes (LO'S)

Competencies	Learning Outcomes (LO'S)
A1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.	1. Describe the relevant mathematical principles and theories in the discipline. 2. Explain the scientific principles and theories that apply to the topic. 3. Using math ideas and theories that are applicable to the field. 4. Using scientific concepts and theories that are relevant to the profession. 5. solve complex engineering problems by - applying the concepts and the theories of mathematics 6. Identify complex engineering problems by applying the concepts and the theories of sciences, appropriate to the discipline.
A2. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use	1. Applying statistical analyses and objective engineering judgment to draw conclusions.



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statistical analyses and objective engineering judgment to draw conclusions.	

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Numerical solution of linear and nonlinear systems	4	4	-
2	Numerical differentiation and integration	6	6	-
3	Curve fitting and interpolation	10	10	-
4	Numerical solution of initial value problems	4	4	-
5	Boundary and Eigen value problems	4	4	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Numerical solution of linear and nonlinear systems	X	X			X	X								
2	Numerical differentiation and integration	X	X			X		X							



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3	Curve fitting and interpolation	X	X			X	X								
4	Numerical solution of initial value problems	X	X			X	X								
5	Boundary and Eigen value problems	X	X			X	X								

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A1	(1,2,3)
2	Student load (quizzes, sheets, report)	A1, A2	A1(2,3),A2(1)
3	Final term examination	A1,A2	A1(2,3,3),A2(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th



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3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Kiusalaas, Jaan. Numerical methods in engineering with Python 3. Cambridge university press, 2020.
2	B. S. Grewal "Numerical Methods in Engineering and Science" Mercury Learning and Information (2018).

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Numerical solution of linear and nonlinear systems	1	X	X																		



وحدة ضمان الجودة



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2	Numeric al differenti ation and integrati on	1	X	X																
3	Curve fitting and interpola tion	1	X	X																
4	Numeric al solution of initial value problems	1	X	X																
5	Boundar y and eigen value problems	1	X	X																

Course Coordinator: Dr. Samar Madian

Head of Department: Asso.prof.Amal Behery

Date of Approval: 2023

Electronic Circuits 1 (CEE 305)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department
Department Responsible for the	Communications and Electronics



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Course	Engineering Department		
Course Title	Electronic Circuits 1		
Course Code	CEE 305		
Year/Level	Level 3		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 201		
Teaching hours	Lectures	Tutorial	Practical
	3	2	-

2- Course Aims:

No.	Aims
1	Master a wide range of engineering knowledge and specialized skills, as well as the ability to apply that information in real-world situations using theories and analytical thinking.
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances

3- Competencies Learning Outcomes (LO'S):

Competency	Learning Outcomes (LO'S)
B3	1. Define basics of information and communication technology (ICT). 2. Recognize methodologies of solving engineering problems. 3. Merge engineering knowledge and understanding to improve design of electronic circuits, products and/or services. 4. Exchange knowledge and skills to engineering community and industry
C4	1: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact.
C5	1: Use a wide range of analytical tools, techniques, equipment, and software packages to simulate and design power electronic circuits.

4. Course Contents:



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No.	Topics	Lectures	Tutorial	Practical
1	BJT low frequency response (general frequency consideration –Bode plot-bypass capacitance-coupling capacitor)	3	2	-
2	FET low frequency response (general frequency consideration –Bode plot-bypass capacitance-coupling capacitor)	6	4	-
3	BJT high frequency response(general frequency consideration –Bode plot-bypass capacitance-coupling capacitor)	6	4	-
4	FET high frequency response(general frequency consideration –Bode plot-bypass capacitance-coupling capacitor)	6	4	-
5	BJT and FET total frequency response and bode plot	6	4	-
6	Feedback and oscillators	3	2	-
7	Power amplifiers	6	4	-
8	Active filters	6	4	-
Total		42	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	BJT low frequency response (general frequency	X			X							X			X



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	consideration – Bode plot- bypass capacitance- coupling capacitor)														
2	FET low frequency response (general frequency consideration – Bode plot- bypass capacitance- coupling capacitor)	X			X							X			X
3	BJT high frequency response(gener al frequency consideration – Bode plot- bypass capacitance- coupling capacitor)	X			X							X			X
4	FET high frequency response(gener al frequency consideration – Bode plot- bypass capacitance- coupling capacitor)	X			X							X			X



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5	BJT and FET total frequency response and bode plot	X			X							X			X
6	Feedback and oscillators	X			X							X			X
7	Power amplifiers	X			X							X			X
8	Active filters	X			X							X			X

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation methods:

No.	Evaluation Method	LO's
1	Periodic exam	B3(1,2,3,4), C3(1)
2	Student load (Quiz & sheets, reports)	C3(1), C5(1)
3	Final term examination	B3(1, 2,3,4), C3(1)



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7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7.3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	A.Sedra,"Microelectronic devices and Circuits", Ninth Edition, Boston Columbus Indianapolis New York San Francisco, 2020.
2	ROBERT B. L. NASHELSKY, "Electronic devices and Circuit Theory ", 9th Edition Pearson Education, Inc., Upper Saddle River, New Jersey 07458. Pearson Prentice Hall, 2018.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5



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1	BJT low frequency response	1, 1, 1													X							X	X
2	FET low frequency response	1, 1, 1													X							X	X
3	BJT high frequency response	1, 1, 1													X							X	X
4	FET high frequency response	1, 1, 1													X							X	X
5	BJT and FET total frequency response and bode plot	1, 1, 1													X							X	X
6	Feedback and oscillators	1													X							X	X
7	Power amplifiers	1													X							X	X
8	Active filters	1, 1													X							X	X

Course Coordinator: Assoc.prof: Osama Oraby

Head of Department: Prof.Mohamed Fouad

Date of Approval: 2023

Electronics Tests2 (CEE 306)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Electronics Tests2		
Course Code	CEE 306		
Year/Level	Level 3		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 204		
Teaching hours	Lectures	Tutorial	Practical
	2	-	2

2- Course Aims:

No.	Aims
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances. achieving Achieving, the properties of electronic components in practice ,studying, designing and implementing applications to use those components and test those with appropriate laboratory equipment components
13	Allocate projects creatively by analyzing data from intended tests and optimize the intended design using cad tools

3. Cometencies (LO'S)

Competency	Learning Outcomes (LO'S)
A5	1. Define technical language and report writing. 2. Assess different ideas, views, and knowledge from a range of sources.



وحدة ضمان الجودة



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	3. Prepare technical reports 4. Search for information to engage in lifelong self-learning discipline.
B2	1. Describe quality assurance systems, codes of practice and standards, health and safety requirements, and environmental issues. 2. Assess and evaluate the characteristics and performance of the electronic components , evaluate sub-systems , implementing and test applications to those components 3. Identify appropriate specifications for required devices. 4. Use relevant laboratory equipment and analyze the results correctly.
B4	1. Use relevant laboratory equipment and analyze the results correctly. 2. Use computational facilities, measuring instruments, workshops and laboratories equipment to design experiments and collect, analyze and interpret results.
B5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Rectifiers and zener regulators. -Practical: a. zener characteristic . b. zener as a voltage regulator .	2		2
2	Clippers circuits -Practical: a. positive and negative clipper.	2		2
3	BJT- characteristic and curves. Practical:	4		4



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	a. BJT characteristic			
4	BJT- switching and amplifier circuits. Practical: BJT as amplifier b. BJT as switch	4		4
5	JFET characteristic circuits. Practical: N-channel JFET characteristic	4		4
6	JFET-switching and amplifier circuits Practical: JFET as a switch. JFET as a amplifier.	4		4
7	MOSFET-amplifier circuits. Practical: N-channel MOSFET characteristic MOSFET as amplifier	4		4
8	MOSFET-switching circuits. Practical: MOSFET as switch. Project(design audio amplifier)	4		4
Total		28	-	28

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Rectifiers and zener regulators. -Practical:	X	X				X		X						



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	a. zener characteristic . b. zener as a voltage regulator .														
2	Clippers circuits -Practical: a. positive and negative clipper.	X	X				X		X						
3	BJT- characteristic and curves. Practical: a. BJTcharacteristic	X	X				X		X						
4	BJT- switching and amplifier circuits. Practical:.. BJT as amplifier b. BJT as switch	X	X				X		X						
5	JFET characteristic circuits. Practical: N-channel JFET characteristic	X	X				X		X						
6	JFET-switching and amplifier circuits Practical: JFET as a switch.	X	X				X		X						



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	JFET as a amplifier.														
7	MOSFET-amplifier circuits. Practical: N-channel MOSFET characteristic MOSFET as amplifier	X	X				X		X						
8	MOSFET-switching circuits. Practical: MOSFET as switch. Project(design audio amplifier)	X	X				X		X						

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:



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No.	Evaluation Method	LO's
1	Periodic exam	A5(1-2)B2(1-2-3), B4(1-2)
2	Student load (projects-lab experiment-CAD tools)	B2(1-2-3-4)
3	Final term examination	A5(1-2-3-4)B2(1-2-3-4), B4(1-2)

7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7.3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	A. C. Sedra and K. C. Smith, <i>Microelectronic Circuits</i> , Oxford University Press, 8 th Edition, 2020.
2	B. Razavi, <i>Fundamentals of Microelectronics</i> , Wiley, 4th. Edition, 2019.
3	Maurizio Di Paolo Emilio , <i>Microelectronics: From Fundamentals to Applied Design</i> , , Springer;3rd ed. 2023 Edition
4	Robert L. Boylestad, <i>Electronic Devices and Circuit Theory: International Edition</i> , Springer, 15th ,2020
5	Fundamentals of Electric Circuits, by Charles k Alexander, Matthew n.o.Sadiku, McGraw hill 7th edition 2023.
6	Thomas L. Floyd, <i>Electronic devices, electron flow version</i> . Prentice Hall, 11 th ,2018

9. Facilities required for teaching and learning:

No.	Facility



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وزارة التعليم العالي
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1	Classroom
2	Computer and video data show
3	Lab
4	White board
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Rectifier s and zener regulator s. - Practical: a. zener character istic . b. zener as a voltage regulator x	1 1												X		X						
2	Introduct ion Java 5Applica tions P6ractic al: Form of the Program	2												X		X						



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	& fundamentals of Java programming language and its syntax & Primitive data types, operators, variables & Joptionpane & scanner Classes.																					
3	Clippers circuits - Practical: a. positive and negative clipper.	13											X		X							
4	BJT-characteristic and curves. Practical: a. BJT characteristic	13											X		X							



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5	BJT-amplifier circuits. Practical: a. BJT as amplifier b. BJT as switch	1 3											X		X					
6	JFET-amplifier circuits. Practical: N-channel JFET characteristic	1 3											X		X					
7	Arrays and Array list Practical: Create Array& Matrix& Array List.	2											X		X					
8	JFET-switching circuits - Practical: JFET as a switch.	1 1 1 3											X		X					

Course Coordinator: Prof.Mohamed Fouad
Head of Department: Prof.Mohamed Fouad
Date of Approval: 2023

Automatic Control ENG 305

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communication and Electronics Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Automatic Control		
Course Code	ENG 305		
Year/Level	Level: 3		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	3	2	-

2. Course Aims:



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No.	Aims
7	Proper utilization of modern engineering techniques, skills, and tools
8	Acknowledge and accept personal responsibility for your education, personal development, as well as your ability to achieve post-graduation and research studies;
12	Communicate and work effectively within multiple teams in the field of communication and electronics engineering and consider the effects of engineering solutions on society and the environment.

4. Competencies (LO'S)

Competency	Learning Outcomes (LO'S)
A2	1. Describe principles of design, including elements of design, a process, and/or a system related to a specific discipline or fields of knowledge. 2. Develop suitable experimentation and/or simulation
B1.	1. Synthesis and integrate electronic systems for certain specific function using the right equipment. 2. Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs.
B2.	1. Assess and evaluate the characteristics and performance of components, systems and processes.
B3	1. Recognize methodologies of solving engineering problems. 2. Exchange knowledge and skills to engineering community and industry
C1.	1: Use computational facilities, measuring instruments, workshops and laboratories equipped to design experiments to collect, analyze and interpret results.
C2.	1: Select appropriate solutions for engineering problems based on analytical thinking.

4. Course Contents:

No.	Topics	Lectures	Practical	Tutorial
1	-Automatic control Concepts (Definitions)	3	-	2



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2	Classification of control system Modeling of some physical systems	6	-	4
3	the closed and opened systems the block diagram and transfer function –	6	-	4
4	signal flow chart	6	-	4
5	modeling by case variables –	3	-	2
6	frequency response analysis – the feed back	6	-	4
7	the stability and its study	3	-	2
8	analyzing the root path - Nyquist plot analysis	3	-	2
9	Design methods for the feedback control systems (the advanced angle - the leftover angle)	6	-	4
Total		42	-	28

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	-Automatic control Concepts (Definitions)	X	X		X										X
2	Classification of control system Modeling of some physical systems	X	X		X										X



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3	the closed and opened systems the block diagram and transfer function –	X	X													X
4	signal flow chart	X	X													X
5	modeling by case variables –	X	X													X
6	frequency response analysis – the feed back	X	X													X
7	the stability and its study	X	X													X
8	analyzing the root path - Nyquist plot analysis	X	X													X
9	Design methods for the feedback control systems (the advanced angle - the leftover angle)	X	X													

6. Teaching and Learning Methods of Disable Students:



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6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	A2(1,2),B1(1,2),B2(1)
2	Student load (Quiz & sheets, reports)	B2(1),C1(1),C2(1)
3	Final term examination	C1(1),C2(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7. 3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Process systems engineering: From Solvay to modern bio- and



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	nanotechnology. A history of development, successes and prospects for the future, 2023.
3	Modern control Engineering, OGATA,2020

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Automatic control merits and basic features	7		X									X	X					X	X		
2	Classification of control action (open-loop and closed-loop, feed-back and feed-forward, process and position	7		X									X	X					X	X		



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	control)																					
3	Mathematical tools (Linearization, Laplace transforms and block diagram algebra)	8		X								X	X						X	X		
4	Process dynamics (first, second and higher orders)	8		X								X	X						X	X		
5	Measuring and actuating elements	12		X								X	X						X	X		
6	Two-position controller and Three-term controller	8		X								X	X						X	X		
7	Controller mechanism and optimum	12		X								X	X						X	X		



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	setting																				
8	System stability (algebraic and graphical methods)	8		X									X	X					X	X	
9	Design methods for the feedback control systems (the advanced angle - the leftover angle)	12		X									X	X					X	X	

Course Coordinator: Dr.Rabab Reda

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023

Computer Organization (ENG 306)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department
Department Responsible for the	Basic science and Engineering Department



وحدة ضمان الجودة



وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
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Course			
Course Title	Computer Organization		
Course Code	ENG 306		
Year/Level	Level 3 -semester2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	3	2	-

2- Course Aims:

No.	Aims
9	-Communicate effectively using different tools (computer hardware, and computer software) and languages (the machine, and assembly language) with various users Study the newest achievements in computer architecture to deal with challenges in a critical and creative manner;

3- Competencies (LO'S):

Competency	Learning Outcomes (LO'S)
B1	1. Assess and evaluate the characteristics and performance of components, systems and processes.
C2	1: Describe principles of design including elements design, and a system related to specific computer system. 2: Merge engineering knowledge and understanding to improve design related to specific computer system. 3: Design system to carry out designs related to specific computer system. 4: Acquire entrepreneurial skills

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	The digital computer Information Theory Digital representations of data	3	2	-
2	Computer system organization. CPU Basics and Organization Marie Machine: -The Architecture -Registers and Buses	9	6	-
3	Storage Systems "Memory Organization and Addressing":	6	4	-



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وزارة التعليم العالي
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بدمياط الجديدة

	-Types of Memory - Memory Hierarchy, - Locality of Reference - Cache Memory - Virtual Memory- Magnetic Disk Technology, Rigid Disk Drives Optical Disks			
4	Instruction set architecture (ISA): -Instruction types, registers -addressing modes - Load/Store architectures - Register Transfer Notation - Instruction Processing - Stacks versus Registers - Number of Operands and Instruction Length - Instruction-Level Pipelining. A Closer Look at Instruction Set Architectures: -Instruction Formats -Design Decisions for Instruction Sets - Little versus Big Endian -Internal Storage in the CPU - The Fetch-Decode-Execute Cycle	9	4	-
5	Input/ Output Subsystem: -I/O Architectures - I/O Control Methods - I/O Bus Operation, -Interrupts	6	4	-
6	MACHINE AND ASSEMBLY LANGUAGE PROGRAMMING Structure of assembly language programs • Architectural support for high---level languages • From high---level to machine language, Roles Of compilers, assemblers, linkers and loaders	9	4	-
Total		42	28	-

5. Teaching and learning methods:



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No.	Teaching Methods
1	Hybrid learning (Lectures (face to face), (E_learning)
2	Flipped Classrooms
3	Cooperative learning.

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	The digital computer Information Theory Digital representations of data	X	X	X								X			
2	Computer system organization. CPU Basics and Organization Marie Machine: -The Architecture -Registers and Buses	X	X	X								X			
3	Storage Systems “Memory Organization and Addressing”: -Types of	X	X	X								X			



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	Memory - Memory Hierarchy, - Locality of Reference - Cache Memory - Virtual Memory- Magnetic Disk Technology, Rigid Disk Drives Optical Disks													
4	Instruction set architecture (ISA): -Instruction types, registers -addressing modes - Load/Store architectures - Register Transfer Notation - Instruction Processing - Stacks versus Registers - Number of Operands and Instruction Length - Instruction-Level Pipelining. A Closer Look at	X	X	X								X		



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	Instruction Set Architectures: -Instruction Formats -Design Decisions for Instruction Sets - Little versus Big Endian -Internal Storage in the CPU - The Fetch-Decode-Execute Cycle													
5	Input/ Output Subsystem: -I/O Architectures - I/O Control Methods - I/O Bus Operation, -Interrupts	X	X	X								X		
6	MACHINE AND ASSEMBLY LANGUAGE PROGRAMMING Structure of assembly language programs • Architectural support for high-level languages • From high---	X	X	X								X		



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	level to machine language, Roles Of compilers, assemblers, linkers and loaders														

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	C2.1, C2.3
2	Student load	B1.1
3	Final term examination	C2.1, C2.2, C2.3, C2.4

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%



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2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Jim Ledin , “Modern Computer Architecture and Organization”, Packt Publishing Ltd, 2023
2	Julia Lobur ,Linda Null, “Essentials of Computer Organization and Architecture”, Jones & Bartlett Learning, 2018.
3	Hans w. Gschwind, “Design of Digital Computers: An Introduction”, Springer, 2019
4	Morse Mano "Digital Design", 7 Editions, Boston Columbus Indianapolis New York San Francisco, 2023.
5	Computer Organization and Architecture: Designing for Performance (8th Ed) by William Stallings, Prentice-Hall...2018.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	The digital computer - Information	9												X	X			X	X	



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	Theory - Digital representations of data																			
2	Computer system organization. CPU Basics and Organization- Marie Machine: -The Architecture - Registers and Buses	9											X	X			X	X		
3	Storage Systems “Memory Organization and Addressing”: - Types of Memory - Memory Hierarchy, - Locality	9											X	X			X	X		



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	of Referenc e - Cache Memory - Virtual Memory- Magnetic Disk Technolo gy, Rigid Disk Drives - Optical Disks																			
4	Instructi on set architect ure (ISA): - Instructi on types, registers - addressin g modes - Load/Sto re architect ures - Register Transfer Notation - Instructi	9										X	X			X	X			



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on Processi ng - Stacks versus Registers - Number of Operand s and Instructi on Length - Instructi on-Level Pipelinin g. A Closer Look at Instructi on Set Architect ures: - Instructi on Formats -Design Decision s for Instructi on Sets - Little versus Big Endian - Internal																				



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	Storage in the CPU - The Fetch Decode-Execute Cycle																					
5	Input/Output Subsystem: -I/O Architectures - I/O Control Methods - I/O Bus Operation, - Interrupts	9											X	X			X	X				
6	Machine & Assembly Language Programming Structure of assembly language programs • Architect	9											X	X			X	X				



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ural support for high- --level language s • From high--- level to machine language , Roles Of compiler s, assemble rs, linkers and loaders																				

Course Coordinator: Dr. Amira Elsonbaty
Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

Engineering Management ENG (307)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department
Department Responsible for the Course	Basic Science and Engineering Department
Course Title	Engineering Management
Course Code	ENG 307



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Year/Level	Level: 3		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2-Course Aims:

No.	Aims
2	Work in and manage a diverse team of professionals from various engineering disciplines, taking responsibility for own and team performance; and Behave professionally and adhere to engineering ethics and standards.
5	Communicate effectively with a variety of audiences using a variety of forms, methods, and languages; cope with academic and professional issues in a critical and creative manner; and display leadership, business administration, and entrepreneurial abilities.
10	Demonstrate leadership qualities, business management, and skill development.

3- Competencies Learning Outcomes (LO'S):

Competencies	Learning Outcomes (LO'S)
A3	1. Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact.
A4	1. List the engineering-related business and management principles. 2. Create methodical project management when dealing with new and advancing technology. 3. Use fundamental organizational and project management abilities.
A6	1. Recognize business and management principles relevant to engineering; project planning and schedule, network based scheduling, critical path method (CPM), program evaluation and review technique (PERT), Probability aspect of project completion time, Project cost control, Resource allocation and forecasting funds requirements.



