Ministry of Higher Education
High Institute of Electronic Engineering
Ministerial Resolution 5053 - 12/10/2016
K 10, Bilbies – 10th of Ramadan

وزارة التعليم العالي
المعهد العالي للهندسة الإلكترونية
قرار وزاري 5053 – 2016/10/12
ك 10 طريق بلبيس العاشر من رمضان

Course Specification

1- Basic Information

Course Title	**Mathematics (3)**	
Course Code	**BAS 111**	
Academic Year	2022-2023	
Coordinator	Dr. Gamal El-Anani	
Teaching Staff	Dr. Gamal El-Anani	
Level	Level (1)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	2
	Lab	0
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	Basic Science	

2- Aim of the course

1. Understand the classification of differential equations.
2. Understand the methods to solve the differential equations.
3. Understand using matrices to solve systems of linear differential equations.
4. Be familiar with Laplace transformations, and its applications

3- Course related program competencies

Level A – General	**A.1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.** **A.2. 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** **A.3. 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.** **A.5. Practice research techniques and methods of investigation as an inherent part of learning.**
Level B - Speciality	
4- Course Contents	**Syllabus:** First - Order Differential Equations - Partial Differentiation - Ordinary and Partial differential equations and their applications - analytic geometry - Infinite Series -Multiple Integrals - Laplace Transform Methods - Fourier Transform - Numerical Differentiation and integration - Curve Fitting - Numerical solution of algebraic equations - Vectors and Linear Algebra - Systems of Differential Equations and Qualitative Methods.

# Topic	Lecture	Tutorial/Practical	No of hours
The concept of differential equations, order, degree. First order differential equations, Separable equations	4	4	8
Homogeneous Functions and Homogeneous equations , Exact	6	6	12

equation			
Second order differential equations	8	8	16
Partial derivative and Applications of Partial Derivatives Double integrals –line integrals	6	6	12
Fourier series and transforms	4	4	8
Total sum	28	28	56
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork		
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice		
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance		
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.		
9- Students assessment			
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)		
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 5		

	- Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : 10 % - Mid-term examination: 20 % - Final – term examination: 70 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	▪ Swokowski, E, Olinick ,M and Pence, D., Calculus, PWS Publishing Company - Boston, 1994. ▪ Mary Attenborough, Engineering Mathematics, McGraw - HILL Book Company Europe, 1994. ▪ Anthony croft,Robert Davison, Engineering Mathematics A modern Foundation for Electrical, Electronic & Control Engineering, Addison - Wesley - Publishing Company, 1992.
c- Periodicals, Web sites .....etc	Web Sites related to Mathematics and Mathematical engineering as: **www.math.hmc.edu**, **www.tutorial.math.lamar.edu**, **www.web.mit.edu**

11-Course contents – Course related program competencies

	Level A			
	A.1	**A.2**	**A.3**	**A.5**
The concept of differential equations, order, degree. First order differential equations, Separable equations	√			
Homogeneous Functions and Homogeneous equations , Exact equation	√	√		√
Second order differential equations		√	√	
Partial derivative and Applications of Partial Derivatives Double integrals –line integrals	√	√	√	
Fourier series and transforms			√	

12-Teaching and learning methods - Course related program competencies

	Level A

	A.1	A.2	A.3	A.5
Lecture (online/in class)	√	√	√	√
Discussion	√	√	√	√
Tutorial	√	√	√	√
Problem solving	√	√	√	√
Brain storming	√	√	√	√
Projects	√	√	√	√
Self-learning		√		
Research and Reporting			√	
Computer Simulation				
Teamwork				

13- Assessment methods - Course related program competencies

Assessment methods	**Course related program comptencies**			
	Level A			
	A.1	**A.2**	**A.3**	**A.5**
1. Mid Term Examination (written/ online)	√	√	√	√
2. Practical Examination				
3. Oral Examination				
4. Formative (quizzes- presentation -reports)	√	√	√	√
5. Final Term Examination (written	√	√	√	√

Course coordinator:

Dr. Gamal El-Anany

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Course Specification

1- Basic Information

Course Title	**Electrical Circuits 1**	
Course Code	**ELP 112**	
Academic Year	2022-2023	
Coordinator	***Dr. Mohammed Elkhamry***	
Teaching Staff	***Dr. Mohammed Elkhamry***	
Level	Level (1)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	1
	Lab	1
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	Electronics Engineering and Electrical Communication	

2- Aim of the course

1. Learn the principles of current, voltage, power and energy
2. Learn the constant and controlled current/voltage sources.
3. Learn the principles of DC and AC circuits.
4. Learn the analysis of AC circuits using vectors
5. Demonstrate the circuit theorems, loop/mesh and nodal methods
6. Demonstrate the resonance circuits, magnetic circuits

3- Course related program competencies

Level A – General	A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics. A.2 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. A.4 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.
Level B - Speciality	B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize .this design B.3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and .professional tools B.4 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 B.5 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	Current, Voltage, Power and energy, Constant and controlled current/voltage sources, Series and Parallel Circuit Analysis, DC circuits (Loop/mesh and Nodal methods), Circuit Theorems, Capacitance and inductance, Alternating current, Analysis of AC circuits using Vectors, Computation of power, Resonance Circuits, Magnetic circuits. تعريف التيار والجهد والقدرة والطاقة مصادر الجهد الثابت والمتحكم فيها - دوائر التوالي والتوازي والدوائر المتسلسلة - تحليل الدوائر لمصادر الجهد الثابت (تيارات الخيارات جهود العقد)- نظريات الدوائر - المكثفات والملفات الحثية - التيار المتردد -استخدام المتجهات في تحليل الدوائر الكهربية- تحليل الدوائر ذات مصادر الجهد المتردد - حساب القدرة- دوائر الرنين- الدوائر المغناطيسية