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	2 Judge engineering decisions considering balanced costs, benefits, time from project cost control and forecasting funds requirements.
A8	1. Communicate effectively.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Principles of Engineering management	4	4	-
2	Principles of planning and its steps	4	4	-
3	Making decisions.	4	4	-
4	Organize And administrative supervision.	4	4	-
5	Communications.	4	4	-
6	Leadership.	4	4	-
7	Control and follow up.	4	4	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	Introduction to project management.	X	X			X		X							
2	Project planning and scheduling.	X	X			X		X							
3	Network based scheduling.	X	X			X	X	X							
4	Critical path	X	X			X	X	X							



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	method.														
5	Program evaluation & review technique (PERT)	X	X				X	X							
6	Probability aspects of project completion time.	X	X			X		X							
7	Project cost control.	X	X			X	X	X							
8	Resource allocation	X	X			X		X							
9	Forecasting funds requirement	X	X			X	X	X							

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A6,A8	A6(1),A8(1)
2	Student load (quizzes, sheets, report)	A8	1
3	Final term examination	A6,A8	A6(1),A8(1)



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7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7.3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	"Project communication Handbook", Office of project management process, fourth edition- 2023
2	T.T. El-Midany, "Production Planning and Control", Mansoura University, 2018.
3	Gideon Halevi "Handbook of production Management Methods", Butterworth-Heinemann, 2020
4	Dennis Blumenfeld, "Operation research calculations handbook", CRC Press LLC, 2019
5	Harold Kerzner, "Project Management" John Wiley & Sons. 2018
6	Myer Kutz, "Mechanical Engineers Handbook: Manufacturing and managements", Volume 3, Third Edition, John Wiley & Sons, Inc, 2020.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Competencies



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			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Principles of Engineering management.	2, 5, 10				X		X		X												
2	Principles of planning and its steps.	2, 5, 10				X		X		X												
3	Making decisions .	2, 5, 10				X		X		X												
4	Organize And administrative supervision.	2, 5, 10				X		X		X												
5	Communications.	2, 5, 10				X		X		X												

Course Coordinator: Dr. Moataz Mostaffa
Head of Department: Asso.prof.Amal Behery

Date of Approval: 2023

Signal analysis (CEE 401)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Signal analysis		
Course Code	CEE 401		
Year/Level	Level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
6	Recognize and respect the importance of the environment, both physical and natural, and work to promote sustainable principles

3- Competencies Learning Outcomes (ILO'S)

Competency	Learning Outcomes (ILO'S)
C1	1: Recognize engineering problems to apply knowledge of mathematics, science and engineering concepts to the solution of engineering problems on society and environment for the representation of signals in the time and alternative range.
C3	1: Investigate the failure of components, system, and processes. 2: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact.

	3: Apply safe systems at work and observe the appropriate steps to manage risks

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Representation of signals in the time and alternative range	2	2	-
2	Basics of continuous signals	2	2	-
3	Basics of discrete time signals	2	2	-
4	Properties of continuous time invariant system	2	2	-
5	Properties of discrete time invariant system	2	2	-
6	Systems described by difference equations	2	2	-
7	The Z transform and discrete time LTI systems	2	2	-
8	The Z transform of some common sequences	2	2	-
9	The unilateral Z transform	2	2	-
10	Fourier analysis of continuous time signals and systems	2	2	-
11	Fourier series representation of periodic signals	2	2	-
12	Filter design	2	2	-
13	Applications to the filter design	4	4	-
Total		28	28	

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Representatio n of signals in the time and	X						X			X				



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	alternative range														
2	Basics of continuous signals	X						X			X				
3	Basics of discrete time signals	X						X			X				
4	Properties of continuous time invariant system	X						X			X				
5	Properties of discrete time invariant system	X						X			X				
6	Systems described by difference equations	X						X			X				
7	The Z transform and discrete time LTI systems	X						X			X				
8	The Z transform of some common sequences	X						X			X				
9	The unilateral Z transform	X						X			X				
10	Fourier analysis of continuous time signals and systems	X						X			X				



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11	Fourier series representation of periodic signals	X						X			X				
12	Filter design	X						X			X				
13	Applications to the filter design	X						X			X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	ILO's
1	Periodic exam	C1(1), C3(1-3)
2	Student load (Quiz & sheets, reports)	C1(1), C3(1-3)
3	Final term examination	C1(1), C3(1-2-3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:



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No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Kenneth E. Kendall, Julie E. Kendall, " System Analysis and Design", prentice-hall, 9th ed. 2018.
2	Jeffrey Whitten and Lonnie Bentley, Systems analysis and design methods", 2023.
3	D. Sundararajan, "A PRACTICAL APPROACH TO SIGNALS AND SYSTEMS", Copyright © 2019 John Wiley & Sons (Asia) Pte Ltd, 2 Clementi Loop, # 02-01, Singapore 129809

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Representation of signals in the time and alternative	6																X		X



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	e range																					
2	Basics of continuous signals	6																	X		X	
3	Basics of discrete time signals	6																	X		X	
4	Properties of continuous time invariant system	6																	X		X	
5	Properties of discrete time invariant system	6																	X		X	
6	Systems described by difference equations	6																	X		X	
7	The Z transform and discrete time LTI systems	6																	X		X	
8	The Z transform	6																	X		X	



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	m of some common sequences																					
9	The unilateral Z transform	6																X		X		
10	Fourier analysis of continuous time signals and systems	6																X		X		
11	Fourier series representation of periodic signals	6																X		X		
12	Filter design	6																X		X		
13	Applications to the filter design	6																X		X		

Course Coordinator: Dr.Rania Hamdy
Head of Department: Prof.Mohamed Fouad
Date of Approval: 2023

Electronic Circuits 2 (CEE 402)

3- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Electronic Circuits 2		
Course Code	CEE 402		
Year/Level	Level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 305		
Teaching hours	Lectures	Tutorial	Practical
	2	3	-

2- Course Aims:

No.	Aims
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.

3-Cometencies (LO'S):

Competency	Learning Outcomes (LO'S)
B3	1. Define basics of information and communication technology (ICT). 2. Merge engineering knowledge and understanding to improve design of electronic circuits, products and/or services.
C3	1. Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact.
C6	1: Use a wide range of analytical tools, techniques, equipment, and software packages to simulate and design



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	low consumed power electronic circuits.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Operational Amplifier; structure, operation, characteristics, Applications	6	6	-
2	Differential amplifier, operation, characteristics, applications	2	2	-
3	Filters, characteristics , types, response, designing	4	4	-
4	Active Filters; operation, characteristics, applications	4	4	-
5	Voltage regulators (Electronic Voltage Regulator-AC voltage stabilizers-Active regulators-linear regulator examples	2	2	-
6	Signal generators	4	4	-
7	Closing circuits	2	2	-
8	Computer Aided design	4	4	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Operational Amplifier; structure, operation,	X						X			X				



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	characteristics , Applications														
2	Differential amplifier, operation, characteristics , applications	X						X			X				
3	Filters, characteristics , types, response, designing	X						X			X				
4	Active Filters; operation, characteristics , applications	X						X			X				
5	Voltage regulators (Electronic Voltage Regulator-AC voltage stabilizers- Active regulators- linear regulator examples	X						X			X				
6	Signal generators	X						X			X				
7	Closing circuits	X						X			X				



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8	Computer Aided design	X						X			X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation methods:

No.	Evaluation Method	LO's
1	Periodic exam	B3(2), C3(1)
2	Student load (Quiz & sheets, reports)	C3(1), C6(1)
3	Final term examination	B3(1,2), C3(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term	60%



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	examination	
Total		100%

8. List of References:

No.	Reference List
1	Thomas L. Floyd, "Electronic devices ", Tenth Edition, Prentice Hall Boston Columbus Indianapolis New York San Francisco, 2023.
2	Adel, Sedra" Microelectronic devices and Circuits", Tenth Edition, Boston Columbus Indianapolis New York San Francisco, 2020.
3	Adel Sedra, Smith, " Microelectronic Circuits ", Eighthth Edition Oxford, New york, 2019

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Operational Amplifier; structure, operation, characteristics, Applications	1 1												X							X	X



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2	Differential amplifier, operation, characteristics, applications	11													X							X	X
3	Filters, characteristics, types, response, designing	11													X							X	X
4	Active Filters; operation, characteristics, applications	11													X							X	X
5	Voltage regulators (Electronic Voltage Regulator-AC voltage stabilizers-	11													X							X	X

	Active regulators-linear regulator examples																				
6	Signal generators	11												X						X	X
7	Closing circuits	11												X						X	X
8	Comput er Aided design	11												X						X	X

Course Coordinator: Assoc.Prof.Ossam Oraby

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023

Integrated circuits (CEE 403)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department
Department Responsible for the Course	Communications and Electronics Engineering Department
Course Title	Integrated circuits
Course Code	CEE 403
Year/Level	Level 4
Specialization	Major
Authorization Date of Course Specification	2023
Pre- Request	CEE 305



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Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2-Course Aims

No.	Aims
2	Apply analytic critical and systemic thinking to discover, analyze, and solve a wide range of engineering problems;

3- Competencies (LO'S):

Competency	Learning Outcomes (LO'S)
A3	1. Describe principles of design including elements design, process and/or a system in order to design low cost, low scale dimensions and low dissipated power integrated circuits.
B2	1. Create systematic and methodic approaches in dealing with new and advancing technology. 2. Identify appropriate specifications for required devices as low size, low cost and low consumed power. 3. Create and/or re-design a process, component or system, and carry out specialized engineering designs of integrated circuits.
C1	1: Recognize engineering problems to identify the best solutions.
C3	1: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Technology of the integrated circuits: implementation of the integrated circuits	4	2	-
2	principles of design – Batt circuits metal/oxide/semiconductor/ the negative and the metal/semiconductor oxide/ synchronous	2	4	-
3	BJT high frequency response	4	4	-



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4	Gallium-Arsend digital circuits - applications of the digital and analog integrated circuits: transistor logic	6	4	-
5	BJT and FET total frequency response and bode plot	4	4	-
6	transistor – connected transmitter logic – the digital circuits for metal/oxide/semiconductor - the widespread amplifiers and the transient conducting amplifiers	4	4	-
7	the radio frequency amplifiers and the medium frequency - the harmonic and non-harmonic pulses – the pulse which is controlled by volt	2	4	-
8	The closed stage ring – applications of the sending and he receiving circuits.	2	2	-
Total		28	28	

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Technology of the integrated circuits: implementation of the integrated circuits	X						X			X				
2	principles of design – Batt circuits metal/oxide/semiconductor/ the negative and the metal/semiconductor	X						X			X				



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	oxide/ synchronous														
3	BJT high frequency response	X						X			X				
4	Gallium-Arsend digital circuits - applications of the digital and analog integrated circuits: transistor logic	X						X			X				
5	BJT and FET total frequency response and bode plot	X						X			X				
6	transistor – connected transmitter logic – the digital circuits for metal/oxide/semiconductor - the widespread amplifiers and the transient conducting amplifiers	X						X			X				
7	the radio frequency amplifiers and the medium frequency - the harmonic and non-harmonic pulses – the pulse which is controlled by volt	X						X			X				
8	The closed stage ring – applications of the sending and he receiving circuits.	X						X			X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials



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2	Online lectures and assignments
6.2. Teaching and learning method for low capacity and outstanding Student	
For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	A3(1), B2(1,2)
2	Student load (Quiz & sheets, reports)	B2(1,2,3),C3(1)
3	Final term examination	A3(1) ,B2,(1,2,3) ,C1 (1),C3,(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Adel, Sedra"Microelectronic devices and Circuits", Tenth Edition, Boston Columbus Indianapolis New York San Francisco, 2019.



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	Columbus Indianapolis New York San Francisco, 2019.
2	ROBERT B. L. NASHELSKY, "Electronic devices and Circuit Theory ", Tenth Edition Pearson Education, Inc., Upper Saddle River, New Jersey 07458. Pearson Prentice Hall, 2023.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Technol ogy of the integrate d circuits: impleme ntation of the integrate d circuits	1			X									X					X		X	
2	principl es of design – Batt circuits metal/ox	1 , 2			X									X					X		X	



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	ide/semi conduct or/ the negative and the metal/se micondu ctor oxide/ synchro nous																			
3	BJT high frequenc y response	1 , 2			X								X					X		X
4	Gallium -Arsend digital circuits - applicati ons of the digital and analog integrate d circuits: transisto r logic	1			X								X					X		X
5	BJT and FET total frequenc y	1 , 2			X								X					X		X



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	response and bode plot																			
6	transistor – connected transmitter logic – the digital circuits for metal/oxide/semiconductor - the widespread amplifiers and the transient conducting amplifiers	1 , 2			X								X					X		X
7	the radio frequency amplifiers and the medium frequency	1 , 2			X								X					X		X



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	y - the harmonic and non-harmonic pulses – the pulse which is controlled by volt																					
8	The closed stage ring – applications of the sending and receiving circuits.	1, 2			X								X					X		X		

Course Coordinator: Dr.Walid Rasslan

Head of Department: Prof.Mohamed Fouad

Date of Approval: 2023

Electronic Tests 3 (CEE 404)

4 Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department



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وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
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Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Electronic Circuits 1		
Course Code	CEE 404		
Year/Level	Level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 306		
Teaching hours	Lectures	Tutorial	Practical
	1	-	3

5 Course Aims:

No.	Aims
1	Proper utilization of modern engineering techniques, skills, and tools
11	Allocate projects creatively by analyzing data from intended tests.

3- Competencies Learning Outcomes (LO'S)

Competencies Learning Outcomes (LO'S)	
A9	1.Think creatively in solving problems of design. 2. Effectively manage tasks, time, and resources. 3 .Refer to relevant literatures.
B4	1. Recognize methodologies of solving engineering problems. 2. Merge engineering knowledge and understanding to improve design of electronic circuits, products and/or services. 3. Demonstrates basic organizational and project management skills.
B5	1.Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	applications on the binaries circuits	2	-	3
2	Performance of transistors – The various transistor amplifiers with single stage and multi-stages	1	-	3



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3	feedback amplifiers	2	-	6
4	frequency response for amplifiers and presenting the frequency range – processes amplifiers	2	-	6
5	Thyristor specifications and its applications	1	-	3
6	TRIAC and DIAC properties	2	-	9
7	operations of amplifier circuits	1	-	3
8	experiments on gates and logic circuits	3	-	9
Total		14		42

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	applications on the binaries circuits	X						X			X				
2	Performance of transistors – The various transistor amplifiers with single stage and multi-stages	X						X			X				
3	feedback amplifiers	X						X			X				



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4	frequency response for amplifiers and presenting the frequency range – processes amplifiers	X						X			X				
5	Thyristor specifications and its applications	X						X			X				
6	TRIAC and DIAC properties	X						X			X				
7	operations of amplifier circuits	X						X			X				
8	experiments on gates and logic circuits	X						X			X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:



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7.1 Student Evaluation methods:

No.	Evaluation Method	LO's
1	Periodic exam	A9(1,2,3),B4 (1)
2	Student load (Quiz & sheets, reports)	B4 (1), B5 (1)
3	Final term examination	A9(1,2,3),B5,B4 (1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Alan S. Morris, "Measurement and Instrumentation Principles," Published May 14th 2019 by Butterworth-Heinemann.
2	Robert A. Witte, "Electronic Test Instruments(Analog and Digital Measurements, Hewlett Packard, 2023

9. Facilities required for teaching and learning:

No.	Facility
1	Computer and video data show
2	Lab
3	White board
4	Wireless internet
5	Sound system

10. Matrix of Competencies and Aims:

No.	To p i c A i m c	Competencies



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			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	applications on the binaries circuits	7, 13		X												X						X
2	Performance of transistors – The various transistor amplifiers with single stage and multi-stages	7, 13		X												X						X
3	feedback amplifiers	7, 13		X												X						X
4	frequency response for amplifiers and presenting the frequency range –	7, 13		X												X						X



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	processe s amplifie rs																				
5	Thyristor specific ations and its applicati ons	7 , 1 3		X											X						X
6	TRIAC and DIAC properti es	1 3		X											X						X
7	operatio ns of amplifie r circuits	1 3		X											X						X
8	experim ents on gates and logic circuits	1 3		X											X						X

Course Coordinator: Dr. Hossam el-Sheikh
Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

Project Management and Control



وحدة ضمان الجودة



وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

(ENG 408)

1-Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Basic science and Engineering Department		
Course Title	Project Management and Control		
Course Code	ENG 408		
Year/Level	level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre-request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2-Course Aims:

No.	Aims
2	Work in and manage a diverse team of professionals from various engineering disciplines, taking responsibility for own and team performance; and Behave professionally and adhere to engineering ethics and standards.
5	Communicate effectively with a variety of audiences using a variety of forms, methods, and languages; cope with academic and professional issues in a critical and creative manner; and display leadership, business administration, and entrepreneurial abilities.
10	Demonstrate leadership qualities, business management, and skill development.

3- Competencies:

Competencies	Learning Outcomes (LO'S)
A4. Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	1. List the engineering-related business and management principles. 2. Create methodical project management when dealing with new and advancing technology. 3. Use fundamental organizational and project management abilities. 4. Apply quality assurance procedures and follow codes and standards.



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A6. Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.	1. Recognize business and management principles relevant to engineering; project planning and schedule, network based scheduling, critical path method (CPM), program evaluation and review technique (PERT), Probability aspect of project completion time, Project cost control, Resource allocation and forecasting funds requirements. 2 Judge engineering decisions considering balanced costs, benefits, time from project cost control and forecasting funds requirements.
A8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools.	1 Communicate effectively.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Introduction to project management.	2	2	-
2	Project planning and scheduling.	2	2	-
3	Network based scheduling.	2	2	-
4	Critical path method.	6	6	-
5	Program evaluation & review technique (PERT)	4	4	-
6	Probability aspects of project completion time.	2	2	-
7	Project cost control.	6	6	-
8	Resource allocation	2	2	-
9	Forecasting funds requirement	2	2	-
Total		28	28	-

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	Introduction to project management .	X	X			X		X							
2	Project planning and scheduling.	X	X			X		X							
3	Network based scheduling.	X	X			X	X	X							
4	Critical path method.	X	X			X	X	X							
5	Program evaluation& review technique (PERT)	X	X				X	X							
6	Probability aspects of project completion time.	X	X			X		X							
7	Project cost control.	X	X			X	X	X							
8	Resource allocation	X	X			X		X							



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9	Forecasting funds requirement	X	X			X	X	X							

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Periodic exam	A6,A8	1
2	Student load (quizzes, sheets, report)	A8	1
3	Final term examination	A6,A8	1,1

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%



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2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Cleland, David. 2020. Flied guide to project management. New York: Wiley.
2	Smith, K.A. 2019. Project management and teamwork. New York: McGraw-Hill.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	Seminar
3	White board
4	Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Introduc tion to project manage ment.	2 , 5 , 1 0				X		X		X												
2	Project planning and scheduli ng.	2 , 5 , 1 0				X		X		X												
3	Network based scheduli	2 , 5				X		X		X												



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	ng.	, 1 0																		
4	Critical path method (CPM).	2,5,10			X		X		X											
5	Program evaluation & review technique (PERT)	2,5,10			X		X		X											
6	Probability aspects of project completion time.	2,5,10			X		X		X											
7	Project cost control.	2,5,10			X		X		X											
8	Resource allocation	2,5,10			X		X		X											

Course Coordinator: Dr. Hamdy Abd EL Aty
Head of Department: Asso.prof.Amal Behery
Date of Approval: 2023

Optical Semiconductors (CEE405)

1- Basic Information:

Program Title		Communications and Electronics Engineering program		
Department Offering the Program		Communications and Electronics Engineering Department		
Department Responsible for the Course		Communications and Electronics Engineering Department		
Course Title		Optical Semiconductors		
Course Code		CEE 405		
Year/Level		Level 4		
Specialization		Major		
Authorization Date of Course Specification		2023		
Pre- Request		CEE 202		
Teaching hours	Lectures	Tutorial	Practical	
	3	2	-	

2- Course Aims:

No.	Aims
6	Recognize and respect the importance of the environment, both physical and natural, and work to promote sustainable principles

3- Competencies (LO'S):

Cometency	Learning Outcomes
C1	1: Recognize engineering problems to design a system; component and process to meet the required needs, operate and maintain optical components and systems for fundamentals of optics, description of fiber optic systems, Properties of optic fiber and fiber components, Electro optic devices.
C3	1: Investigate the failure of components, system, and processes. 2: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact.



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	3: Apply safe systems at work and observe the appropriate steps to manage risks

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Fundamentals of optics	6	4	-
2	Physical description of fiber optic systems	6	4	-
3	Properties of optic fiber and fiber components	8	6	-
4	Electro optic devices: light sources and modulator, detectors and amplifiers	6	4	-
5	Fiber optic link design and specification	10	6	-
6	Basic concepts of light absorption and emission from semiconductors optics	6	4	-
Total		42	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Fundamentals of optics	X						X			X				
2	Physical description of fiber optic systems	X						X			X				
3	Properties of optic fiber and fiber components	X						X			X				



وحدة ضمان الجودة



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4	Electro optic devices: light sources and modulator, detectors and amplifiers	X						X			X				
5	Fiber optic link design and specification	X						X			X				
6	Basic concepts of light absorption and emission from semiconductor s optics	X						X			X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	ILO's
1	Periodic exam	C1(1), C3(1-3)
2	Student load (quizzes- reports- sheets)	C1(1), C3(1-3)
3	Final term examination	C1(1), C3(1-2-3)

7.2 Evaluation Schedule:



7.3 weighting of Evaluation:

8. List of References:

9. Facilities required for teaching and learning:

10. Matrix of Competencies and Aims:

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وزارة التعليم العالي
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1	Fundamentals of optics	6																X		X	
2	Physical description of fiber optic systems	6																X		X	
3	Properties of optic fiber and fiber components	6																X		X	
4	Electro-optic devices: light sources and modulators, detectors and amplifiers	6																X		X	
5	Fiber optic link design and specification	6																X		X	

6	Basic concepts of light absorption and emission from semiconductors optics	6																	X		X	

Course Coordinator: Assoc. Prof.Ossama Oraby
Head of Department: Prof.Mohamed Fouad
Date of Approval: 2023

Microprocessor systems (CEE 406)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Microprocessor systems		
Course Code	CEE 406		
Year/Level	level 4- Semester2		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical

	3	2	-

2- Course Aims:

No.	Aims
11	Deal with Computer systems (computer's hard ware, software, operating systems and inter facing) to meet the required needs in all electronics engineering issues.

3- Cometenecies (LO'S):

Competency	Learning Outcomes (LO'S)
A1	1 Applying basics of microprocessor's systems that are related to the electronic systems.
B2	1. Evaluate the characteristics and performance of microprocessor's types.
C2	1: Describe principles of a specific microprocessor system. 2: Explain current engineering technologies as related to microprocessor systems
C3	1: Investigate the failure of microprocessor processes

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Theory and design of microprocessor. - Semiconductors technology. Support circuits.-Types of Microprocessor	3	2	-
2	80x86 Processor Architecture: - Introduction, Processor Model,- Programmer's model, - Designer's Model: 8086 hardware details,	6	4	-
3	Clock generator 8284A: Bus buffering and latching, - Processor Read & Write bus cycles, Ready and waits state generation, Minimum versus Maximum mode operation.	6	4	-
4	Memory Interfacing: 80x86 processor-Memory interfacing, Address decoding techniques, Memory Devices – ROM, EPROM, SRAM, FLASH, and DRAM devices, Memory internal organization Memory read and write timing diagrams. DRAM Controller	6	4	-
5	Basic I/O Interfacing: Parallel I/O, Programmed I/O, I/O port address decoding, The 8255A	6	4	-



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	Programmable Peripheral Interface (PPI), programming 8255, Operation modes, Interface examples – Timer Interfacing: The 8254 Programmable Interval Timer (PIT), Timing applications. Serial I/O Interface: Asynchronous communication, Physical communication			
6	Interrupts: Interrupt driven I/O, Software & Hardware interrupts, Interrupt vectors and vector table, Interrupt processing, The 8259A Programmable Interrupt Controller (PIC)- cascading of 8259s, programming 8259, Interrupt examples – Printer, Real-Time Clock, PC Keyboard. Direct Memory Access: Basic DMA operation, DMA Controlled I/O, The 8237.DMA Controller, Disk Memory Systems- Floppy disk, Hard disk, optical disk memory systems, video displays.	9	6	-
7	Microprocessor programming and interfacing, software development. Assembly language, Machine language	6	4	-
Total		42	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Theory and design of	X	X					X			X	X			



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	microprocessor .- Semiconductor s technology. Support circuits.-Types of Microprocesso r														
2	80x86 Processor Architecture: - Introduction, Processor Model,- Programmer's model, - Designer's Model: 8086 hardware details,	X	X					X				X	X		
3	Clock generator 8284A: Bus buffering and latching, - Processor Read & Write bus cycles, Ready and waits state generation, Minimum versus Maximum mode operation.	X	X					X				X	X		



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4	Memory Interfacing: 80x86 processor-Memory interfacing, Address decoding techniques, Memory Devices – ROM, EPROM, SRAM, FLASH, and DRAM devices, Memory internal organization Memory read and write timing diagrams. DRAM Controller	X	X					X			X	X			
5	Basic I/O Interfacing: Parallel I/O, Programmed I/O, I/O port address decoding, The 8255A Programmable Peripheral Interface (PPI),	X	X					X			X	X			



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	programming 8255, Operation modes, Interface examples – Timer Interfacing: The 8254 Programmable Interval Timer (PIT), Timing applications. Serial I/O Interface: Asynchronous communication , Physical communication													
6	Interrupts: Interrupt driven I/O, Software & Hardware interrupts, Interrupt vectors and vector table, Interrupt processing, The 8259A Programmable Interrupt Controller (PIC)- cascading of 8259s,	X	X					X			X	X		



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	programming 8259, Interrupt examples – Printer, Real- Time Clock, PC Keyboard. Direct Memory Access: Basic DMA operation, DMA Controlled I/O, The 8237.DMA Controller, Disk Memory Systems- Floppy disk, Hard disk, optical disk memory systems, video displays.														
7	Microprocesso r programming and interfacing, software development. Assembly language, Machine language	X	X					X			X	X			

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments



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6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	C2.1, B1.1
2	Student load	C2.1, C3.1
3	Final term examination	A1.1C2.1, C2.2, B1.1, B2.1, C3.1

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7. 3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Dr. Deepali A. Godse, Atul P. Godse, Microprocessors and Multicore Systems”,



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	Technical Publications, 2023
2	Dr. Deepali A. Godse, Atul P. Godse, , "Microprocessors & Introduction to Microcontroller," Technical Publications,2023.
3	Thomas L. Floyd, " Electronic devices ", Ninth Edition, Prentice Hall Boston Columbus Indianapolis New York San Francisco,2020
4	Adel Sedra, Smith, " Microelectronic Circuits ", six Edition Oxford, New York, 2020
5	A.P.Godse, D.A.Godse, Microprocessors Technical Publications, 2019.
6	Introduction to Microprocessors and Microcontrollers, John Crisp, Newnes, 2018.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																				
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	
1	Theory and design of microprocessor. Semiconductors technology, Support circuits	1 1	X											X						X	X		
2 - 3	Process or Architec	1 1	X											X						X	X		



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	ture: Introduc tion, Process or Model, Program mer's model, Design er's Model: 8086 hardwar e details, types of Micropr ocessor.																			
4 - 5	Clock generato r 8284A, Bus bufferin g and latching, Process or Read & Write bus cycles, Ready and wait state generati on,	1 1	X										X					X	X	



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	Minimum versus Maximum mode operation.																				
6 - 7	Memory Interfacing :80x86 processor- Memory interfacing, Address decoding techniques, Memory Devices – ROM, EPROM , SRAM, FLASH, DRAM devices, Memory internal organization, Memory read and write	11	X										X					X	X		



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	timing diagram s, DRAM Controll er																			
8 - 9	Basic I/O Interfacing: Parallel I/O, Program med I/O, I/O port address decodin g, The 8255A Program mable Peripher al Interfac e (PPI), program ming 8255, Operatio n modes, Interfac e example s – Keyboar	1 1	X										X					X	X	



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d matrix, LCD/7- Segment Display, Printer, stepper motor, A/D and D/A converte r. Timer Interfaci ng: The 8254 Program mable Interval Timer (PIT), Timing applicati ons. Serial I/O Interfac e: Asynchr onous commun ication, Physical commun ication standard -EIA RS232,																				



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	Program mable Commu nication Interfac e - UART 8251, Interfacing serial I/O devices- mouse, modem, PC Keyboar d.																					
1 0 1 1 1 2	Interrupt s: Interrupt driven I/O, Softwar e & Hardwar e interrupt s, Interrupt vectors and vector table, Interrupt processi ng, The 8259A	1 1	X									X						X	X			



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Program mable Interrupt Controll er (PIC)- cascadin g of 8259s, program ming 8259, Interrupt example s – Printer, Real- Time Clock, PC Keyboar d. Direct Memory Access: Basic DMA operatio n, DMA Controll ed I/O, The 8237.D MA Controll er, Disk Memory Systems																			



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	- Floppy disk, Hard disk, optical disk memory systems, video displays .																				
1314	Microprocessor programming and interfacing, Software development. Assembly language, Machine language	11	X										X					X	X		

Course Coordinator: Dr. Amira Elsonbaty
Head of Department: Prof. Mohamed Foad
Date of Approval: 2023

**Electromagnetic Waves
(CEE407)**

1- Basic Information:

Program Title		Communications and Electronics Engineering program		
Department Offering the Program		Communications and Electronics Engineering Department		
Department Responsible for the Course		Communications and Electronics Engineering Department		
Course Title		Electromagnetic Waves		
Course Code		CEE 407		
Year/Level		level 4		
Specialization		Major		
Authorization Date of Course Specification		2023		
Pre- Request		CEE 301		
Teaching hours	Lectures	Tutorial	Practical	
	2	2	-	

2- Course Aims:

No.	Aims
2	Using the basics of engineering theories related to electromagnetic waves, in addition to the ability to convert them to life applications

3- Competencies (LO'S):

Competency	Learning Outcomes (LO'S)
C1	1. Apply knowledge of mathematics to assess theories of electromagnetics engineering . 2. Apply knowledge of science to assess theories of electromagnetics engineering. 3. apply the theories of electromagnetic engineering to assess the applications

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Faraday law- Maxwell equations	4	2	-
2	Electromagnetic Wave propagation in different media and general wave solution	6	4	-
3	Boundary condition -Power and Poynting theorem	2		-
4	-Reflections at the interface at different media	6	4	-
5	Standing wave ratio and input	2	2	-



وحدة ضمان الجودة



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	impedance			
6	Transmission line theory and applications	4	2	-
7	Smith chart - Matching mechanisms	4	4	-
Total		28	28	

5. Teaching and learning methods:

N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Faraday law- Maxwell equations	X	X								X	X			
2	Electromagnetic Wave propagation in different media and general wave solution	X	X								X	X			
3	Boundary condition - Power and Poynting theorem	X	X								X	X			
4	-Reflections at the interface at different media	X	X								X	X			
5	Standing wave ratio and input impedance	X	X								X	X			



وحدة ضمان الجودة



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6	Transmission line theory and applications	X	X								X	X			
7	Smith chart - Matching mechanisms	X	X								X	X			

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	C1(1,2,3)
2	Student load (quizzes-sheets-reports)	C1(1,2,3)
3	Final term examination	C1(1,2,3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%

2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Matthew N.O. Sadiku., J.Sagliocca and O.Soriyan ” <i>Elements of Electromagnetics</i> ,” 7 th -edition 2018
2	W.H. Hayt, Jr.,”Engineering of Electromagnetics,” Amazon, 9thEdition (2018).
3	F. T. Ulaby, ”Fundamentals of Applied Electromagnetics, ”Prentice-Hall, 2023.
4	R. Plonseyand R. E. Collin, “Principles and Applications of ElectromagneticFields,”McGraw-Hill,2020.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system

10. Matrix of knowledge and skills of the course:

No.	Topic	aim	A1	C2
1			X	
2			X	x
3			X	x
4			X	x
5			X	x
6			X	x
7				x

10. Matrix of Competencies and Aims:



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No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Faraday law-Maxwell equations	1	X																X			
2	Electromagnetic Wave propagation in different media and general wave solution	2	X																X			
3	Boundary condition - Power and Poynting theorem	2	X																X			
4	- Reflections at the interface	1, 2	X																X			



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	at different media																					
5	Standing wave ratio and input impedance	2	X															X				
6	Transmission line theory and applications	2	X															X				
7	Smith chart - Matching mechanisms	1, 2	X															X				

Course Coordinator: Dr.Hossam Abd-El-Fattah

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023

Electronic Tests 4 (CEE 408)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Electronic Tests 4		
Course Code	CEE408		
Year/Level	Level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 402		
Teaching hours	Lectures	Tutorial	Practical
	1	-	3

2- Course Aims:

No.	Aims
7	Proper utilization of modern engineering techniques, skills, and tools
13	. Allocate projects creatively by analyzing data from intended tests.

3- Competencies Learning Outcomes (LO'S):

Competency	Learning Outcomes (LO'S)
A9	1.Think creatively in solving problems of design. 2. Effectively manage tasks, time, and resources. 3 .Refer to relevant literatures.
B4	1. Use relevant laboratory equipment and analyze the results correctly for communication systems
C4.	1: Use appropriate tools to measure system performance to evaluate modulation/demodulation technique And of the performance of optical communication system.

4. Course Contents:



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No.	Topics	Lectures	Tutorial	Practical
1	Optical fiber application -Practical : 660 nm Analog Transmitter Circuit 660 nm analog Received Circuit	2	-	6
2	Amplitude, ASK, AM modulation - Practical : 820 nm Analog Transmitter Circuit&820 nm analog Received Circuit	2	-	6
3	Amplitude, ASK, AM demodulation -Practical : 820 nm Digital Transmitter Circuit. & 660 nm Digital Transmitter Circuit. AM Modulator	2	-	6
4	FM, FSK modulation -Practical : ASK Modulator- AM Demodulator	2	-	6
5	FM, FSK demodulation -Practical : ASK Demodulator FM Modulator	2	-	6
6	Phase locked loop -Practical : FSK Modulator FM Demodulator FSK Demodulator	1	-	3
7	Line coding Practical : Manchester	1	-	3
8	Optical communication system. - Practical: Encoder and Decoder	2	-	6
Total		14		42

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	BASICS OF OPERATIONAL AMPLIFIERS: Current mirror and current sources, Current sources as active loads, Voltage sources, Voltage References, BJT Differential amplifier with active loads, Basic information about op-amps	X	X		X	X									



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2	Ideal Operational Amplifier – General operational amplifier stages –and internal circuit diagrams of IC 741, DC and AC performance characteristics, slew rate, Open and closed loop configurations	×	×		×	×									



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3	APPLICATIONS OF OPERATIONAL AMPLIFIERS: Sign Changer, Scale Changer, Phase Shift Circuits, Voltage Follower, V-to- I and I-to-V converters, adder, subtractor, Instrumentation amplifier, Integrator, Differentiator, Logarithmic amplifier, Antilogarithmic amplifier, Comparators, Schmitt trigger, Precision rectifier, peak detector, clipper and clamper, Low- pass, high-pass and band-pass Butterworth filters	X	X		X	X									



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4	ANALOG MULTIPLIER AND PLL: Analog Multiplier using Emitter Coupled Transistor Pair – Gilbert Multiplier cell – Variable transconductance technique, analog multiplier Ics and their applications, Operation of the basic PLL, Closed loop analysis, Voltage controlled oscillator, Monolithic PLL IC 565, application of PLL for AM detection, FM detection, FSK modulation and demodulation and Frequency synthesizing	X	X		X	X								



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5	ANALOG TO DIGITAL AND DIGITAL TO ANALOG CONVERTER S: Analog and Digital Data Conversions, D/A converter – specifications – weighted resistor type, R-2R Ladder type, Voltage Mode and Current-Mode R / 2R Ladder types – switches for D/A converters, high speed sample-and-hold circuits, A/D Converters	×	×		×	×									



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6	specifications – Flash type – Successive Approximation type – Single Slope type – Dual Slope type – A/D Converter using Voltage-to- Time Conversion – Oversampling A/D Converters	X	X		X	X									
7	WAVEFORM GENERATOR S AND SPECIAL FUNCTION ICS: Sine-wave generators, Multivibrators and Triangular wave generator, Saw-tooth wave generator, ICL8038 function generator, Timer IC 555, IC Voltage regulators	X	X		X	X									



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8	Three terminal fixed and adjustable voltage regulators – IC 723 general purpose regulator – Monolithic switching regulator, Switched capacitor filter IC MF10, Frequency to Voltage and Voltage to Frequency converters, Audio Power amplifier, Video Amplifier, Isolation Amplifier, Opto-couplers and fibre optic IC.	X	X		X	X									

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students

- Assign a portion of the office hours for those students.
- Give them specific tasks.
- Repeat the explanation of some of the material and tutorials.



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	- Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	ILO's
1	Periodic exam	A9(1,2,3),B4(1)
2	Student load (quizzes- reports- electronic- projects)	B4(1), C4(1)
3	Final term examination	A9(1,2,3),B4(1), C4(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Bahaa E. A. Saleh, Malvin Carl Teich,"Fundamentals of Photonics ", ISBN: 978-1-119-50687-4., 3rd 2019
2	J.C.palais,"Fiber Optics Communications",prentice Hall,2020
3	G. P. Agrawal, <i>Nonlinear Fiber Optics</i> (Academic Press, Elsevier, 1989); Japanese translation, 6th ed. 2019.
4	G. P. Agrawal, <i>Fiber-Optic Communication Systems</i> (Wiley, 1992); 4th ed. 2018.
5	D.K.Mynbaev and L.L.Scheiner,"Fiber-Optic Communications Technology."prentice-Hall,2023.



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9. Facilities required for teaching and learning:

No.	Facility
1	Computer and video data show
2	Lab
3	White board
4	Wireless internet
5	Sound system

10. Matrix of knowledge and skills of the course:

N o.	Topic	Aims	B4	C4
1			X	
			X	
3			X	X
4				X



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5				X
				X
6			X	
7			X	
8				

10. Matrix of Competencies and Aims:

List Matrix of Competencies and Aims:																						
No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Optical fiber applicati on - Practical : 660 nm Analog Transmi tter Circuit 660 nm analog Receive d Circuit	7 , 13														X					X	

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	Transmitter Circuit. AM Modulator																				
4	FM, FSK modulation - Practical : ASK Modulator- AM Demodulator	13													X					X	
5	FM, FSK demodulation - Practical : ASK Demodulator FM Modulator	7, 13													X					X	
6	Signal generators	11													X					X	



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7	Phase locked loop - Practical : FSK Modulator or FM Demodulator FSK Demodulator	7														X					X	
8	Computer Aided design	11														X					X	

Course Coordinator: Dr. Walid Rasslan
Head of Department: Prof. Mohamed Foad
Date of Approval: 2023

Environmental Management (ENG401)

1-Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Basic Science and Engineering Department		
Course Title	Environmental Management		
Course Code	ENG401		
Year/Level	level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre-request	-		
Teaching hours	Lectures	Tutorial	Practical
	3	-	-

2-Course Aims:

No.	Aims
2	Work in and manage a diverse team of professionals from various engineering disciplines, taking responsibility for own and team performance; and Behave professionally and adhere to engineering ethics and standards.
3	Recognize his or her role in promoting engineering and contributing to the profession's and community's development; by appreciating the importance of the environment, both physical and natural, and working to promote sustainability concepts;

3- Competencies Learning Outcomes (LO'S):

Competencies	Learning Outcomes (LO'S)
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	1 Understand the professional ethics and impacts of engineering solutions on society and environment. 2 Recognizes the environmental and economic impact of various industries, waste minimization, and industrial facility remediation. 3 Judge engineering decisions considering balanced costs, benefits, safety, quality, reliability, and environmental impact.



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design and development.	4 Incorporate economic, societal, global, environmental, and risk management factors into design.
A4 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.	1 Describe quality assurance systems, codes of practice, and standards, as well as health and safety regulations and environmental concerns. 2 Apply safe systems at work by taking the necessary precautions to manage hazards. 3 Utilize modern technologies.
A10 Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.	1 Search for information to engage in lifelong self-learning discipline.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	The importance of studying environmental science – modern technology and its effect on the environment	12	-	-
2	quality of the environment and development elements	6	-	-
3	sources of environmental pollution and method of control (air pollution – water pollution)	12	-	-
4	Solid wastes pollution – noise) – economics of environmental pollution control – legislations for the environment protection.	12	-	-
Total		42	-	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab



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1	The importance of studying environmental science – modern technology and its effect on the environment	X	X			X					X				
2	quality of the environment and development elements	X	X	X		X					X				
3	sources of environmental pollution and method of control (air pollution – water pollution)	X	X			X		X			X				
4	Solid wastes pollution – noise) – economics of environmental pollution control – legislations for the environment protection.	X	X	X		X		X			X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials



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2	Online lectures and assignments
6.2. Teaching and learning method for low capacity and outstanding Student	
For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student evaluation method:

No.	Evaluation Method	Competencies	LO's
1	Mid Term Examination	A3, A4	1, 1
2	Semester work (report, quizzes, presentation)	A4, A10	1, 2, 1
3	Final Term Examination	A3, A4, A10	2, 3, 1, 2

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	د.زكريا طاحون , ادارة البيئة نحو الانتاج الأنظف , الهيئة المصرية العامة للكتاب, القاهرة, 2023
2	محمد اسماعيل خضر, مقدمة في علوم البيئة , الهيئة العامة للكتاب , القاهرة 2019

9. Facilities required for teaching and learning:

No.	Facility



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1	Seminar
2	Lecture Classroom
3	White Board
4	Data Show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	The importance of studying environmental science – modern technology and its effect on the environment	2, 3			X	X						X										
2	Quality of the environment and development elements	2, 3			X	X						X										
3	Sources	2			X	X						X										



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	of environmental pollution and method of control (air pollution – water pollution	3																		
4	Solid wastes pollution – noise) – economics of environmental pollution control – legislations for the environment protection.	2, 3			X	X					X									

Course Coordinator: Dr. Ramadan Elkateb
Head of Department: Asso.prof.Amal Behery

Date of Approval: 2023

Microwave electronics (CEE 411)

1- Basic Information:

Program Title				Communications and Electronics Engineering program
Department Offering the Program				Communications and Electronics Engineering Department
Department Responsible for the Course				Communications and Electronics Engineering Department
Course Title				Microwave electronics
Course Code				CEE 411
Year/Level				Level 4
Specialization				Major
Authorization Date of Course Specification				2023
Pre- Request				CEE 402
Teaching hours	Lectures	Tutorial	Practical	
	2	2	-	

1- Course Aims:

No.	Aims
3	Establish a strong behavior and maintain engineering ethics and standards;
8	Acknowledge and accept personal responsibility for your education, personal development, as well as your ability to achieve post-graduation and research studies;
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.

3- Competencies (LO'S):

Competency	Learning Outcomes (LO'S)
A3	1. Describe principles of design including elements design, process and/or a system related to specific disciplines. 2. Combine, exchange, and assess different ideas, views, and knowledge from a range of sources



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B2	1. Create and/or re-design a process, component or system, and carry out specialized engineering designs.
C2	1. Describe principles of design including elements design, process and/or a system related to specific disciplines 2. Design a process, component or system to carry out specialized engineering designs

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Microwave fundamental and Transmission line	2	2	
2	Microwave filters design. Low pass filter by insertion loss method Scaling and conversion Stepped impedance low pass filter design Implementation using stubs. Implementation with coupled line.	6	8	-
3	Directional coupler	4	4	
4	Rectangular wave guide-Cylindrical wave guide.	6	6	
5	Microwaves transistors and amplifiers	6	6	-
6	Low noise amplifiers	2	2	-
7	Microwaves oscillators	2	2	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab



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1	Microwave fundamental and Transmission line	X	X			X					X				
2	Microwave filters design. Low pass filter by insertion loss method Scaling and conversion Stepped impedance low pass filter design Implementation using stubs. Implementation with coupled line.	X	X			X					X				
3	Directional coupler	X	X			X					X				
4	Rectangular wave guide- Cylindrical wave guide.	X	X			X					X				
5	Microwaves transistors and amplifiers	X	X			X					X				
6	Low noise amplifiers	X	X			X					X				
7	Microwaves oscillators	X	X			X					X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:



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1	Additional Tutorials
2	Online lectures and assignments
6.2. Teaching and learning method for low capacity and outstanding Student	
For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	ILO's
1	Periodic exam	A3(1),B2(1)
2	Student load (quizzes- reports –sheets-presentation)	A3(1),B2(1),C2(1)
3	Final term examination	A3(1)B2(1),C2(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	David M.pozar, "microwave engineering ", Fourth Edition Pearson Education, Inc., bibliographical references and index. ISBN 978-0-470-63155-3, 2023.



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2	W.H. Hayt, Jr., "Engineering of Electromagnetics," Amazon, 9th Edition (2018).
3	Matthew N.O. Sadiku., J.Sagliocca and O.Soriyan "Elements of Electromagnetics," 7 th -edition –Oxford, 2018.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Transmission line	3, 8												X		X			X	X
2	Microwave filters design. Low pass filter by insertion loss method Scaling and conversion	3, 8, 9												X		X			X	X



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	Stepped impedance low pass filter design Implementation using stubs. Implementation with coupled line.																			
3	Directional coupler	3, 8, 11											X		X			X	X	
4	Rectangular waveguide-Cylindrical waveguide.	3, 11											X		X			X	X	
5	Microwaves transistors and amplifiers	8, 11											X		X			X	X	



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6	Low noise amplifiers	8, 11												X		X			X	X		
7	Microwaves oscillators	3, 8, 11												X		X			X	X		

Course Coordinator: Dr. Hossam Elsheikh

Head of Department: Prof. Mohamed Foad

Date of Approval: 2023

Advanced electronic measurements (CEE 412)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department
Department Responsible for the Course	Communications and Electronics Engineering Department
Course Title	Advanced electronic measurements
Course Code	CEE412
Year/Level	Level 4
Specialization	Major
Authorization Date of Course Specification	2023
Pre- Request	CEE 202

Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.
13	Allocate projects creatively by analyzing data from intended tests.

3. Competencies Learning Outcomes (LO'S)

Competency	Learning Outcomes (LO'S)
B2	1. Describe quality assurance systems, codes of practice and standards, health and safety requirements, and environmental issues. 2. Assess and evaluate the characteristics and performance of components, systems and processes. 3. Create and/or re-design a process, component or system, and carry out specialized engineering designs.
C1	1: Recognize engineering problems to identify the best solutions 2: Think creatively and innovatively in problem solving and design 3: Search for information to engage in lifelong self-learning discipline.
C3	1: Describe quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.
C4	1: Evaluate the troubles to repair all types of electronic systems using the standard tools.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Integrated measurements amplifiers	2	2	-
2	comparisons and taking of the samples and the	2	2	-



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	stopping			
3	the converters(digital/analog and analog/digital)	6	6	-
4	the electric variables	6	6	-
5	signals preparation and its filtration idle elements	6	6	-
6	systems and components of signals attainments	6	6	-
Total		28	28	-

5. Teaching and learning methods:

N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Integrated measurements amplifiers	X	X			X					X				
2	comparisons and taking of the samples and the stopping	X	X			X					X				
3	the converters(digital/analog and analog/digital)	X	X			X					X				
4	the electric variables	X	X			X					X				
5	signals preparation and its filtration idle elements	X	X			X					X				



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6	systems and components of signals attainments	X	X			X					X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	B2(1,2) ,B4(1)
2	Student load (quizzes- reports –sheets-presentation)	B4(1,2),C4(1),C5(1)
3	Final term examination	B4(1),C4(1),C5(1)

7.2 Evaluation Schedule

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term	60%



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	examination	
Total		100%

8. List of References:

No.	Reference List
1	ELECTRONIC AND ELECTRICAL MEASURING INSTRUMENTS & MACHINES BY U A BAKSHI, A V BAKSHI, K A BAKSHI 2018
2	ELECTRONIC INSTRUMENTATION AND MEASUREMENTS BY DAVID A. BELL 2019

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Integrated measurements amplifiers	1 1 , 1 3												X		X					X	X
2	comparisons and taking of the samples and the stoping	1 1 , 1 3												X		X					X	X



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3	the converte rs(digita l/analog s and analog/d igital)	1 1 , 1 3												X		X						X	X
4	the electric variable s	1 1 , 1 3												X		X						X	X
5	signals preparat ion and its filtration	1 1 , 1 3												X		X						X	X
6	systems and compon ents of signals attainme nts	1 1 , 1 3												X		X						X	X

Course Coordinator: Dr.Amira EL-Sonbaty

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023

Electronic design with aids of computer

(CEE 413)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Electronic design with aids of computer		
Course Code	CEE413		
Year/Level	Level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 204		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
11	Design a system; component, process, and circuits with aids computer's software programs to meet the required needs in all communication and electronics engineering issues.
12	Communicate and work effectively within multiple teams in the field of communication and electronics engineering and consider the effects of engineering solutions on society and the environment.

3- Competencies Learning Outcomes (LO'S):

Competency	Learning Outcomes (LO'S)
B1	1. Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs. 2. Identify appropriate specifications for required devices.
C1	1. Recognize engineering problems to identify the best solutions
C2	1: Define current engineering technologies as related to Electronics and communication Engineering systems. 2: Design a process, component or system to carry out specialized engineering designs.



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C3	1: Investigate the failure of components, system, and processes. 2: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact. 3: Apply safe systems at work and observe the appropriate steps to manage risks

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	The electronic systems and the circulating standard components in electronic and communications	4	4	-
2	The design of the schemata and the printed circuits	4	4	-
3	The computer software packages in the electronic design	4	4	-
4	Examples for the electronic design using these computer software packages.	4	4	-
5	Introduction of VHDL	2	2	-
6	Data types in VHDL	2	2	-
7	Operators and attributes	2	2	-
8	Concurrent code	2	2	-
9	Sequential codes	2	2	-
10	Signals and variables	2	2	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab



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1	The electronic systems and the circulating standard components in electronic and communications	X	X			X					X				
2	The design of the schemata and the printed circuits	X	X			X					X				
3	The computer software packages in the electronic design	X	X			X					X				
4	Examples for the electronic design using these computer software packages.	X	X			X					X				
5	Introduction of VHDL	X	X			X					X				
6	Data types in VHDL	X	X			X					X				
7	Operators and attributes	X	X			X					X				
8	Concurrent code	X	X			X					X				
9	Sequential codes	X	X			X					X				



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10	Signals and variables	X	X			X					X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	B1(1,2),C1(1),C3(1,2,3)
2	Student load	B1(1,2),C1(1),C2(1,2)
3	Final term examination	B1(1,2),C1(1),C2(1,2),C3(1,2,3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%



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3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	James M.Kirkpatrick, Electronic drafting and printed circuit board design, Delmar Publishers, ISBN 0827323158, 2019.
2	Robert S. Villanucci, Electronic drafting – printed circuit design, Macmillan Publishing company, ISBN 0024230502, 2023.
3	a Phillips, Tony (2000). "The Antikythera Mechanism I". American Mathematical Society. Retrieved 5 April 2018

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	The electronic systems and the circulating standard components in electronic	1 1 , 1 2										X						X	X	X		



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	c and commun ications																					
2	The design of the schemat a and the printed circuits	1 1 , 1 2										X						X	X	X		
3	The compute r software package s in the electroni c design	1 1 , 1 2										X						X	X	X		
4	Exempl es for the electroni c design using these compute r software package s.	1 1 , 1 2										X						X	X	X		
5	Introduc tion of VHDL	1 1 , 1 2										X						X	X	X		



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6	Data types in VHDL	1 1 , 1 2										X					X	X	X		
7	Operators and attributes	1 1 , 1 2										X					X	X	X		
8	Concurrent code	1 1 , 1 2										X					X	X	X		
9	Sequential codes	1 1 , 1 2										X					X	X	X		
10	Signals and variables	1 1 , 1 2										X					X	X	X		

Course Coordinator: Dr.Amira El-Sonbaty
Head of Department: Prof.Mohamed Fouad
Date of Approval: 2023

Fundamentals of Biomedical Engineering (CEE 414)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Fundamentals of Biomedical Engineering		
Course Code	CEE 414		
Year/Level	Level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 305-CEE 401		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

q. Course Aims:

No.	Aims
3	Establish a strong behavior and maintain engineering ethics and standards;
8	Acknowledge and accept personal responsibility for your education, personal development, as well as your ability to achieve post-graduation and research studies;
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.

3-Cometencies (LO'S):

Competency	Learning Outcomes (LO'S)
B2	1. Create systematic and methodic approaches in dealing with new and advancing technology. 2. Demonstrate efficient IT capabilities.
B4	1. Use relevant laboratory equipment and analyze the results correctly 2. Troubleshoot, maintain and repair almost all types of electronic systems using the standard tools.

	3. Use appropriate tools to measure system performance. 4. Use computational facilities, measuring instruments, workshops and laboratories equipment to design experiments and collect, analyze and interpret results.
C1	1: Recognize engineering problems to identify the best solutions 2: Think creatively and innovatively in problem solving and design 3: Present technical reports. 4: Search for information to engage in lifelong self-learning discipline.
C2	1. Define concepts and theories of mathematics and sciences, which is appropriate to the discipline.
C3	1: Describe quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	The safety and the insulations in the medical equipments	4	4	-
2	the manners of the noise deletion	4	4	-
3	the hearted helpful equipments	4	4	-
4	physiological measurements and the vital sensitivity	8	8	-
5	a processing of the vital signals and different photographic methods	8	8	-
Total		28	28	-

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	The safety and the insulations in the medical equipments	X	X			X					X				
2	the manners of the noise deletion	X	X			X					X				
3	the hearted helpful equipments	X	X			X					X				
4	physiological measurements and the vital sensitivity	X	X			X					X				
5	a processing of the vital signals and different photographic methods	X	X			X					X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student



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For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	B2(1)
2	Student load (quizzes- reports –sheets- presentation)	B2(1),B4(1),C1(1)
3	Final term examination	B4(1),C1(1),C2(1,2), C3(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Book Fundamentals of Biomedical Engineering Download File PDF Epub Torrent 2019

9. Facilities required for teaching and learning:

No.	Facility



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1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4
1	The safety and the insulations in the medical equipments	3																X	X	X	X
2	the manners of the noise deletion	8																X	X	X	X
3	the hearted helpful equipments	11																X	X	X	X
4	physiological measurements and the	12																X	X	X	X

	vital sensitivi ty																				
5	a processi ng of the vital signals and different photogr aphic methods	1 2																X	X	X	X

Course Coordinator: Dr. Amira Alsonbaty

Head of Department: Prof. Mohamed Fouad

Date of Approval: 2023

Information systems (CEE 415)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering Department
Department Responsible for the Course	Communications and Electronics Engineering Department
Course Title	Information systems
Course Code	CEE415



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Year/Level	Level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	ENG 201		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
10	Demonstrate leadership qualities, business management, and skill development.
5	Recognize his or her contribution in advancing engineering and contributing to the profession's and community's development;

3- Competencies Learning Outcomes (LO'S):

A ₄	1-List the engineering-related business and management principles, websites 2.Define contemporary websites technologies and their applications in relation to engineering field 3.Utilize modern technologies, programs, applications related by websites 4.Search for information and engage in life-long self-learning .
A ₈	1. Communicate effectively. 2. Demonstrate efficient IT capabilities.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Information systems: A: Concepts of the information systems B: Components of the information systems C:The functions of the information systems	4	3	-
2	Organizing the function of information systems	2	2	-
3	Semiconductor and gates characteristics NMOS, CMOS, PMOS	2	3	-
4	The separate systems & Expert systems	2	2	-
5	Decision support systems	4	4	-
6	Manipulation of the commercial systems &	4	2	-



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	Systems of information management			
7	Operating systems	2	2	-
8	Office automation -Implementation support systems	4	2	-
9	Data processing systems – files processing – data relationships	2	2	-
10	Types of databases - relational database-common databases – management systems	2	2	-
11	systems (analysis - design - manipulation – maintenance	2	2	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Information systems: A: Concepts of the information systems B: Components of the information systems C: The functions of the information systems	X				X		X			X				



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2	Organizing the function of information systems	X				X		X			X				
3	Semiconductor and gates characteristics NMOS, CMOS, PMOS	X				X		X			X				
4	The separate systems & Expert systems	X				X		X			X				
5	Decision support systems	X				X		X			X				
6	Manipulation of the commercial systems & Systems of information management	X				X		X			X				
7	Operating systems	X				X		X			X				
8	Office automation - Implementation support systems	X				X		X			X				
9	Data processing systems – files processing – data relationships	X				X		X			X				



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10	Types of databases - relational database-common databases – management systems	X				X		X			X				
11	systems (analysis - design - manipulation – maintenance	X				X		X			X				

6. Teaching and Learning Methods of Disable Students:

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7. 1 Student Evaluation methods:

No.	Evaluation Method	Competencies
1	Midterm examination	A6
2	Semester work(quizzes, sheets, report)	A6, A7
3	Final term examination	A6, A7

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks



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1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7. 3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	INFORMATION TECHNOLOGY : THEORY AND PRACTICE SINHA, PRADEEP K. SINHA, PRITI, 2018
2	INFORMATION TECHNOLOGY LAW, IAN J. LLOYD , 2020

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Information systems: A: Conce	10						X	X											



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	pts of the information systems B: Components of the information systems C: The functions of the information systems																				
2	Organizing the function of information systems	5						X	X												
3	Semiconductor and gates characteristics NMOS, CMOS, PMOS	10, 5						X	X												
4	The separate systems	10, 5						X	X												



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	& Expert systems	5																				
5	Decision support systems						X	X														
6	Manipulation of the commercial systems & Systems of information management	10,5					X	X														
7	Operating systems	5					X	X														
8	Office automation - Implementation support systems	5					X	X														
9	Data processing systems – files processing –	5					X	X														



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	data relations hips																					
10	Types of database s - relational database - common database s – manage ment systems	105						X	X													
11	systems (analysis - design - manipul ation – mainten ance	5						X	X													

Course Coordinator: Dr.Amira El-Sonbaty

Head of Department: Prof.Mohamed Fouad

Date of Approval: 2023

Telecommunications (CEE 416)

1- Basic Information:

Program Title	Communications and Electronics Engineering



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		Program	
Department Offering the Program		Communications and Electronics Engineering Department	
Department Responsible for the Course		Communications and Electronics Engineering Department	
Course Title		Telecommunications	
Course Code		CEE 416	
Year/Level		level 4	
Specialization		Major	
Authorization Date of Course Specification		2023	
Pre- Request		CEE 401	
Teaching hours	Lectures	Tutorial	Practical
	2	6	-

2. Course Aims:

No.	Aims
11	Allocate projects creatively by analyzing data from intended tests.
1	Master a wide range of engineering knowledge and specialized skills, as well as the ability to apply that information in real-world situations using theories and analytical thinking.

3. Competencies Learning Outcomes (LO'S):

Competency	Learning Outcomes (LO'S)
B1	1. Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs. 2. Identify appropriate specifications for required devices.
C1	1. Recognize engineering problems to identify the best solutions
C2	1: Define current engineering technologies as related to Electronics and communication Engineering systems. 2: Design a process, component or system to carry out specialized engineering designs.
C3	1: Investigate the failure of components, system, and processes. 2: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact. 3: Apply safe systems at work and observe the appropriate steps to manage risks



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4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Wireless telephony	4	4	-
2	Client circuits	4	4	-
3	Communication cables	4	4	-
4	Used tones	2	2	-
5	Telephony circuits	4	4	-
6	Communication methods	4	4	-
7	Electronic Communication	2	2	-
8	Communication between cities	4	4	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Wireless telephony	X				X				X	X				
2	Client circuits	X				X				X	X				
3	Communication cables	X				X				X	X				
4	Used tones	X				X				X	X				



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5	Telephony circuits	X				X				X	X				
6	Communication methods	X				X				X	X				
7	Electronic Communication	X				X				X	X				
8	Communication between cities	X				X				X	X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	ILO's
1	Periodic exam	C1(1),C3(1-2)
2	Student load (quizzes-presentation-sheets-verify with CAD tools)	C1(1),C3(1-2)
3	Final term examination	C1(1),C3(1-2-3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th



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2	Semester work	7 th - 9 th
3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Fundamentals of telecommunications, ,Rogers Freeman ,4 th edition ,2018
2	B. P. Lathi, Modern Digital and Analog Communication Systems, 2019.
3	Robert W. Jones, " Hand book on Satellite communication ", 5th Edition, Willy, New york, 2023

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Wireless telephon	1 1											X					X	X	X



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	y	, 1 2																				
2	Client circuits	1 1 , 1 2										X					X	X	X			
3	Commun ication cables	1 1 , 1 2										X					X	X	X			
4	Used tones	1 1 , 1 2										X					X	X	X			
5	Telephon y circuits	1 1 , 1 2										X					X	X	X			
6	Commun ication methods	1 1 , 1 2										X					X	X	X			
7	Electroni c Commun ication	1 1 , 1 2										X					X	X	X			
8	Commun ication between cities	1 1 , 1										X					X	X	X			

[illegible]

Course Coordinator: Dr. Walid Rasslan
Head of Department: Prof. Mohamed Foad
Date of Approval: 2023

Computer Circuit Design (CEE 417)

1- Basic Information:

Program Title		Communications and Electronics Engineering program	
Department Offering the Program		Communications and Electronics Engineering department	
Department Responsible for the Course		Communications and Electronics Engineering department	
Course Title		Computer Circuit Design	
Course Code		CEE417	
Year/Level		Level 4	
Specialization		Major	
Authorization Date of Course Specification		2023	
Pre- Request		CEE 402	
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
11	Design a system; component, process, and circuits with aids computer's software programs to meet the required needs in all communication and electronics engineering issues.
12	Communicate and work effectively within multiple teams in the field of communication and electronics engineering and consider the effects of engineering solutions on society and the environment.

3-Competencies Learning Outcomes (LO'S):

Competency	Learning Outcomes (LO'S)
B1	1. Use a wide range of analytical tools, techniques, equipment,



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	and software packages pertaining to the discipline and develop required computer programs. 2. Identify appropriate specifications for required devices.
C1	1. Recognize engineering problems to identify the best solutions
C2	1: Define current engineering technologies as related to Electronics and communication Engineering systems. 2: Design a process, component or system to carry out specialized engineering designs.
C3	1: Investigate the failure of components, system, and processes. 2: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact. 3: Apply safe systems at work and observe the appropriate steps to manage risks

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Introduction to digital electronic	2	2	-
2	IC's fabrication technology- Binary circuit	2	2	-
3	Characteristics using transistors-logic gates families	4	4	-
4	Types and characteristics, metal transistor gates- oxide	4	4	-
5	semiconductor and gates characteristics NMOS, CMOS, PMOS	4	4	-
6	Regeneration digital logic circuits - flip-flops - schmit impulse	4	4	-
7	Multi vibrator circuits - Temporary ICS - Semiconductor memory	4	4	-
8	ROM types ,static and dynamic writing - power sources and regulators - Energy loss Data Bus	4	4	-
Total		28	28	-

5. Teaching and learning methods:

No.	Teaching Methods
1	Lectures
2	Discussion sessions
3	Information collection from different sources



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4	E_learning

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Introduction to digital electronic	X			X	X					X				
2	IC's fabrication technology- Binary circuit	X			X	X					X				
3	Characteristics using transistors- logic gates families	X			X	X					X				
4	Types and characteristics, metal transistor gates- oxide	X			X	X					X				
5	semiconductor and gates characteristics NMOS, CMOS, PMOS	X			X	X					X				



وحدة ضمان الجودة



وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

6	Regeneration digital logic circuits - flip-flops - schmit impulse	X			X	X					X				
7	Multi vibrator circuits - Temporary ICS - Semiconductor memory	X			X	X					X				
8	ROM types ,static and dynamic writing - power sources and regulators - Energy loss Data Bus	X			X	X					X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	B1(1,2),C1(1)C2(1)



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2	Student load (quizzes-presentation-sheets-reports)	C2(1,2)
3	Final term examination	B1(1,2),C1(1)C2(2)C2(1,2),C3(1,2,3)

7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
3	a Phillips, Tony (2000). "The Antikythera Mechanism I". American Mathematical Society. Retrieved 5 April 2020

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Introduction to digital	11																X	X	



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بدمياط الجديدة

	electroni c																					
2	IC's fabricati on technolo gy- Binary circuit	1 1															X	X				
3	character istics using transistor s-logic gates families	1 1															X	X				
4	types and character istics, metal transistor gates- oxide	1 1															X	X				
5	semicon ductor and gates character istics NMOS, CMOS, PMOS	1 1															X	X				
6	regenerat ion digital logic circuits -	1 2															X	X				



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وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

	flip-flops – Schmitt impulse																			
7	multi vibrator circuits - temporary ICS - semiconductor memory	1 2															X	X		
8	ROM types ,static and dynamic writing - power sources and regulators - Energy loss Data Bus	1 2															X	X		

Course Coordinator: Dr.Amira El-Sonbaty

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023

Artificial Intelligence (CEE 418)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Artificial Intelligence		
Course Code	CEE 418		
Year/Level	Level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.
13	Allocate projects creatively by analyzing data from intended tests.

3- Competencies Learning Outcomes (LO'S):

Competency	Learning Outcomes (LO'S)
B2	1. Describe quality assurance systems, codes of practice and standards, health and safety requirements, and environmental issues. 2. Assess and evaluate the characteristics and performance of components, systems and processes.



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وزارة التعليم العالي
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	3. Create and/or re-design a process, component or system, and carry out specialized engineering designs.
C1	1: Recognize engineering problems to identify the best solutions 2: Think creatively and innovatively in problem solving and design 3: Search for information to engage in lifelong self-learning discipline.
C3	1: Describe quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.
C4	1: Evaluate the troubles to repair all types of electronic systems using the standard tools.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Fundamental of artificial intelligent	2	2	-
2	random search	2	2	-
3	knowledge coding	2	2	-
4	Mathematical logic for knowledge	2	2	-
5	engineering and expert systems	2	2	-
6	Natural language processing	2	2	-
7	Knowledge representation	2	2	-
8	production system	2	2	-
9	Robots	4	4	-
10	Condensed introduction to programming using Lisip language and overall review for programming by Prolog language	2	2	-
11	programming applications in AI field focusing on: structure of customer accounting system including research operations	2	2	-
12	logical presentation, and decision-making process in the uncertainty case	2	2	-
13	computer vision and neural networks	2	2	-
Total		28	28	-

5. Teaching and learning methods:



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وزارة التعليم العالي
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N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	Fundamental of artificial intelligent	x	x		x	x	x				x				
2	random search	x	x		x	x	x				x				
3	knowledge coding	x	x		x	x	x				x				
4	Mathematical logic for knowledge	x	x		x	x	x				x				
5	engineering and expert systems	x	x		x	x	x				x				
6	Natural language processing	x	x		x	x	x				x				
7	Knowledge representation	x	x		x	x	x								
8	production system	x	x		x	x	x				x				
9	Robots	x	x		x	x	x				x				



وحدة ضمان الجودة



وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
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10	Condensed introduction to programming using Lisp language and overall review for programming by Prolog language	x	x		x	x	x				x				
11	programming applications in AI field focusing on: structure of customer accounting system including research operations	x	x		x	x	x				x				
12	logical presentation, and decision-making process in the uncertainty case	x	x		x	x	x				x				
13	computer vision and neural networks	x	x		x	x	x				x				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:



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وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
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1	Additional Tutorials
2	Online lectures and assignments
6.2. Teaching and learning method for low capacity and outstanding Student	
For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	B2(1,2,3),C2(1), C1(1)
2	Student load	B2(1,2,3),C3(1)
3	Final term examination	B2(1,2,3),C1.(1,2,3), C3(1),C4(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:



وحدة ضمان الجودة



وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

No.	Reference List
1	Justin Healey, "Artificial Intelligence", Spinney Press, 2023.
2	Melanie Mitchell, "Artificial Intelligence: A Guide for Thinking Humans", Farrar, Straus and Giroux, 2019.
3	Russell & Norvig, "Artificial Intelligence: A Modern Approach", 4th Edition, Prentice Hall, 2020. Also referred to as AIMA

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Fundamental of artificial intelligence	1 1 , 1 3																	X	X		
2	Random search	1 1 , 1 3																	X	X		
3	knowledge coding	1 1 , 1 3																	X	X		



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4	Mathematical logic for knowledge	1113																X	X		
5	Engineering and expert systems	1113																X	X		
6	Natural language processing	1113																X	X		
7	Knowledge representation	1113																X	X		
8	production system	1113																X	X		
9	Robots	1113						X	X									X	X		
10	Condensed introduction to programming using	1113																X	X		



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	LISIP language and overall review for programming by Prolog language																				
1 1	program ming applicati ons in AI field focusing on: structure of customer accounti ng system including research operation s	1 1 , 1 3																X	X		
1 2	logical presentat ion, and decision-making process in the uncertain ty case	1 1 , 1 3																X	X		



Course Coordinator: Dr. Amira Elsonbaty
Head of Department: Prof. Mohamed Fouad
Date of Approval: 2023

1- Basic Information:

2- Course Aims:

3- Competencies (LO'S)

435

C1	1: Recognize engineering problems to apply knowledge of mathematics concepts to the solution of digital Signal processing on society and environment.
C4	1: Analyze the results of numerical models to appreciate their limitations. 2: Use appropriate tools to measure system performance. 3: Search for information to engage in lifelong self-learning discipline.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	General concepts of digital signal processing (DSP)	3	2	-
2	Continuous-time system analysis	3	4	-
3	Fourier analysis and sampled data Signals	6	4	-
4	Discrete-time system analysis	6	2	-
5	Realization and frequency response of discrete-time systems	9	6	-
6	Properties of analog filters	3	2	-
7	Infinite impulse response (IIR) digital filter design	3	2	-
8	Basic properties of discrete and Fast Fourier Transform (FFT)	6	4	-
9	Applications of the discrete Fourier transform	3	2	-
Total		42	28	

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab



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وزارة التعليم العالي
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1	General concepts of digital signal processing (DSP)	X			X	X					X				
2	Continuous-time system analysis	X			X	X					X				
3	Fourier analysis and sampled data Signals	X			X	X					X				
4	Discrete-time system analysis	X			X	X					X				
5	Realization and frequency response of discrete-time systems	X			X	X					X				
6	Properties of analog filters	X			X	X					X				
7	Infinite impulse response (IIR) digital filter design	X			X	X					X				
8	Basic properties of discrete and Fast Fourier Transform (FFT)	X			X	X					X				
9	Applications of the discrete Fourier	X			X	X					X				



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	transform														

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	ILO's
1	Periodic exam	C1(1), C3(1- 2)
2	Student load (quizzes-presentation-sheets-reports)	C1(1), C3(1- 2-3)
3	Final term examination	C1(1), C3(1- 2-3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7. 3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%



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المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

Total	100%

8. List of References:

No.	Reference List
1	S. Salivahanan, A. Vallavaraj, "Digital Signal Processing," Tata McGraw-Hill Education. 2023.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	General concepts of digital signal processing (DSP)	5																X			X	
2	Continuous-time system analysis	5																X			X	
3	Fourier analysis and sampled data Signals	5																X			X	
4	Discrete-time system	5																X			X	



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	analysis																			
5	Realization and frequency response of discrete-time systems	5															X			X
6	Properties of analog filters	5															X			X
7	Infinite impulse response (IIR) digital filter design	5															X			X
8	Basic properties of discrete and Fast Fourier Transform (FFT)	5															X			X
9	Applications of the discrete Fourier transform	5															X			X

Course Coordinator: Dr. Walid Raslan
Head of Department: Prof. Mohamed Foad
Date of Approval: 2023

Communication Systems (CEE 502)

1-Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Communication Systems		
Course Code	CEE 502		
Year/Level	Level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 402		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2-Course Aims:

No.	Aims
6	Recognize and respect the importance of the environment, both physical and natural, and work to promote sustainable principles

3-Competencies (LO'S)

Competency	Learning Outcomes (ILO'S)
C1	1: Recognize engineering problems to define concepts and theories of mathematics and sciences, which is appropriate to the analog and digital communication systems discipline.
C3	1 Investigate the failure of components, system, and processes. 2: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact.



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	3: Apply safe systems at work and observe the appropriate steps to manage risks

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Communication theory.	4	4	-
2	Amplitude modulation and demodulation	6	6	-
3	Frequency and phase modulation and demodulation	6	6	-
4	Impulse modulation PAM, PWM, PPM - nesesises in modulation systems the encrypted modulation – the differential encrypted modulation - the frequency and temporal division – the wide and frequent encryption.	4	6	
5	Analog communication transceiver.	6	6	-
6	Analog to digital converter	2	2	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab



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1	Introduction to communication systems: Elements of communication system, Frequency spectrum, Need for modulation	x	x		x						x			
2	types of modulation, TDM, FDM, Noise, Signal to noise ratio, noise figure, noise temperature, noise calculation in single and cascaded stages	x	x		x						x			



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وزارة التعليم العالي
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3	Modulation techniques: Time domain equation of AM wave, Modulation index, effects of over modulation, bandwidth, power and voltage calculations of AM signal	X	X		X						X				



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4	Suppressed carrier and single sideband techniques, angle modulation-its types, Time domain equation of FM wave, Modulation index, bandwidth, side bands, power of side bands, frequency deviation, pre-emphasis, de-emphasis, FM stereo system, merits and demerits of FM over AM	x	x		x							x				



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5	Transmitters and Receivers: Specifications of transmitters, low level modulation, high level modulation, heterodyne type transmitters, SSB transmitter	X	X		X						X				



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6	FM transmitter, Armstrong method of FM generation, sensitivity, selectivity, fidelity of receiver, Crystal receiver, TRF receiver, super heterodyne AM receiver, selection of IF, IF amplifier circuits, AVC, IMRR, FM receiver, FM detector (Foster Seeley), Noise limiter circuit, comparison of AM & FM receivers	x	x		x							x				



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6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

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7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	ILO's
1	Periodic exam	C1(1),C3(1-3)
2	Student load (quizzes-presentation-sheets-reports)	C1(1),C3(1-3)
3	Final term examination	C1(1),C3(1-2-3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List



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وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

1	Sklar, Digital communications fundamental and applications, 2019.
2	Communication systems, Simon Haykin, 5th edition 2020.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Communication theory.	6																X		X
2	Amplitude modulation and demodulation	6																X		X
3	Frequency and phase modulation and demodulation	6																X		X
4	impulse modulation PAM, PWM,	6																X		X



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	PPM - nesises in modulati on systems the encrypte d modulati on – the differenti al encrypte d modulati on - the frequenc y and temporal division – the wide and frequent encryptio n.																			
5	Analog communi cation transceiv er.	6														X		X		
6	noises in modulati on systems – the encrypte	6														X		X		

d modulati on – the differenti al encrypte d modulati on																				

Course Coordinator: Dr. Rania Hamdy

Head of Department: Prof. Mohamed Fouad

Date of Approval: 2023

Communications networks (CEE 503)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Communications networks		
Course Code	CEE 503		
Year/Level	Level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	3	2	-

2- Course Aims:



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No.	Aims
8	Accept full responsibility for personal learning and self-development. knowledge and skills and the ability to participate in post-graduate academic achievement
9	Use a variety of modes, tools, and languages to effectively communicate with a wide range of audiences.

3- Competencies (LO'S)

By the end of this course, the student able to:

Competency	Learning Outcomes (LO'S)
A7	1. Collaborate effectively within multidisciplinary team. 2. Work in stressful environment and within constraints. 3. Motivate individuals.
B3	1. Define basics of information and communication technology (ICT). 2. Select and appraise appropriate ICT tools to a variety of communication engineering problems.
C2	1. Define current engineering technologies as related to communication Engineering systems 2. Analyze the performance of digital and analog communication. 3. Apply engineering knowledge and understanding to improve design of communication systems, and services of networks.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Introduction to Communication Systems and Networks	3	2	-
2-3-4	Network Models: OSI_ model, TCP_IP model	9	6	-
5	Addressing types in networks	3	2	
7-6	Protocols: types protocols, TCP_protocol, UDP_protocol, IP_protocol,	6	4	-
8	Transmission Media: guided & un guided	3	2	



وحدة ضمان الجودة



وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

	media			
9	Network Devices (modes): hob, repeaters, switch, router	3	2	-
10	Switching circuits	3	2	
11	Network security	3	2	-
12-13	Data and Signals & Digital Transmission & Analog Transmission	6	4	-
14	Errors & Error Detection and Correction & Error control	3	3	-
Total		42	28	-

5. Teaching and learning methods:

N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	FUNDAMENTAL S & LINK LAYER: Building a network – Requirements - Layering and protocols - Internet Architecture	x	x	x	x			x							
2	Network software – Performance ; Link layer Services - Framing - Error Detection - Flow control	x	x	x	x			x							



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3	MEDIA ACCESS & INTERNETWORKING: Media access control - Ethernet (802.3) - Wireless LANs – 802.11	x	x	x	x			x							
4	Bluetooth - Switching and bridging – Basic Internetworking (IP, CIDR, ARP, DHCP, ICMP).	x	x	x	x			x							
5	ROUTING: Routing (RIP, OSPF, metrics) – Switch basics – Global Internet (Areas, BGP, IPv6), Multicast	x	x	x	x			x							
6	addresses – multicast routing (DVMRP, PIM).	x	x	x	x			x							
7	TRANSPORT LAYER: Overview of Transport layer - UDP -Reliable byte stream (TCP) - Connection management - Flow Control	x	x	x	x			x							



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8	Retransmission – TCP Congestion control - Congestion avoidance (DECbit, RED) – QoS – Application requirements	x	x	x	x			x							
9	APPLICATION LAYER: Traditional applications – Electronic Mail (SMTP, POP3, IMAP, MIME) – HTTP – Web Services –DNS – SNMP.	x	x	x	x			x							

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:



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No.	Evaluation Method	LO's
1	Periodic exam	B3.1,B3.2
2	Student load	A7.1,A7.2,A7.3
3	Final term examination	B3.1,B3.2,C2.1,C2.2,C2.3

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Arshad Iqbal," Computer Networks Multiple Choice Questions and Answers (MCQs), Bushra Arshad,2019
2	Saha, Debashis , "Advances in Data Communications and Networking for Digital Business Transformation", IGI Global, 2018
3	James Kurose , Keith Ross ," Computer Networking: A Top-Down Approach "(8th Edition) ,2019
4	A. S. Tanenbaum, D. J. Wetherall, "Computer Networks", tenth Edition, James F. Kurose, Keith W., 2020
5	Forouzan " Data communication and network" sixth edition,2023

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board



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4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Introduct ion to Commun ication Systems and Network s	8							X						X				X			
2	Network Models: OSI_ model, TCP_IP model	8 , 9							X						X				X			
3	Addressi ng types in networks	8							X						X				X			
4	Protocols : types protocols , TCP_pro tocol, UDP_pr otocol, IP_proto	9							X						X				X			



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	col,																					
5	Transmis sion Media: guided & un guided media	9						X							X				X			
6	Network Devices (modes): hob, repeaters , switch, router	8 , 9						X							X				X			
7	Switchin g circuits	9						X							X				X			
8	Network security	8						X							X				X			
9	Data and Signals & Digital Transmis sion & Analog Transmis sion	9						X							X				X			
10	Errors & Error Detectio n and Correctio n & Error control	8 , 9						X							X				X			

Course Coordinator: Dr. Amira Elsonbaty
Head of Department: Prof. Mohamed Fouad
Date of Approval: 2023

Project 1 (CEE 509)

1- Basic Information:

Program Title		Communications and Electronics Engineering program	
Department Offering the Program		Communications and Electronics Engineering department	
Department Responsible for the Course		Communications and Electronics Engineering department	
Course Title		Project 1	
Course Code		CEE 509	
Year/Level		Level 5	
Specialization		Major	
Authorization Date of Course Specification		2023	
Pre- Request		Completion of 144 CR	
Teaching hours	Lectures	Tutorial	Practical
	2	-	2

2- Course Aims:

No.	Aims
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances- Allocate projects creatively by analyzing data from intended tests.

3- Competencies (LO'S):

Competency	Learning Outcomes (LO'S)
A5	1 Define technical language and report writing. 2 Assess different ideas, views, and knowledge from a range of sources. 3 Prepare technical reports 4 Search for information to engage in lifelong self-learning



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	discipline.
A7	1 Collaborate effectively within multidisciplinary team. 2 Work in stressful environment and within constraints. 3 Motivate individuals.
A9	1.Think creatively in solving problems of design. 2. Effectively manage tasks, time, and resources. 3 .Refer to relevant literatures.
C4	1: Analyze the results of numerical models to appreciate their limitations. 2: Use appropriate tools to measure system performance. 3: Evaluate the troubles to repair all types of electronic systems using the standard tools. 4:Search for information to engage in lifelong self-learning discipline.

4. Course Contents:

No.	Topics
1	Assigned projects in which students will be expected to apply principles of communication and electronic
2	Analysis to solve a given real world problem
3	Reports will be emphasized in addition to the technical content

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Assigned projects in which students will be	X			X	X					X				



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	expected to apply principles of communication and electronic														
2	Analysis to solve a given real world problem	X			X	X					X				
3	Reports will be emphasized in addition to the technical content	X			X	X					X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Oral examination	C4(1-2-3-4)
2	Student load (presentation-verify with CAD tools)	C4(1-2-3-4)
3	Final term examination	C4(1-2-3-4)



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7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Oral Examination	at the end of IE 510
2	Semester work (presentation, Report)	2 nd -7 th - 9 th -14 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Oral examination	50%
2	Semester work	50%
Total		100%

8. List of References:

No.	Reference List
1	Different new references according to the project

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of knowledge and skills of the course:

No.	Topic	Aims	A5	A7	A9	C4
1	Assigned projects in which students will be expected to apply principles of communication and electronic	11,12,13	x	x		
2	Analysis and	11,12	x		x	



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No.	Topic	Aims	A5	A7	A9	C4
	design to solve a given real world problem	,13				
3	Reports and presentations will be emphasized in addition to the technical content	11,12,13	x		x	x

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																				
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5	
1	Assigned projects in which students will be expected to apply principles of communication and electronic	1 1 , 1 2 , 1 3					X		X		X											X	
2	Analysis and	1 1					X		X		X										X		



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	design to solve a given real world problem	, 1 2 , 1 3																		
3	Reports and presentat ions will be emphasiz ed in addition to the technical content	1 1 , 1 2 , 1 3				X		X		X									X	

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023

Digital Communications (CEE 504)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Digital Communications		
Course Code	CEE 504		
Year/Level	Level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 402		
Teaching hours	Lectures	Tutorial	Practical
	3	2	-

2- Course Aims:

No.	Aims
6	Recognize and respect the importance of the environment, both physical and natural, and work to promote sustainable principles

3- Competencies (LO'S):

Competency	Learning Outcomes (LO'S)
C1	1: Recognize engineering problems to meet the required needs, operate and maintain digital communication, and coding systems.
C3	1: Investigate the failure of components, system, and processes. 2: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact. 3: Apply safe systems at work and observe the appropriate steps to manage risks

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Introduction of digital communication , basic components of digital communication	3	2	-



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2	Information theory	3	2	-
3	Source coding algorithms	6	4	-
4	Analog pulse modulation sampling theory ,PAM, PWM, PCM, delta modulation	6	4	-
5	Base band transmission -TDM digital carrier modulation	6	4	-
6	Error rate performance of digital modulation techniques	6	4	-
7	Coherent receivers , None coherent receivers	6	4	-
8	Channel coding ,Speed spectrum techniques	6	4	-
Total		42	28	-

5. Teaching and learning methods:

N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	SAMPLING & QUANTIZATION: Low pass sampling – Aliasing-Signal Reconstruction-Quantization	x	x		x	x					x				



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2	Uniform & non-uniform quantization – quantization noise - Logarithmic Companding of speech signal- PCM - TDM	x	x		x	x					x			
3	WAVEFORM CODING: Prediction filtering and DPCM	x	x		x	x					x			
4	Delta Modulation - ADPCM & ADM principles- Linear Predictive Coding	x	x		x	x					x			
5	BASEBAND TRANSMISSION: Properties of Line codes- Power Spectral Density of Unipolar / Polar RZ & NRZ – Bipolar NRZ – Manchester	x	x		x	x					x			



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6	ISI – Nyquist criterion for distortionless transmission – Pulse shaping – Correlative coding -Marry schemes – Eye pattern – Equalization.	x	x		x	x					x				
7	DIGITAL MODULATION SCHEME: Geometric Representation of signals - Generation, detection, PSD & BER of Coherent BPSK, BFSK & QPSK - QAM Carrier Synchronization - structure of Non-coherent Receivers - Principle of DPSK	x	x		x	x					x				



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8	ERROR CONTROL CODING: Channel coding theorem - Linear Block codes - Hamming codes - Cyclic codes - Convolutional codes - Vitterbi Decoder.	x	x		x	x						x				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	C1(1),C3(1-2)
2	Student load (quizzes-presentation-sheets-reports)	C1(1),C3(1-2)
3	Final term examination	C1(1),C3(1-2-3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th



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3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	A. Lapidoth, A Foundation in Digital Communication, Cambridge, 2019
2	R. G. Gallager, Principles of Digital Communication, Cambridge University Press, 2023.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Introduct ion of digital communi cation , basic compone	6																X		X		



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	nts of digital communi cation																					
2	Informati on theory	6															X		X			
3	Source coding algorith ms	6															X		X			
4	Analog pulse modulati on sampling theory ,PAM, PWM, PCM, delta modulati on	6															X		X			
5	Base band transmiss ion - TDM digital carrier modulati on	6															X		X			
6	Error rate performa nce of digital	6															X		X			



Course Coordinator: Dr.Walid Rasslan
Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

1- Basic Information:

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Pre- Request		-		
Teaching hours	Lectures	Tutorial	Practical	
	3	2	-	

2- Course Aims:

No.	Aims
1	. Master a wide range of engineering knowledge and specialized skills, as well as the ability to apply that information in real-world situations using theories and analytical thinking.

3- Competencies (LO'S):

Competency	Learning Outcomes (LO'S)
C2	1: Listing characteristics of engineering materials related to the discipline. 2: Evaluate the characteristics and performance of components, systems and processes such as optical amplifier, laser sources ..etc. 3: Choose appropriate specifications for required devices
C3	1: Apply knowledge of optical fibers 2: Apply knowledge of science to asses theories of luminous communications 3: proof applications of the theories of optical fibers to luminous communication

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Fundamentals of optical fibers	3	2	-
2	Digital optical transmission system	6	4	-
3	Optical fiber communication system components	6	4	-
4	Design of analog and Digital optical fiber link	9	6	-
5	WDM network	6	4	-
6	Optical amplifiers	6	4	-
7	Optical LASER sources	6	4	-
Total		42	28	-

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	Fundamentals of optical fibers	X	x		x	x					x				
2	Digital optical transmission system	X	x		x	x					x				
3	Optical fiber communication system components	X	x		x	x					x				
4	Design of analog and Digital optical fiber link	X	x		x	x					x				
5	WDM network	X	x		x	x					x				
6	Optical amplifiers	X	x		x	x					x				
7	Optical LASER sources	X	X		X	X					X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity

-Assign a portion of the office hours for those students.



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students	-Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO'S
1	Periodic exam	C2(1,2),C3(1,2)
2	Student load	C2(1),C3(1)
3	Final term examination	C2(1,2),C3(1,2)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	G.Keiser,"Fiber Optics Communications",McGraw-Hill,2019
2	J.C.palais,"Fiber Optics Communications",prentice Hall,2023
3	G.p.Agrawal,"Fiber-Optic Communication Systems,"Wiley,2020
4	D.K.Mynbaev and L.L.Scheiner,"Fiber-Optic Communications Technology."Prentice-Hall,2018.

9. Facilities required for teaching and learning:



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No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Fundamentals of optical fibers	7																			X	X
2	Digital optical transmission system	7																			X	X
3	Optical fiber communication system components	7																			X	X
4	Design of analog and Digital optical fiber link	7																			X	X

5	WDM network	7																		X	X
6	Optical amplifiers	7																		X	X
7	Optical LASER sources	7																		X	X

Course Coordinator: Asso. Prof. Ossama Oraby

Head of Department: Prof. Mohamed Fouad

Date of Approval: 2023

Electronic Tests 5 (CEE 506)

1- Basic Information:

Program Title		Communications and Electronics Engineering program	
Department Offering the Program		Communications and Electronics Engineering department	
Department Responsible for the Course		Communications and Electronics Engineering department	
Course Title		Electronic Tests 5	
Course Code		CEE506	
Year/Level		Level 5	
Specialization		Major	
Authorization Date of Course Specification		2023	
Pre- Request		CEE 403	
Teaching hours	Lectures	Tutorial	Practical
	1	-	3

2- Course Aims:

No.	Aims
7	Proper utilization of modern engineering techniques, skills, and tools- Allocate projects creatively by analyzing data from intended tests.

3- Competencies (LO'S):

Competency	Learning Outcomes (LO'S)



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A9	1. Think creatively in solving problems of design. 2. Effectively manage tasks, time, and resources. 3. Refer to relevant literatures.
B4.	1. Use relevant laboratory equipment and analyze the results correctly of antennas and optical fiber systems and modulation/demodulation technique.
C4.	1: Use appropriate tools to measure antenna performance, evaluate modulation/demodulation technique And of the performance of optical communication system.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	-digital communication system -Practical: 1. Experiment of coding and decoding for hamming codes and error correction codes. 2. Determination of the operating frequency	2	-	6
2	Properties of closed phase ring Experiment of CPLD programmable digital signal generator.	2	-	3
3	Optical communication systems - Fiber cable types - Technology of Transmitters & Receivers -division multiplexing Practical: experiment of Optical fiber transmitter and receiver by different optical wavelength. -ASK modulator and demodulator - FSK modulator and demodulator	3	-	9
4	Television circuits properties -Record speeds - Standard fibre cables -Specialized cables) -Practical: Analog signals - PSK/DPSK modulation and demodulation	2	-	6
5	Antennas , fine waves and micrometry circuits -Relation between power and distance	4	-	12



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	- Relation between power and antenna direction. etc) -Practical: - Relation between distances between two antennas and power received - Relation between Polarization and received power -. measure radiation pattern. -. Power and frequency.			
6	Integrated circuits Practical: Embedded projects	2	-	6
Total		14	-	42

5. Teaching and learning methods:

N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	-digital communication system -Practical: 1. Experiment of coding and decoding for hamming codes and error correction codes.	X			X	X	X				X				



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	2. Determination of the operating frequency														
2	Properties of closed phase ring Experiment of CPLD programmable digital signal generator.	X			X	X	X				X				
3	Optical communicatio n systems - Fiber cable types -Technology of Transmitters & Receivers -division multiplexing Practical: experiment of Optical fiber transmitter and receiver by different optical wavelength. -ASK modulator and demodulator - FSK modulator and	X			X	X	X				X				



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	demodulator														
4	Television circuits properties -Record speeds - Standard fibre cables -Specialized cables) -Practical: Analog signals - PSK/DPSK modulation and demodulation	X			X	X	X				X				
5	Antennas , fine waves and micrometry circuits -Relation between power and distance - Relation between power and antenna direction. etc) -Practical: - Relation between distances between two antennas and power received	X			X	X	X				X				



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	- Relation between Polarization and received power -. measure radiation pattern. -. Power and frequency.														
6	Integrated circuits Practical: Embedded projects	X			X	X	X				X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	ILO's
1	Periodic exam	A9(1,2,3),B4(1)
2	Student load (quizzes-presentation-sheets-reports-project)	B4(1), C4(1)
3	Final term examination	A9(1,2,3),B4(1), C4(1)

7.2 Evaluation Schedule:



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No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7. 3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	C. Balanis, "Antenna theory analysis and design", 3rd edition John Wiley & Sons, Inc, Toronto, Canada, 2018
2	Digital Communications: Fundamentals and Applications, By "Bernard Sklar", Prentice Hall, 4th ed, 2023.
3	Communication Systems, By Simon Haykin, 5 th ed, John Wiley & Sons, Inc, Toronto, Canada, 2020
4	G. P. Agrawal, <i>Nonlinear Fiber Optics</i> (Academic Press, Elsevier, 1989); Japanese translation, 6th ed. 2019

9. Facilities required for teaching and learning:

No.	Facility
1	Computer and video data show
2	Lab
3	White board
4	Wireless internet
5	Sound system

10. Matrix of Competencies and Aims:

No.	To p i c	Competencies



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			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Laboratory experiments in the fields of digital communication system (relation between power and distance-power and antenna direction .. etc) - Practical: ab. experiment of ASK modulator and demodulator c. experiment of FSK	7, 13									X					X					X	



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	modulator and demodulator. experiment of PSK/DPSK modulation and demodulation. experiment of coding and decoding for hamming codes and error correction codes.																			
2	Lecture: information systems & information technology (Fields-Applications -	7							X				X					X		



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	Example s) Practica l: html structure code																			
3	Propert ies of closed phase ring - Practical: 7 , 1 3 experime nt of CPLD program mable digital signal generator .								X					X					X	
4	Lecture: Hardwar e used in informati on systems Practica l: Font Tags	7							X					X					X	
5	Optical communi cation systems (	1 3							X					X					X	



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<u>Technology</u> <u>Transmitters -</u> <u>Receivers-Digital</u> <u>predistortion-Fiber</u> <u>cable types-</u> <u>Amplification-</u> <u>Wavelength-</u> <u>division multiplexing-</u> <u>Bandwidth-distance</u> <u>product</u> - Practical: a. experiment of transmitter and receiver optical fiber by different optical wavelen gth.																			



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6	Lecture: Introduction of data communication system Practical: order lists	7									X					X					X	

Course Coordinator: Dr.Ahmed Kabil
Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

Project 2 (CEE 510)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Project 2		
Course Code	CEE 510		
Year/Level	Level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 509		
Teaching hours	Lectures	Tutorial	Practical
	2	-	4

2- Course Aims:

No.	Aims



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11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.

3-Cometencies (LO'S):

Competency	Learning Outcomes (LO'S)
A5	1 Define technical language and report writing. 2 Assess different ideas, views, and knowledge from a range of sources. 3 Prepare technical reports 4 Search for information to engage in lifelong self-learning discipline.
A7	1 Collaborate effectively within multidisciplinary team. 2 Work in stressful environment and within constraints. 3 Motivate individuals.
A9	1 Think creatively in solving problems of design. 2 Effectively manage tasks, time, and resources. 3 Refer to relevant literatures.
C4	1: Analyze the results of numerical models to appreciate their limitations. 2: Use appropriate tools to measure system performance. 3: Evaluate the troubles to repair all types of electronic systems using the standard tools. 4: Search for information to engage in lifelong self-learning discipline.

4. Course Contents:

No.	Topics
1	Survey, internet search, data collection
2	Formulation of the problem, determination of the project objectives
3	Evaluation seminars 4
4	Building of the mathematical model, applying the design concepts and/or design of the experimental set
5	Evaluation seminars 8
6	Simulation and/or carrying out the planned experiments
7	Writing up the final report and or the detailed drawings, preparing for the final



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	presentation

5. Teaching and learning methods:

	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	Continuation and conclusion of the investigated results on the communication or electronic problems of Project I	x	x		x	x			x		x				x
2	Written reports and team presentations are required.	x	x		x	x			x		x				x

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students



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For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	ILO's
1	Oral examination	A5(1,2,3,4), A7(1,2,3), A9(1,2,3),C4(1,2,3,4)
2	Student load (presentation and tasks)	A5(1,2,3,4), A7(1,2,3), A9(1,2,3),C4(1,2,3,4)
3	Report Evaluation	A5(1,2,3,4), A7(1,2,3), A9(1,2,3),C4(1,2,3,4)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Different new references according to the type of project

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system



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5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Survey, internet search, data collection	1 1 , 1 2 , 1 3					X		X		X										X	
2	Formulation of the problem, determination of the project objectives	1 1 , 1 2 , 1 3					X		X		X										X	
3	Evaluation seminars	1 1 , 1 2 , 1 3					X		X		X										X	
4	Building of the	1 1					X		X		X										X	



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	mathematical model, applying the design concepts and/or design of the experimental set	, 1 2 , 1 3																		
5	Evaluation seminars 8	1 1 , 1 2 , 1 3					X		X		X								X	
6	Simulation and/or carrying out the planned experiments	1 1 , 1 2 , 1 3					X		X		X								X	
7	Writing up the final report and or the detailed drawings	1 1 , 1 2 , 1 3					X		X		X								X	

preparing for the final presentation																				

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023

Robotics engineering (CEE 511)

2- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Robotics engineering department		
Course Code	CEE 511		
Year/Level	Level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
			-

2. Course Aims:

No.	Aims
3	Establish a strong behavior and maintain engineering ethics and standards;
8	Acknowledge and accept personal responsibility for your education, personal development, as well as your ability to achieve post-graduation and research studies;
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.

3. Cometenecies (LO'S):



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Competency	Learning Outcomes (LO'S)
B2	1. Create systematic and methodic approaches in dealing with new and advancing technology. 2. Demonstrate efficient IT capabilities.
B4	1. Use relevant laboratory equipment and analyze the results correctly 2. Troubleshoot, maintain and repair almost all types of electronic systems using the standard tools. 3. Use appropriate tools to measure system performance. 4. Use computational facilities, measuring instruments, workshops and laboratories equipment to design experiments and collect, analyze and interpret results.
C1	1: Recognize engineering problems to identify the best solutions 2: Think creatively and innovatively in problem solving and design 3: Present technical reports. 4: Search for information to engage in lifelong self-learning discipline.
C2	1. Define concepts and theories of mathematics and sciences, which is appropriate to the discipline.
C3	1: Describe quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	BASIC CONCEPTS Brief history-Types of Robot–Technology- Robot classifications and specifications-Design and control issues- Various manipulators – Sensors - work cell - Programming languages.	6	6	-
2	DIRECT AND INVERSE KINEMATICS Mathematical representation of Robots - Position and orientation – Homogeneous transformation- Various joints- Representation using the Denavit Hattenberg parameters - Degrees of freedom-Direct- kinematics-Inverse kinematics- SCARA robots- Solvability – Solution Methods-Closed form solution.	6	6	-
3	MANIPULATOR DIFFERENTIAL MOTION AND STATICS Linear and angular velocities-Manipulator Jacobian-Prismatic and rotary joints–Inverse -	4	4	-



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	Wrist and arm singularity - Static analysis - Force and moment Balance.			
4	PATH PLANNING Definition-Joint space technique-Use of p-degree polynomial-Cubic polynomial-Cartesian space technique - Parametric descriptions - Straight line and circular paths - Position and orientation planning.	6	6	-
5	DYNAMICS AND CONTROL 2DOF Manipulator-Lagrange Euler formulation-Dynamic model – Manipulator-control problem-Linear control schemes-PID control scheme-Force control of robotic manipulator.	6	6	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab



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1	BASIC CONCEPTS Brief history-Types of Robot–Technology- Robot classifications and specifications- Design and control issues- Various manipulators – Sensors - work cell - Programming languages.	x	x		x	X					x	x			
2	DIRECT AND INVERSE KINEMATICS Mathematical representation of Robots - Position and orientation – Homogeneous transformation- Various joints- Representation using the Denavit Hattenberg parameters - Degrees of freedom- Direct- kinematics- Inverse kinematics- SCARA robots- Solvability – Solution Methods-Closed form solution.	x	x		x	X					x	x			



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3	MANIPULATOR DIFFERENTIAL MOTION AND STATICS Linear and angular velocities Manipulato Jacobian-Prismatic and rotary joints–Inverse -Wrist and arm singularity – Static analysis - Force and moment Balance.	x	x		x	X					x	x			
4	PATH PLANNING Definition-Joint space technique-Use of p-degree polynomial- Cubic polynomial- Cartesian space technique – Parametric descriptions - Straight line and circular paths - Position and orientation planning.	x	x		x	X					x	x			
5	DYNAMICS AND CONTROL 2DOF Manipulator- Lagrange Euler formulation-Dynamic model – Manipulator-control problem- Linear control schemes-PID control scheme-Force control of robotic manipulator.	x	x		x	X					x	x			

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:



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1	Additional Tutorials
2	Online lectures and assignments
6.2. Teaching and learning method for low capacity and outstanding Student	
For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	B2(1,2),B4(1,2,3,4)
2	Student load	B2(1,2), C3 (1)
3	Final term examination	B2(1,2), B4(1,2,3,4),C1(1,2,3,4),C2(b1),C3 (1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Edwin J. C. Sobey, "Learn It, Try It!", Raintree, 2019



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2	Chi N. Thai, “Exploring Robotics with ROBOTIS Systems”, Springer, 2018
3	Harry H. Poole, Fundamentals of Robotics Engineering, Springer Science & Business Media, 2020
4	J.O.Gray, DarwinG.Galdwell”Advanced Robotics & Intelligent machines” Institution of Electrical Engineers, 2021.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	BASIC CONCEPTS Brief history- Types of Robot- Technology-Robot classifications and specifications- Design and control	3												X		X		X	X	X		



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	issues- Various manipula tors – Sensors - work cell - Program ming language s.																					
2	DIRECT AND INVERS E KINEM ATICS Mathema tical represent ation of Robots - Position and orientati on – Homoge neous transfor mation- Various joints- Represen tation using the Denavit Hattenbe	3 , 8											X		X			X	X	X		



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	rg paramete rs - Degrees of freedom- Direct- kinemati cs- Inverse kinemati cs- SCARA robots- Solvabili ty – Solution Methods -Closed form solution.																				
3	MANIP ULATO R DIFFER ENTIAL MOTIO N AND STATIC S Linear and angular velocitie s- Manipul ator	8 , 1 1											X		X		X	X	X		



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	Jacobian - Prismatic and rotary joints– Inverse - Wrist and arm singularit y - Static analysis - Force and moment Balance.																			
4	PATH PLANNI NG Definitio n-Joint space techniqu e-Use of p-degree polynom ial-Cubic polynom ial- Cartesian space techniqu e - Parametr ic descripti ons -	1 1										X		X			X	X	X	



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	Straight line and circular paths - Position and orientation planning.																			
5	DYNAMICS AND CONTROL 2DOF Manipulator- Lagrange Euler formulation- Dynamic model – Manipulator-control problem- Linear control schemes- PID control scheme- Force control of robotic	8										X		X			X	X	X	



manipula tor.																				

Course Coordinator: Dr.Amira El-Sonbaty
Head of Department: Prof.Mohamed Fouad
Date of Approval: 2023

Computer Engineering (CEE 512)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Computer Engineering		
Course Code	CEE 512		
Year/Level	Level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	ENG 104		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

1- Course Aims:

No.	Aims
2	Apply analytic critical and systemic thinking to discover, analyze, and solve a wide range of engineering problems;

3. Cometenecies (LO'S):

Competency	Learning Outcomes (LO'S)
B3	1. Define basics of information and communication technology (ICT). b1. Select and appraise appropriate ICT tools to a variety of engineering problems. 2. Demonstrates basic organizational and project management skills. 3. Lead and motivate individuals. 4. Acquire entrepreneurial skills
C5	1: Listing characteristics of engineering materials related to the discipline. 2: Evaluate the characteristics and performance of components, systems and processes. 3: Choose appropriate specifications for required devices.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	The basics of the computer organization	4	4	-
2	computer instructions	8	8	-



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3	processing unit- Control unit	6	6	-
4	control by micro programs– memory organization	4	4	-
5	operating systems – time management	6	6	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits and Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	The basics of the computer organization	x	x		x	x				x				
2	computer instructions	x	x		x	x				x				
3	processing unit- Control unit	x	x		x	x				x				
4	control by micro programs– memory organization	x	x		x	x				x				
5	operating systems – time management	x	x		x	x				x				
6	politics – space management – the levels of storage – address translation – the pages	x	x		x	x				x				
7	the files – structures of the files – user interface – the orders translator	x	x		x	x				x				



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8	the helpful and reactive programs – the synchronization – basics of networks.	×	×		×	×					×				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	B3(1,2,3,4,5) C5(.1,2,3)
2	Student load (quizzes-sheets- reports)	B3(1,2,3,4,5) C5(.1,2,3)
3	Final term examination	B3(1,2,3,4,5) C5(.1,2,3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm	20%



وحدة ضمان الجودة



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	examination	
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Mohammed Ridha, Abdullah ridha, Nanh Ridha ,”Computer Engineering on Overview : Elective, 2023
2	Vojin G. Oklobdzija ,”The Computer Engineering Handbook, CRC Press,2019.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	The basics of the computer organization	2											X					X				
2	computer instructions	2											X					X				
3	processing unit- Control	2											X					X				



وحدة ضمان الجودة



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	unit																				
4	control by micro programs – memory organization	2												X				X			
5	operating systems – time management	2												X				X			

Course Coordinator: Dr.Amira El-Sonbaty
Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

Radar systems (CEE 513)

2- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering department
Department Responsible for the Course	Communications and Electronics Engineering department
Course Title	Radar systems
Course Code	CEE 513
Year/Level	Level 5
Specialization	Major
Authorization Date of Course Specification	2023
Pre- Request	CEE 416

Teaching hours	Lectures	Tutorial	Practical
	2	2	-

3- Course Aims:

No.	Aims
1	Master a wide range of engineering knowledge and specialized skills, as well as the ability to apply that information in real-world situations using theories and analytical thinking.
2	Apply analytic critical and systemic thinking to discover, analyze, and solve a wide range of engineering problems;

3-Cometencies (LO'S):

Competency	Learning Outcomes (LO'S)
B3	1. Define basics of information and communication technology (ICT). 2. Select and appraise appropriate ICT tools to a variety of engineering problems. 3. Demonstrates basic organizational and project management skills.



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	4. Lead and motivate individuals. 5. Acquire entrepreneurial skills
C5	1: Listing characteristics of engineering materials related to the discipline. 2: Evaluate the characteristics and performance of components, systems and processes. 3: Choose appropriate specifications for required devices.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Basics of radar systems	2	2	-
2	Radar types (pulse radar- CW radar)	4	4	-
3	Radar principle Radar equations. PRF. Doppler frequency.	4	4	
4	Radar Building blocks and discussing the basics of each block.	4	4	-
4	Radar component	6	6	-
5	Antenna radar.	6	6	-
6	Applications in the military and civil fields and the remote sensations.	4	4	-
Total		28	28	

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab



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1	INTRODUCTI ON TO RADAR EQUATION: Introduction- Basic Radar – The simple form of the Radar Equation- Radar Block Diagram- Radar Frequencies – Applications of Radar – The Origins of Radar	x	x		x						x				
2	Detection of Signals in Noise- Receiver Noise and the Signal-to-Noise Ratio- Probability Density Functions- Probabilities of Detection and False Alarm	x	x		x						x				



وحدة ضمان الجودة



وزارة التعليم العالي
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3	Integration of Radar Pulses- Radar Cross Section of Targets- Radar cross Section Fluctuations- Transmitter Power-Pulse Repetition Frequency- Antenna Parameters- System losses – Other Radar Equation Considerations.	x	x		x						x				
4	MTI AND PULSE DOPPLER RADAR: Introduction to Doppler and MTI Radar-Delay –Line Cancellers- Staggered Pulse Repetition Frequencies – Doppler Filter Banks – Digital MTI Processing	x	x		x						x				



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5	Moving Target Detector - Limitations to MTI Performance - MTI from a Moving Platform (AMIT) – Pulse Doppler Radar – Other Doppler Radar Topics	x	x		x						x				
6	Tracking with Radar – Monopulse Tracking – Conical Scan and Sequential Lobing - Limitations to Tracking Accuracy - Low-Angle Tracking - Tracking in Range - Other Tracking Radar Topics – Comparison of Trackers - Automatic Tracking with Surveillance Radars (ADT).	x	x		x						x				



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7	Applications in the military and civil fields and the DETECTION OF SIGNALS IN NOISE: Matched –Filter Receiver – Detection Criteria – Detectors — Automatic Detector - Integrators - Constant-False-Alarm Rate Receivers	×	×		×						×				



وحدة ضمان الجودة



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8	The Radar operator - Signal Management - Propagation Radar Waves - Atmospheric Refraction - Standard propagation - Nonstandard Propagation - The Radar Antenna - Reflector Antennas - Electronically Steered Phased Array Antennas – Phase Shifters - Frequency-Scan Arrays Radar Transmitters and Receivers - Introduction	x	x		x						x				



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9	Linear Beam Power Tubes - Solid State RF Power Sources - Magnetron - Crossed Field Amplifiers – Other RF Power Sources – Other aspects of Radar Transmitter.- The Radar Receiver - Receiver noise Figure – Super heterodyne Receiver - Duplexers and Receiver Protectors- Radar Displays.	x	x		x							x			
10	RADIO DIRECTION AND RANGES: Introduction - Four methods of Navigation .- The Loop Antenna -Loop Input Circuits - An Aural Null Direction Finder –The Goniometer - Errors in Direction Finding	x	x		x							x			



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11	Adcock Direction Finders - Direction Finding at Very High Frequencies - Automatic Direction Finders –The Commutated Aerial Direction Finder - Range and Accuracy of Direction Finders	x	x		x							x				



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12	The LF/MF Four course Radio Range - VHF Omni Directional Range(VOR) - VOR Receiving Equipment - Range and Accuracy of VOR – Recent Developments. Hyperbolic Systems of Navigation (Loran and Decca) - Loran- A - Loran-A Equipment - Range and precision of Standard Loran - Loran-C - The Decca Navigation System -Decca Receivers - Range and Accuracy of Decca - The Omega System	x	x	x															

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity

-Assign a portion of the office hours for those students.



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students	-Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

No.	Evaluation Method	LO's
1	Periodic exam	B3(1,2,3,4,5) C5(.1,2,3)
2	Student load	B3(1,2,3,4,5) C5(.1,2,3)
3	Final term examination	B3(1,2,3,4,5) C5(.1,2,3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	M.Sholnik,"Introduction to RADAR system," 3 rd McGraw-Hill, 2023.
2	W.L.StutzmanandG. A. Thiele,"AntennaTheoryandDesign," John Wiley&Sons, 2019

9. Facilities required for teaching and learning:



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No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Basics of radar systems	2																				X
2	systems , Radar types and its applications for military and civilian fields	1																				X
3	Radar Building blocks and discussing the basics of each block	1 , 2																				X
4	Rectangular	1																				X



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	waveguides (TE-modes) and cut off frequencies																				
5	Rectangular waveguides (TM-modes) and cut off frequencies	1, 2																			X
6	S-parameters	1																			X

Course Coordinator: Prof.Mohamed Fouad

Head of Department: Prof.Mohamed Fouad

Date of Approval: 2023

Neural networks (CEE 514)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering department
Department Responsible for the	Communications and Electronics Engineering



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وزارة التعليم العالي
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Course	department		
Course Title	Neural networks		
Course Code	CEE 514		
Year/Level	level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	-		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

4- Course Aims:

No.	Aims
1	Master a wide range of engineering knowledge and specialized skills, as well as the ability to apply that information in real-world situations using theories and analytical thinking.
2	Apply analytic critical and systemic thinking to discover, analyze, and solve a wide range of engineering problems;

3. Cometencies (LO'S):

No.	Knowledge and understanding
C1	1: Recognize engineering problems to identify the best solutions 2: Think creatively and innovatively in problem solving and design 3: Present technical reports. 4: Search for information to engage in lifelong self-learning discipline.
C2	1. Define concepts and theories of mathematics and sciences, which is appropriate to the discipline.
C3	1: Describe quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Introduction of (Natural Neural structure- Artificial natural Neural - parallel processing)	2	2	-
2	Artificial natural Neural Networks main components.	2	2	-
3	Neural Networks classification with examples& Neural Networks design	2	2	



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4-5	Neuron models and basic learning rules. Learning of a single neuron and single layer neural networks	4	4	
6-7	Learning Algorithms-artificial Neural Networks, Multilayer neural networks and back-propagation, Multilayer neural network applications	4	4	-
8-9 10	Associative memory. Supervised Neural Networks learning –self organizing learning	6	6	-
11	Preprocessing data-network structure	2	2	-
12	Hopfield model-Boltzmann model	4	4	-
13- 14	Neural Networks and expert systems and Neural decision tree - Presentation of projects	4	4	-
Total		28	28	

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	introduction: artificial neural network: introduction, characteristics - learning methods – taxonomy	x	x		x	x					x	x			
2	Evolution of neural networks- basic models - important technologies	x	x		x	x					x	x			
3	applications. Fuzzy logic: Introduction - crisp sets- fuzzy sets	x	x		x	x					x	x			
4	crisp relations and fuzzy relations: cartesian product of relation	x	x		x	x					x	x			



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5	classical relation, fuzzy relations, tolerance and equivalence relations, non-iterative fuzzy sets	x	x		x	x						x	x			
6	Genetic algorithm- Introduction- biological background	x	x		x	x						x	x			
7	traditional optimization and search techniques - Genetic basic concepts.	x	x		x	x						x	x			

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's



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1	Midterm examination	C2.1, C1.1
2	Semester work	C3.1
3	Final term examination	C2.1, C1.1,C1.2,C1.3,C1.4

7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7.3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Daniel Graupe , “Principles of Artificial Neural Networks: Basic Designs to Deep Learning (4th Edition,” World Scientific,2019.
2	L. C. Jain, “Recent Advances in Artificial Neural Networks”, CRC Press, 2018
3	Russell &Norvig, "Artificial Intelligence: A Modern Approach", 2nd Edition, Prentice Hall, 2020.
4	B. D. Ripley, Pattern Recognition and Neural Networks, Cambridge University Press., 2019.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet

10. Matrix of Competencies and Aims:

No.	To p i c	Competencies



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			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Introduction to natural Neural structure - Introduction to Artificial natural Neural Networks and parallel processing	2													X							X
2	Artificial natural Neural Networks main components	1													X							X
3	Neural Networks classification	1, 2													X							X
4	Supervised Neural Networks	1													X							X



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	learning –self organizin g learning																			
5	Neural Network s design	1 , 2												X						X
6	Preproce ssing data- network structure	1												X						X
7	Learning Algorith ms- artificial Neural Network s multilaye r models	1												X						X
8	Hopfield model- Boltzma nn model	2												X						X
9	Neural Network s and expert systems	1 , 2												X						X
10	Multilay er neural network applicati ons	1 , 2												X						X



وحدة ضمان الجودة



وزارة التعليم العالي
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Course Coordinator: Dr. Amira Elsonbaty
Head of Department: Prof. Mohamed Fouad
Date of Approval: 2023

Printed circuits design and fabrication (CEE 515)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Printed circuits design and fabrication		
Course Code	CEE 515		
Year/Level	Level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 406		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2-Course Aims:

No.	Aims
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.
12	Communicate and work effectively within multiple teams in the field of communication and electronics engineering and consider the effects of engineering solutions on society and the environment.

3- Competencies (LO'S)

Competency	Learning Outcomes (LO'S)
B3	1. Select and appraise appropriate ICT tools to a variety of engineering problems. 2. Acquire entrepreneurial skills
C5	1: Listing characteristics of engineering materials related to the discipline. 2: Evaluate the characteristics and performance of components, systems and processes. 3: Choose appropriate specifications for required devices.



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4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Printed Circuit Board (PCB) scales (size and types)-	4	4	-
2	Surface treatments	2	2	-
3	Capacitors and coils for PCB connection	2	2	-
4	Spaces connection	2	2	-
5	Actual resources and earth's connectors- Components for positioning	2	2	-
6	Cooling requirements and Group density- Tests for surface	2	2	-
7	Design rules for different PCB and their applications: Digital, Analog, High frequency, and auto-technical	2	2	-
8	Programs for PCB design	4	4	-
9	Electronic board's fabrication	2	2	-
10	Auto-mechanical operations in PCB technology	2	2	-
11	Multi-layered boards	2	2	-
12	Technical methods for welding and assembly components	2	2	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Printed Circuit	X			X		X				X				



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	Board (PCB) scales (size and types)-														
2	Surface treatments	X			X		X				X				
3	Capacitors and coils for PCB connection	X			X		X				X				
4	Spaces connection	X			X		X				X				
5	Actual resources and earth's connectors-Components for positioning	X			X		X				X				
6	Cooling requirements and Group density-Tests for surface	X			X		X				X				
7	Design rules for different PCB and their applications: Digital, Analog, High frequency, and auto-technical	X			X		X				X				



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8	Programs for PCB design	X			X		X				X				
9	Electronic board's fabrication	X			X		X				X				
10	Auto-mechanical operations in PCB technology	X			X		X				X				
11	Multi-layered boards	X			X		X				X				
12	Technical methods for welding and assembly components	X			X		X				X				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	C6(1-2)



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2	Student load (quizzes-sheets-reports)	C6(2)
3	Final term examination	B3(1,2)C6(1-2-3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	S. Sedra and K. C. Smith, <i>Microelectronic Circuits</i> , eight th Edition, Oxford University Press, 2020
2	Printed Circuits Board Handbook, By "Clyde F. Coombs", Mc, Graw Hill, seventh ed, 2019.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No	To p i c	Competencies



وحدة ضمان الجودة



وزارة التعليم العالي
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			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Printed Circuit Board (PCB) scales (size and types)-	1 1													X							X
2	Surface treatments	1 1													X							X
3	Capacitors and coils for PCB connection	1 1													X							X
4	Spaces connection	1 1 , 1 2													X							X
5	Actual resources and earth's connectors- Components for positioning	1 1 , 1 2													X							X
6	Cooling requirem	1 1													X							X



وحدة ضمان الجودة



وزارة التعليم العالي
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	ents and Group density-Tests for surface	12																		
7	Design rules for different PCB and their applications: Digital, Analog, High frequency, and auto-technical	11												X						X
8	Programs for PCB design	11												X						X
9	Electronic board's fabrication	11												X						X
10	Auto-mechanical operations in PCB technology	11												X						X
11	Multi-layered boards	11												X						X



وحدة ضمان الجودة



وزارة التعليم العالي
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1 2	Technical methods for welding and assembly components	1 1													X								X

Course Coordinator: Dr. OsamaEl-Oraby
Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

Industrial Electronics (CEE 516)

1-Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering Department		
Department Responsible for the Course	Communications and Electronics Engineering Department		
Course Title	Industrial Electronics		
Course Code	CEE 516		
Year/Level	Level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	BAS 112		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
3	Establish a strong behavior and maintain engineering ethics and standards;
8	Acknowledge and accept personal responsibility for your education, personal development, as well as your ability to achieve post-graduation and research studies;
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.

3- Cometencies (LO'S):

Cometencies Learning Outcomes (LO'S)	
B3	1. Create systematic and methodic approaches in dealing with new and advancing technology. 2. Demonstrate efficient IT capabilities.
B4	1. Use relevant laboratory equipment and analyze the results correctly 2. Troubleshoot, maintain and repair almost all types of electronic systems using the standard tools.



وحدة ضمان الجودة



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	3. Use appropriate tools to measure system performance. 4. Use computational facilities, measuring instruments, workshops and laboratories equipment to design experiments and collect, analyze and interpret results.
C3	1: Recognize engineering problems to identify the best solutions 2: Think creatively and innovatively in problem solving and design 3: Present technical reports. 4: Search for information to engage in lifelong self-learning discipline.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	The usage of electronics in measurement equipment's ,Length and temperature	2	2	-
2	self-waves and its usage in intelligence systems	2	2	-
3	circuit bracers and its usage in industry and traffic control	4	4	-
4	noise measurement system	4	4	-
5	different heating system using high frequency for conductive materials – sensitivity systems	4	4	-
6	loading systems	2	4	-
7	temperature recording and magnetic amplifiers	4	4	-
8	exhaust system analysis	2	2	-
9	control system for power system	4	4	-
Total		28	28	-

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	The usage of electronics in measurement equipment: Length and temperature – self waves and its usage in intelligence systems	x	x		x	x					x				
2	circuit breakers and its usage in industry and traffic control	x	x		x	x					x				
3	noise measurement system	x	x		x	x					x				



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4	different heating system using high frequency for conductive materials	x	x		x	x					x				
5	different heating system using high frequency for conductive materials – sensitivity systems	x	x		x	x					x				
6	sensitivity systems	x	x		x	x					x				
7	loading systems	x	x		x	x					x				
8	temperature recording and magnetic amplifiers	x	x		x	x					x				
9	exhaust system analysis – control system for power system	x	x		x	x					x				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:



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1	Additional Tutorials
2	Online lectures and assignments
6.2. Teaching and learning method for low capacity and outstanding Student	
For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation methods:

No.	Evaluation Method	LO's
1	Periodic exam	B3(1,2),B4(1,2,3,4)
2	Student load (Quiz & sheets, reports)	B3(1,2), C3 (1)
3	Final term examination	B3(1,2), B4(1,2,3,4)C3(1,2,3,4)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. Reference list

No.	Reference List



وحدة ضمان الجودة



وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
بدمياط الجديدة

1	Adel Sedra, smith , “Microelectronic circuit, 8th edition Oxford Newyork , 2019”
2	Thomas L .Floyd , “Electronic devices” 10 th edition , Prentice Hall Boston coulombus Indianapolis Newyork San Francisco , 2023”.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	The usage of electronics in measurement equipments ,Length and temperature	3													X	X				X		
2	self-waves and its usage in intelligence	3 , 8													X	X				X		



وحدة ضمان الجودة



وزارة التعليم العالي
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	systems																					
3	circuit bracers and its usage in industry and traffic control	8 , 1 1													X	X					X	
4	noise measure ment system	1 1													X	X					X	
5	different heating system using high frequenc y for conducti ve materials — sensitivit y systems	8													X	X					X	
6	loading systems	3													X	X					X	
7	temperat ure recordin g and magnetic amplifier	8													X	X					X	



وحدة ضمان الجودة



وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
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	s																				
8	exhaust system analysis	11													X	X				X	
9	control system for power system	8, 11													X	X				X	

Course Coordinator: Dr.Amira El-Sonbaty
Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

Introduction to VLSI Design (CEE 517)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Introduction to VLSI Design		
Course Code	CEE 517		
Year/Level	Level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 402		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

5. Course Aims:

No.	Aims
3	Establish a strong behavior and maintain engineering ethics and standards;
8	Acknowledge and accept personal responsibility for your education, personal development, as well as your ability to achieve post-graduation and research studies;
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.

3. Competencies (LO'S):

Competency	Learning Outcomes (LO'S)
B2	1. Create systematic and methodic approaches in dealing with new and advancing technology. 2. Demonstrate efficient IT capabilities.
B4	1. Use relevant laboratory equipment and analyze the results correctly 2. Troubleshoot, maintain and repair almost all types of electronic systems using the standard tools.



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	3. Use appropriate tools to measure system performance. 4. Use computational facilities, measuring instruments, workshops and laboratories equipment to design experiments and collect, analyze and interpret results.
C1	1: Recognize engineering problems to identify the best solutions 2: Think creatively and innovatively in problem solving and design 3: Present technical reports. 4: Search for information to engage in lifelong self-learning discipline.
C2	1. Define concepts and theories of mathematics and sciences, which is appropriate to the discipline.
C3	1: Describe quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Design of VLSI circuits	2	2	-
2	Stick diagramming	2	2	-
3	NMOS transistors	4	4	-
4	Switch and gate Logic	2	2	-
5	PLAs- Finite-state machines- Design rules	4	4	-
6	CAD system	2	2	-
7	Speed and power considerations	2	2	-
8	Floor planning	2	2	-
9	Layout techniques	2	2	-
10	Fabrication of VLSI	2	2	-
11	Two basic MOS technologies and other available technologies	2	2	-
12	Oxidation- Photoengraving- Chemical etching diffusion.	2	2	-



وحدة ضمان الجودة



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Total	28	28	-

5. Teaching and learning methods:

N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	MOS TRANSISTOR PRINCIPLE: NMOS and PMOS transistors, Process parameters for MOS and CMOS, Electrical properties of CMOS circuits and device Modeling	x	x		x						x				
2	Scaling principles and fundamental limits, CMOS inverter scaling, propagation delays, Stick diagram, Layout diagrams	x	x		x						x				



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3	COMBINATIONAL LOGIC CIRCUITS: Examples of Combinational Logic Design, Elmore's constant, Pass transistor Logic	x	x		x						x			
4	Transmission gates, static and dynamic CMOS design, Power dissipation – Low power design principles	x	x		x						x			
5	SEQUENTIAL LOGIC CIRCUITS: Static and Dynamic Latches and Registers, Timing issues, pipelines, clock strategies	x	x		x						x			
6	Memory architecture and memory control circuits, Low power memory circuits, Synchronous and Asynchronous design	x	x		x						x			



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7	DESIGNING ARITHMETIC BUILDING BLOCKS:Data path circuits, Architectures for ripple carry adders, carry look ahead adders	x	x		x						x				
8	High speed adders, accumulators, Multipliers, dividers, Barrel shifters, speed and area tradeoff.	x	x		x						x				
9	IMPLEMENTATION STRATEGIES: Full custom and Semi-custom design, Standard cell design and cell libraries, FPGA building block architectures, FPGA interconnect routing procedures	x	x		x						x				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials.



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	- Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	LO's
1	Periodic exam	B2(1,2),B4(1,2,3,4)
2	Student load (quizzes-sheets-reports)	B2(1,2), C3 (1)
3	Final term examination	B2(1,2), B4(1,2,3,4),C1(1,2,3,4),C2(1),C3 (1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Adel, Sedra"Microelectronic devices and Circuits", Ninth Edition, Boston Columbus Indianapolis New York San Francisco, 2023 Columbus Indianapolis New York San Francisco, 2023.
2	ROBERT B. L. NASHELSKY, "Electronic devices and Circuit Theory ", tenth Edition Pearson Education, Inc., Upper Saddle River, New Jersey 07458. Pearson Prentice Hall, 2019.



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وزارة التعليم العالي
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9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Design of VLSI circuits	3			X									X					X	X		
2	Stick diagram ming	3 , 8			X									X					X	X		
3	NMOS transistors	8 , 11			X									X					X	X		
4	Switch and gate Logic	11			X									X					X	X		
5	PLAs- Finite-state machines - Design rules	8			X									X					X	X		
6	CAD system	3			X									X					X	X		



وحدة ضمان الجودة



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7	Speed and power considerations	8			X									X					X	X		
8	Floor planning	11			X									X					X	X		
9	Layout techniques	8, 11			X									X					X	X		
10	Fabrication of VLSI	3, 8			X									X					X	X		
11	Two basic MOS technologies and other available technologies	3, 11			X									X					X	X		
12	Oxidation-Photoengraving-Chemical etching diffusion.	11			X									X					X	X		

Course Coordinator: Prof.Mohamed Foad

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023

Satellite systems (CEE 518)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Satellite systems		
Course Code	CEE 518		
Year/Level	Level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	CEE 416		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

2- Course Aims:

No.	Aims
2	Apply analytic critical and systemic thinking to discover, analyze, and solve a wide range of engineering problems;

3-Cometencies (LO'S):

Competency	Learning Outcomes (LO'S)
B3	1. Define basics of information and communication technology (ICT). 2. Select and appraise appropriate ICT tools to a variety of engineering problems. 3. Demonstrates basic organizational and project management skills. 4. Lead and motivate individuals. 5. Acquire entrepreneurial skills
C5	1: Listing characteristics of engineering materials related to the discipline.



وحدة ضمان الجودة



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	2: Evaluate the characteristics and performance of components, systems and processes.
	3: Choose appropriate specifications for required devices.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Introduction, satellite classifications and applications	4	4	-
2	Satellite orbits	4	4	-
3	Satellite link budget	4	4	-
4	Satellite subsystems	4	4	-
5	Satellite modulations	2	2	-
6	INTEL sat, Nile Sat	2	2	-
7	GPS , Reconnaissance sat	4	4	-
8	Computer Aided design; Matlab	4	4	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab



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وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
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1	SATELLITE ORBITS: Kepler's Laws, Newton's law, orbital parameters, orbital perturbations, station keeping, geo stationary and non-Geo-stationary orbits	x	x		x	x					x				
2	Look Angle Determination- Limits of visibility –eclipse-Sub satellite point – Sun transit outage- Launching Procedures - launch vehicles and Propulsion	x	x		x	x					x				
3	SPACE SEGMENT AND SATELLITE LINK DESIGN: Spacecraft Technology- Structure, Primary power, Attitude and Orbit control, Thermal control and Propulsion	x	x		x	x					x				



وحدة ضمان الجودة



وزارة التعليم العالي
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4	communication Payload and supporting subsystems, Telemetry, Tracking and command. Satellite uplink and downlink Analysis and Design, link budget	x	x		x	x					x				
5	E/N calculation-performance impairments-system noise, inter modulation and interference, Propagation Characteristics and Frequency considerations-System reliability and design lifetime	x	x		x	x					x				



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المعهد العالي للهندسة والتكنولوجيا
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6	EARTH SEGMENT: Introduction – Receive –Only home TV systems – Outdoor unit – Indoor unit for analog (FM) TV –Master antenna TVsystem -Community antenna TV system –Transmit – Receive earth stations –Problems –Equivalent isotropic radiated power	×	×		×	×						×				



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7	Transmission losses – Free-space transmission – Feeder losses – Antenna misalignment losses – Fixed atmospheric and ionospheric losses – Linkpower budget equation – System noise – Antenna noise – Amplifier noise temperature – Amplifiers in cascade – Noise factor – Noise temperature of absorptive networks – Overall system noise temperature	x	x		x	x						x				



وحدة ضمان الجودة



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8	Carrier-to- Noise ratio – Uplink – Saturation flux density – Input back off – The earth station - HPA – Downlink – Output back off – Satellite														
	TWTA output – Effects of rain – Uplink rain– Fade margin – Downlink rain – Fade margin – Combined uplink and downlink C/N ratio – Inter modulation noise	x	x		x	x					x				



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9	SATELLITE ACCESS: Modulation and Multiplexing: Voice, Data, Video, Analog – digital transmission system, Digital video Broadcast, multiple access: FDMA, TDMA, CDMA, Assignment Methods, Spread Spectrum communication, compression – encryption	x	x		x	x						x			
10	SATELLITE NAVIGATION SYSTEM: Distance Measuring Equipment – Operation of DME – TACAN – TACAN Equipment – Instrument Landing System – Ground Controlled Approach System	x	x		x	x						x			



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وزارة التعليم العالي
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1 1	Microwave Landing System(MLS) The Doppler Effect - Beam Configurations - Doppler Frequency Equations - Track Stabilization – Doppler Spectrum - Components of the Doppler Navigation System - Doppler range Equation - Accuracy ofDoppler Navigation Systems. Inertial Navigation	x	x		x	x						x				



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وزارة التعليم العالي
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1 2	Principles of Operation - Navigation Over the Earth- Components of an Inertial Navigation System - Earth Coordinate Mechanization - Strapped-Down Systems - Accuracy of Inertial Navigation Systems-The Transit System - Navstar Global Positioning System (GPS)	×	×		×	×						×				



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وزارة التعليم العالي
المعهد العالي للهندسة والتكنولوجيا
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1 3	SATELLITE APPLICATIONS: INTELSAT Series, INSAT, VSAT, Mobile satellite services: GSM,GPS, INMARSAT, LEO, MEO, Satellite Navigational System. Direct Broadcast satellites(DBS)- Direct to home Broadcast (DTH), Digital audio broadcast (DAB)	x	x		x	x						x			
1 4	World space services, Business TV(BTV), GRAMSAT,Speci alized services – E –mail, Video conferencing ,Internet.	x	x		x	x						x			

6. Student Evaluation:

6.1 Student Evaluation methods:

No.	Evaluation Method	LO's
1	Midterm examination	B3(1)
2	Semester work	C5(1,2)
3	Final term examination	B3(1), C5(1,2,3)

6.2 Evaluation Schedule:

No.	Evaluation Method	Weeks



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1	Midterm examination	8 th
2	Semester work	2 nd -7 th - 9 th -14 th
3	Final term examination	15 th

6.3 weighting of Evaluation :

No.	Evaluation method	Weights
1	Mid-term examination	20%
2	final examination	60%
3	Semester work	20%
	Total	100%

7. List of References:

No.	Reference List
1	Robert W. Jones, " Hand book on Satellite communication ", 5th Edition, Willy, New york, 2020
2	Michael O. Kolawole, " Satellite Communication Engineering ", Marcel Dekker, Inc, New York ,2023
3	Dennis Roddy " Satellite Communications", 4th Edition, Graw-Hill, New York , 2019

8. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet

9. Matrix of knowledge and skills of the course:

N o.	Topic	Aims	B3	C5
1	Introduction, satellite classifications and applications	2	x	
2	Satellite orbits	2	x	X
3	Satellite link budget	2		
4	Satellite subsystems	2	x	



وحدة ضمان الجودة



وزارة التعليم العالي
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5	Satellite modulations	2	x	X
6	INTEL sat, Nilesat	2	x	X
7	GPS, reconnaissance sat	2		X
8	Computer Aided design	2		X

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Introduction, satellite classifications and applications	2													X							X
2	Satellite orbits	2													X							X
3	Satellite link budget	2													X							X
4	Satellite subsystems	2													X							X
5	Satellite modulations	2													X							X
6	INTEL sat, Nilesat	2													X							X



Course Coordinator: Prof.Mohamed Fouad
Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

1- Basic Information:

2- Course Aims:

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3-Cometencies (LO'S)

Competency	Learning Outcomes (LO'S)
B3	1. Select and appraise appropriate ICT tools to a variety of engineering problems. 2. Acquire entrepreneurial skills
C5	1: Listing characteristics of engineering materials related to the discipline. 2: Evaluate the characteristics and performance of components, systems and processes. 3: Choose appropriate specifications for required devices.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Principles of cellular radio	6	6	-
2	Mobile radio propagation and channel modeling	4	4	-
3	Multiple access methods: FDMA, TDMA, GSM, CDMA.	4	4	-
4	Physical and Logical channels	4	4	-
5	Mobile generations: 1G, 2G, 3G, 4G, 5G	6	6	-
6	Multi – carrier and OFDM systems.	4	4	-
Total		28	28	-

5. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Printed Circuit Board (PCB)	X			X	X	X	X			X	X			



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	scales (size and types)-														
2	Surface treatments	X			X	X	X	X			X	X			
3	Capacitors and coils for PCB connection	X			X	X	X	X			X	X			
4	Spaces connection	X			X	X	X	X			X	X			
5	Actual resources and earth's connectors-Components for positioning	X			X	X	X	X			X	X			
6	Cooling requirements and Group density-Tests for surface	X			X	X	X	X			X	X			

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students



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For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation method:

No.	Evaluation Method	ILO's
1	Periodic exam	C6(1-2)
2	Student load	C6(1)
3	Final term examination	B3(1,2)C6(1-2-3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	C.A. Balanis,"Antenna Theory– Analysis and Design," John Wiley & Sons, 2020
2	W.L. Stutzman and G. A. Thiele,"Antenna Theory and Design," John Wiley & Sons, 2019.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system



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5	Wireless internet

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Principle s of cellular radio	3													X							X
2	Mobile radio propagati on and channel modeling	3 , 8													X							X
3	Multiple access methods: FDMA, TDMA, GSM, CDMA.	8 , 11													X							X
4	Physical and Logical channels	11													X							X
5	Mobile generatio ns: 1G, 2G, 3G, 4G, 5G	8													X							X



Course Coordinator: Dr.Walid Rasslan
Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

1- Basic Information:

2- Course Aims:

Competencies Learning Outcomes (LO'S)



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Competency	Learning Outcomes LO'S
C5	1: Listing characteristics of engineering materials related to the discipline. 2: Evaluate the characteristics and performance of components, systems and processes. 3: Choose appropriate specifications for required devices.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Basic definition and theorems	2	2	-
2	Formulation of the radiation problems	2	2	-
3	Isotropic point source-Power and field patterns-Directivity and gain-Radiation impedance	2	2	-
4	Infinitesimal dipole antenna	2	2	-
5	Finite length dipole antenna	2	2	-
6	Wave polarization-Radiation from current elements-	2	2	-
7	Uda-Yagi antenna-Log-periodic antenna-Antenna measurement techniques	2	2	-
8	Microstrip antennas	2	2	-
9	Basic principles and analytical techniques of electromagnetic wave propagation	2	2	-
10	Linear wire antennas	2	2	-
11	Transmission lines-waveguides and resonators	4	4	-
12	Two element array antenna	2	2	-
13	Basic microwave networks-scattering	2	2	-
Total		28	28	-

5. Teaching and learning methods:



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No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	FUNDAMENTALS OF RADIATION: Definition of antenna parameters – Gain, Directivity, Effective aperture, Radiation Resistance, Band width, Beam width, Input Impedance Matching	x	x		x	x					x				
2	Baluns, Polarization mismatch, Antenna noise temperature, Radiation from oscillating dipole, half wave dipole, folded dipole, and Yagi array.	x	x		x	x					x				
3	APERTURE AND SLOT ANTENNAS: Radiation from rectangular apertures, Uniform and Tapered aperture, Horn antenna, Reflector antenna	x	x		x	x					x				



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4	Aperture blockage, Feeding structures, Slot antennas, Microstrip antennas – Radiation mechanism – Application, Numerical tool for antenna analysis	x	x		x	x					x				
5	ANTENNA ARRAYS: N element linear array, Pattern multiplication, Broadside and End fire array –Concept of Phased arrays, Adaptive array, Basic principle of antenna Synthesis-Binomial array	x	x		x	x					x				
6	SPECIAL ANTENNAS: Principle of frequency independent antennas – Spiral antenna, Helical antenna, Log periodic. Modern antennas- Reconfigurable antenna, Active antenna, Dielectric antennas, Electronic band gap structure and applications, Antenna Measurements-Test Ranges, Measurement of Gain, Radiation pattern, Polarization, VSWR	x	x		x	x					x				



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7	PROPAGATION OF RADIO WAVES: Modes of propagation, Structure of atmosphere, Ground wave propagation, Tropospheric propagation	x	x		x	x					x				
8	Duct propagation, Troposcatter propagation, Flat earth and Curved earth concept Sky wave propagation – Virtual height, critical frequency, Maximum usable frequency – Skip distance, Fading, Multi hop propagation	x	x		x	x					x				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7. 1 Student Evaluation methods:

No.	Evaluation Method	Competencies



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1	Midterm examination	C5(1)
2	Semester work(quizzes, sheets, report)	C5(1,2)
3	Final term examination	C5(1,2,3)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7.3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	C.A. Balanis,"AntennaTheory– AnalysisandDesign,"JohnWiley&Sons, 2020
2	W.L.StutzmanandG. A. Thiele,"AntennaTheoryandDesign," JohnWiley&Sons, 2019.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5



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1	Basic definition and theorems	1, 2													X							X
2	Formulation of the radiation problems	1, 2													X							X
3	Isotropic point source-Power and field patterns-Directivity and gain-Radiation impedance	1, 2													X							X
4	Infinitesimal dipole antenna	1, 2													X							X
5	Finite length dipole antenna	1, 2													X							X
6	Wave polarization-Radiation from current elements	1, 2													X							X



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	-																					
7	Uda-Yagi antenna-Log-periodic antenna-Antenna measurement techniques	1, 2													X							X
8	Microstrip antennas	1, 2													X							X
9	Basic principles and analytical techniques of electromagnetic wave propagation	1, 2													X							X
10	Linear wire antennas	1, 2													X							X
11	Transmission lines-	1, 2													X							X



2. Course Aims:

No.	Aims
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.
13	Allocate projects creatively by analyzing data from intended tests.

3. Competencies Learning Outcomes (LO'S):

Competency	Learning Outcomes (LO'S)
B2	1: Assess and evaluate the characteristics and performance of components, systems, and processes.
C2	1: Select appropriate solutions for engineering problems based on analytical thinking.
Competency	Learning Outcomes (LO'S)
B2	1. Describe quality assurance systems 2. Assess and evaluate the characteristics and performance of components, systems, and processes. 3. Create and/or re-design a process, component, or system, and carry out specialized engineering designs.
C1	1. Recognize, explain, analyze, and describe computer elements, 2. Use methodologies of software planning
C3	1. Demonstrate the ability to model and analyze components and systems Electronics Engineering 2. identify the software tools to optimize their performance
C4	1. Demonstrate the knowledge about measurement equipment 2. Demonstrate the ability to use them to characterize components and systems electronics engineering.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	General Digital communication systems (design and analysis of the digital and analogue electronic circuits)	4	4	-
2	Radio systems	8	8	-
3	Telephone Systems (the mobile technology and personal computer)	6	6	-
4	Radio Navigation Systems	6	6	-
5	Satellite Systems (video and audio systems using the microwaves, satellites,)	4	4	-



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Total	28	28	-

5. Teaching and learning methods:

N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	Integrated measurements amplifiers	x	x		x						x				
2	comparisons and taking of the samples and the stopping	x	x		x						x				
3	The converters(digital/an alogs and analog/digital)	x	x		x						x				
4	the electric variables	x	x		x						x				
5	signals preparation and its filtration	x	x		x						x				
6	systems and components of signals attainments	x	x		x						x				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks.



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	-Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7. 1 Student Evaluation methods:		
No.	Evaluation Method	Competencies
1	Midterm examination	B2
2	Semester work(quizzes, sheets, report)	B2, C1
3	Final term examination	C1, C3, C4
7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Adel Sedra, smith , “Microelectronic cicuit, 6th edition Oxford Newyork , 2019”
2	Thomas L .Floyd , “Electronic devices” 11 th edition , Prentice Hall Boston coulombus Indianapolis Newyork San Francisco , 2023”.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom



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2	
3	White board
4	Data show system
5	Wireless internet

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	General Digital communication systems (design and analysis of the digital and analogue electronic circuits)	1 1												X				X		X	X	
2	Radio systems	1 1 , 1 3												X				X		X	X	
3	Telephone Systems (the mobile)	1 1 , 1 3												X				X		X	X	



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	technology and personal computer)																					
4	Radio Navigation Systems	11											X				X		X	X		
5	Satellite Systems (video and audio systems using the microwaves, satellites,)	1113											X				X		X	X		

Course Coordinator: Dr. Amira El-Sonbaty

Head of Department: Prof. Mohamed Foad

Date of Approval: 2023

Wireless Communications (CEE 522)

1- Basic Information:

Program Title	Communications and Electronics Engineering program
Department Offering the Program	Communications and Electronics Engineering department
Department Responsible for the Course	Communications and Electronics Engineering department
Course Title	Wireless Communications
Course Code	CEE 522
Year/Level	level 5
Specialization	Major



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Authorization Date of Course Specification		2023		
Pre- Request		CEE 416		
Teaching hours	Lectures	Tutorial	Practical	
	2	2	-	

3- Course Aims:

No.	Aims
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.
12	Communicate and work effectively within multiple teams in the field of communication and electronics engineering and consider the effects of engineering solutions on society and the environment.

3- Competencies (LO'S)

Competency	Learning Outcomes (LO'S)
B3	1. Select and appraise appropriate ICT tools to a variety of engineering problems. 2. Acquire entrepreneurial skills
C5	1: Listing characteristics of engineering materials related to the discipline. 2: Evaluate the characteristics and performance of components, systems and processes. 3: Choose appropriate specifications for required devices.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Considers aspects of wireless and mobile systems.	8	8	-
2	Wireless communications channels.	4	4	-
3	Mobile networking including support for the Internet Protocol suite.	4	4	-
4	wireless communications applications.	8	8	-
5	Multiple Access techniques.	4	4	-
Total		28	28	-

5. Teaching and learning methods:



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N o	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	lab
1	Considers aspects of wireless and mobile systems.	X			X	X	X	X			X	X			
2	Wireless communication s channels.	X			X	X	X	X			X	X			
3	Mobile networking including support for the Internet Protocol suite.	X			X	X	X	X			X	X			
4	wireless communication s applications.	X			X	X	X	X			X	X			
5	Multiple Access techniques.	X			X	X	X	X			X	X			

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1 Additional Tutorials

2 Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity -Assign a portion of the office hours for those students.



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students	-Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7. 1 Student Evaluation methods:		
No.	Evaluation Method	Competencies
1	Midterm examination	B3(1,2),C5(1,2)
2	Semester work(quizzes, sheets, report)	C5(1,2)
3	Final term examination	B3(1,2),C5(1,2,3)
7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Wireless Communications and networks – willim Stallings.
2	Wireless Communications and neworking – Mark, Jon M.,Zhyang , Weihua.

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	



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3	White board
4	Data show system
5	Wireless internet

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Consider aspects of wireless and mobile systems.	1 1 , 1 2													X							X
2	Wireless communications channels.	1 1 , 1 2													X							X
3	Mobile networking including support for the Internet Protocol suite.	1 1 , 1 2													X							X
4	wireless communications applications.	1 1 , 1 2													X							X



5	Multiple Access techniques.	1 1 , 1 2													X							X

Course Coordinator: Dr. HossamEl-Shiekh

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023

Special topics in communication Engineering (CEE 523)

1- Basic Information:

Program Title	Communications and Electronics Engineering program		
Department Offering the Program	Communications and Electronics Engineering department		
Department Responsible for the Course	Communications and Electronics Engineering department		
Course Title	Special topics in communication Engineering		
Course Code	CEE 523		
Year/Level	level 5		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre- Request	DEPT		
Teaching hours	Lectures	Tutorial	Practical
	2	2	-

4- Course Aims:

No.	Aims
11	Computer systems in Electronics and Communication engineering can be used to design a system, component, and process to meet recent technological advances.
13	Allocate projects creatively by analyzing data from intended tests.

5- Competencies Learning Outcomes (LO'S):

Competency	Learning Outcomes (LO'S)
B2	1. Describe quality assurance systems, codes of practice and standards, health and safety requirements, and environmental issues. 2. Assess and evaluate the characteristics and performance of components, systems and processes. 3. Create and/or re-design a process, component or system, and carry out specialized engineering designs.
C1	1: Recognize engineering problems to identify the best solutions 2: Think creatively and innovatively in problem solving and design



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	3: Search for information to engage in lifelong self-learning discipline.
C3	1: Describe quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues.
C4	1: Evaluate the troubles to repair all types of electronic systems using the standard tools.

4. Course Contents:

No.	Topics	Lectures	Tutorial	Practical
1	Radio frequency design fundamentals	2	2	-
2	Microwave filters design. Low pass filter by insertion loss method Scaling and conversion Stepped impedance low pass filter design Implementation using stubs. Implementation with coupled line.	8	8	-
3	Design implementation of low pass, high pass band, pass and band reject filters using CAD tools.	2	2	
4	Microwave transistor amplifier Analysis and design amplifier Power and gain equations. Stability analysis. Design for maximum gain Unilateral design Design for specific gain	8	8	-
5	Low noise amplifier	2	2	-
6	Power amplifier Characteristic power amplifier classes Large signal characterization	4	4	-
7	Green communication Vision of the green communication Problem definitions and approaches for radio green communication.	2	2	-
Total		28	28	-



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5. Teaching and learning methods:

5.1. Teaching and learning methods:															
No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	A topic to be selected by the department to address new subjects in Communications Engineering	x	x		x	x					x				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7. 1 Student Evaluation methods:

No.	Evaluation Method	Competencies



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1	Midterm examination	C1(1),C5(1)
2	Semester work(quizzes, sheets, report)	C1(2)
3	Final term examination	C1(1),C5(1),B1(1,2,3)
7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	C.A. Balanis,"AntennaTheory– AnalysisandDesign,"John Wiley&Sons, 2019
2	W.L.StutzmanandG. A. Thiele,"AntennaTheory and Design," John Wiley&Sons, 2020.
3	David M.pozar, "microwave engineering ", Fourth Edition Pearson Education, Inc., bibliographical references and index. ISBN 978-0-470-63155-3, 2023.
4	W.H. Hayt, Jr., "Engineering of Electromagnetics," Amazon, 9 th Edition (2018).
	Matthew N.O. Sadiku., J.Sagliocca and O.Soriyan " Elements of Electromagnetics , " 7 th -edition –Oxford, 2018

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet



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10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Radio frequency design fundamentals	11												X							X	X
2	Microwave filters design. Low pass filter by insertion loss method Scaling and conversion Stepped impedance low pass filter design Implementation using stubs. Implementation with	1113												X							X	X



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	coupled line.																			
3	Design implementation of low pass, high pass band, pass and band reject filters using CAD tools.	1113											X						X	X
4	Microwave transistor amplifier Analysis and design amplifier Power and gain equations . Stability analysis. Design for maximum gain Unilateral design Design	1113											X						X	X



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	for specific gain																					
5	Low noise amplifier	1 1 , 1 3												X							X	X
6	Power amplifier Characteristic power amplifier classes Large signal characterization	1 1 , 1 3												X							X	X
7	Green communication Vision of the green communication Problem definitions and approaches for radio green communication.	1 1 , 1 3												X							X	X

Course Coordinator: Dr.Hossam El-Sheikh
Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

Training 1 (ENG 430)

1. Basic Information:

Program Title	Communications and Electronics Engineering		
Department Offering the Program	Communications and Electronics Engineering		
Department Responsible for the Course	Communications and Electronics Engineering		
Course Title	Training 1		
Course Code	ENG 430		
Year/Level	Level 3		
Specialization	Major		
Authorization Date of Course Specification	2023		
Prerequisite	Completion of the previous level		
Training hours	Lectures	Tutorial	Practical
	-	-	42

2. Course Aims:

No.	Aims
1	Master a wide range of engineering knowledge and specialized skills, as well as the ability to apply that information in real-world situations using theories and analytical thinking.
2	Apply analytic critical and systemic thinking to discover, analyze, and solve a wide range of engineering problems;
4	Work as part of and manage a diverse team of professionals from various engineering specializations, taking responsibility for individual and team performance.
	Communicate and work effectively within multiple teams in the field of communication and electronics engineering and consider the effects of engineering solutions on society and the environment.



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10	Demonstrate leadership qualities, business management, and skill development.

3. Competencies (LOs):

Competency	Learning Outcomes (LO'S)
A5	1. Define technical language and report writing. 2. Assess different ideas, views, and knowledge from a range of sources. 3. Prepare technical reports 4. Search for information to engage in lifelong self-learning discipline.
A7	1. Collaborate effectively within multidisciplinary team. 2. Work in stressful environment and within constraints. 3. Motivate individuals.
C2	1: Describe principles of design including elements design, process and/or a system related to specific disciplines 2: Define current engineering technologies as related to Electronics and communication Engineering systems 3: Select appropriate solutions for engineering problems based on analytical thinking. 4: Merge engineering knowledge and understanding to improve design, products and/or services. 5: Design a process, component or system to carry out specialized engineering designs. 6: Effectively manage tasks, time, and resources. 7: Acquire entrepreneurial skills
C3	1: Describe quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues. 2: Investigate the failure of components, system, and processes. 3: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact. 4: Apply safe systems at work and observe the appropriate steps to manage risks
C5	1: Listing characteristics of engineering materials related to the discipline. 2: Evaluate the characteristics and performance of components, systems and processes. 3: Choose appropriate specifications for required devices.

4. Course Contents:

No.	Topic	Tutorial	Practical
1	Students will be expected to apply principles of	-	8



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	communication and electronic.		
2	Analysis and design to solve a given real world problem.	-	26
3	Reports and presentations will be emphasized in addition to the technical content.	-	8
Total		-	42

5. Teaching and learning methods:

5.1. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and movies	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and Research	Cooperative	Discovering	Modeling	Lab
1	Students should spend 6 weeks in field training, after completing the Second level, in any Engineering Institution or Engineering Firms	x	x			x					x				



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2	Students should demonstrate the professional and practical skills they acquired during discussion with their assigned tutors	x	x			x					x				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. - Encourage them to take parts in the running research projects.

7. Student Evaluation:

7.1 Student Evaluation methods:

No.	Evaluation Method	Competencies
1	Midterm examination	A7(1),C2(1),C3(1)
2	Semester work(quizzes, sheets, report)	C3(1),C5(1)
3	Final term examination	A5(1),A7(1),C2(1)

7.2 Evaluation Schedule:

No.	Evaluation Method	Weeks



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1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th

7. 3 weighting of Evaluation:

No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Subject study

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board
4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																	
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3
1	Students will be expected to apply	1, 2, 3					X		X											X



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	principle s of communi cation and electroni c	4 , 1 0 , 1 2 , 1 3																		
2	Analysis and design to solve a given real world problem	1 , 2 , 4 , 1 0 , 1 2 , 1 3					X		X									X		X
3	Reports and presentat ions will be emphasiz ed in addition to the technical content	1 , 2 , 4 , 1 0 , 1 2 , 1					X		X									X		X



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		3																		

Head of Department: Prof.Mohamed Foad
Date of Approval: 2023

Training 2 (ENG 530)

1. Basic Information:

Program Title	Communications and Electronics Engineering		
Department Offering the Program	Communications and Electronics Engineering		
Department Responsible for the Course	Communications and Electronics Engineering		
Course Title	Training		
Course Code	ENG 530		
Year/Level	Level 4		
Specialization	Major		
Authorization Date of Course Specification	2023		
Pre-requist	Completion of the previous level		
Training hours	Lectures	Tutorial	Practical
	-	-	42

2. Course Aims:

No.	Aims
1	Master a wide range of engineering knowledge and specialized skills, as well as the ability to apply that information in real-world situations using theories and analytical thinking.
2	Apply analytic critical and systemic thinking to discover, analyze, and solve a wide range of engineering problems;
3	Work as part of and manage a diverse team of professionals from various engineering specializations, taking responsibility for individual and team performance.
4	Communicate and work effectively within multiple teams in the field of communication and electronics engineering and consider the effects of engineering solutions on society and the environment.
10	Demonstrate leadership qualities, business management, and skill development.

3. Cometenencies (LOs):

Competency	Learning Outcomes (LO'S)
A5	1 .Define technical language and report writing.



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	2. Assess different ideas, views, and knowledge from a range of sources. 3. Prepare technical reports 4. Search for information to engage in lifelong self-learning discipline.
A7	1. Collaborate effectively within multidisciplinary team. 2. Work in stressful environment and within constraints. 3. Motivate individuals.
C2	1: Describe principles of design including elements design, process and/or a system related to specific disciplines 2: Define current engineering technologies as related to Electronics and communication Engineering systems 3: Select appropriate solutions for engineering problems based on analytical thinking. 4: Merge engineering knowledge and understanding to improve design, products and/or services. 5: Design a process, component or system to carry out specialized engineering designs. 6: Effectively manage tasks, time, and resources. 7: Acquire entrepreneurial skills
C3	1: Describe quality assurance systems, codes of practice and standards, health and safety requirements and environmental issues. 2: Investigate the failure of components, system, and processes. 3: Judge engineering decision considering balanced cost, benefits, safety, quality, reliability, and environmental impact. 4: Apply safe systems at work and observe the appropriate steps to manage risks
C5	1: Listing characteristics of engineering materials related to the discipline. 2: Evaluate the characteristics and performance of components, systems and processes. 3: Choose appropriate specifications for required devices.

4. Course Contents:

No.	Topic	Tutorial	Practical
1	Building of the mathematical model, applying the design concepts and/or design of the Experiment set	-	6
2	carrying out the planned training	-	30
3	Writing up the final report and or the detailed drawings, preparing for the final presentation	-	6



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Total	-	42

5. Teaching and learning methods:

5. 1. Teaching and learning methods:

No	Topics	Face-to-Face Lecture	Online Lecture	Flipped Classroom	Presentation and	Discussion	Problem solving	Brain storming	Projects	Site visits	Self-learning and	Cooperative	Discovering	Modeling	Lab
1	Students should spend 6 weeks in field training, after completing the Second level, in any Engineering Institution or Engineering Firms	x	x			X					x				



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2	They should prepare a technical report implying a full description of the processes they joined for training	x	x			x					x				
3	Students should demonstrate the professional and practical skills they acquired during discussion of report with their assigned tutors	x	x			x					x				

6. Teaching and Learning Methods of Disable Students:

6.1. Teaching and Learning Methods of Disable Students:

1	Additional Tutorials
2	Online lectures and assignments

6.2. Teaching and learning method for low capacity and outstanding Student

For low capacity students	-Assign a portion of the office hours for those students. -Give them specific tasks. -Repeat the explanation of some of the material and tutorials. - Assign a teaching assistance to follow up the performance of



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	these group of students
For outstanding Students	-Hand out project assignments to those students. -Give them some research topics to be searched using the internet and conduct presentation. Encourage them to take parts in the running research projects.

7. Student Evaluation:

7. 1 Student Evaluation methods:		
No.	Evaluation Method	Competencies
1	Midterm examination	A5(1)
2	Semester work(quizzes, sheets, report)	A7(1), C3(1)
3	Final term examination	A7(1),C3(1), C5(1)
7.2 Evaluation Schedule:		
No.	Evaluation Method	Weeks
1	Midterm examination	8 th
2	Semester work	7 th - 9 th
3	Final term examination	15 th
7. 3 weighting of Evaluation:		
No.	Evaluation Method	Weights
1	Midterm examination	20%
2	Semester work	20%
3	Final term examination	60%
Total		100%

8. List of References:

No.	Reference List
1	Subject study

9. Facilities required for teaching and learning:

No.	Facility
1	Lecture classroom
2	
3	White board



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4	Data show system
5	Wireless internet
6	Sound system

10. Matrix of Competencies and Aims:

No.	Topic	Aims	Competencies																			
			A1	A2	A3	A4	A5	A6	A7	A8	A9	A10	B1	B2	B3	B4	B5	C1	C2	C3	C4	C5
1	Building of the mathematical model, applying the design concepts and/or design of the training set	1, 2, 4, 10, 11, 12, 13					X		X											X		X
2	carrying out the planned training	1, 2, 4, 10, 11, 12					X		X											X		X



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		, 1 3																			
3	Writing up the final report and or the detailed drawings , preparin g for the final presentat ion	1 , 2 , 4 , 1 0 , 1 2 , 1 3					X		X										X		X

Head of Department: Prof.Mohamed Foad

Date of Approval: 2023