# Topic	Lecture	Tutorial/Practical	No of hours
Current, Voltage, Power and energy, Constant and controlled current/voltage ,sources	4	4	8
Series and Parallel Circuit	6	6	12

Analysis, ,			
DC Circuit Theorems (Loop/mesh and Nodal ,methods) ,	8	8	16
Capacitance. inductance, and Alternating current Computation of power	6	6	12
Analysis of AC circuits using ,Vectors .Resonance Circuits	4	4	8
Total sum	28	28	56
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork		
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice		
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance		
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.		
9- Students assessment			
a- Assessment methods	1. Mid Term Examination (written) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)		

b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 4 - Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	▪ Class tutorial and quizzes: 10 % ▪ Mid-term examination: 20 % ▪ Lab/practical exam: 10 % ▪ Final – term examination: 60 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	[1] Robert L Boylston, Introductory Circuit Analysis, Pearson Education Limited Twelfth Edition, 2014 [2] F. E. V.-Perez, R. P.-Areny, Microcontrollers: Fundamentals and Applications with PIC, CRC Press, Feb., 2009. [2] J. W. Nilsson and S. A. Riedel, Electric Circuits, Prentice - Hall, 8th. Ed., 2008
c- Periodicals, Web sites .....etc	https://www.khanacademy.org/science/electrical-engineering

11-Course ccontents – Course related program competencies

	Level A			**Level B**			
	A.1	**A.2**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Current, Voltage, Power and energy, Constant and controlled current/voltage sources,	√						
Series and Parallel Circuit Analysis	√	√		√	√	√	√
DC circuits Theorems, (Loop/mesh and Nodal methods),		√	√			√	√
Capacitance and inductance, Alternating current	√	√	√				

Analysis of AC circuits using Vectors Resonance Circuits, and Computation of power,			√				

12-Teaching and learning methods - Course related program competencies							
	Level A			Level B			
	A.1	A.2	A.4	B.2	B.3	B.4	B.5
Lecture (in class)	√						
Discussion	√	√	√	√	√	√	√
Tutorial	√	√	√	√	√		
Problem solving			√	√	√		
Brain storming				√	√	√	√
Projects				√	√	√	√
Self-learning							√
Research and Reporting						√	
Computer Simulation						√	√
Teamwork							

13- Assessment methods - Course related program competencies							
Assessment methods	Course related program comptencies						
	Level A			Level B			
	A.1	A.2	A.4	B.2	B.3	B.4	B.5
1. Mid Term Examination (written)	√	√	√	√	√		
2. Practical Examination	√	√	√	√	√	√	√
3. Oral Examination	√	√	√	√			
4. Formative (quizzes- presentation -reports)	√	√	√	√	√		
5. Final Term Examination (written)	√	√	√	√	√	√	√

Authorized from board of the department at 1/9/2022

Course coordinator:

Dr. Mohammed Elkhamry

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Course Specification

1- Basic Information

Course Title	**Principles of Electrical Engineering**	
Course Code	ELP 113	
Academic Year	2022-2023	
Coordinator	Assoc. Prof. Saad Awad Mohamed Abdelwahab	
Teaching Staff	Assoc. Prof. Saad Awad Mohamed Abdelwahab	
Level	Level (1)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	1
	Lab	0
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	• Electronics Engineering and Electrical Communication. • Computers and Systems Engineering.	

2- Aim of the course

1. Learn the principles of electric circuit analysis: DC circuits, AC circuits, circuits under transient conditions.
2. Learn the electric power and machines: power systems, transformers, synchronous and induction generators.
3. To emphasize on the principles of three - phase and single - phase motors, speed control of motors, cables, transmission lines, switching circuits, electrical installations.
4. To enhance students' ability for of measurement and protection: protection circuits and devices, relays and timers, measuring devices and recorders.

3- Course related program competencies

Level A – General	A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. A.2 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 A.3 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. A.10 Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
Level B - Speciality	B.1 Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems. B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design. B.3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools. B.4 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. B.5 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	Electric Circuit Analysis: DC circuits, AC circuits, Circuits under transient conditions. Electric Power and Machines: power systems, Transformers, Synchronous and induction generators, Three - phase and single - phase motors, speed control of motors, cables, transmission lines, switching circuits, electrical installations. Measurement and Protection: Protection circuits and devices, relays and timers, measuring devices and recorders. تحليل الدوائر الكهربية: اساسيات الدوائر- دوائر التيار المستمر- دوائر التيار المتردد الدوائر ـ تحت الظروف العابرة- الالات والقوي الكهربية: نظم القوي الكهربية -المحولات -المولدات المتزامنة والحثية المحركات ثلاثية واحادية الطور - التحكم في سرعة المحركات الكهربية -الكابلات الكهربية -خطوط النقل الكهربي - دوائر القطع والتوصيل - التوصيلات الكهربية, القياس والوقاية: دوائر ومكونات الوقاية - دوائر المرحلات والمتممات الزمنية -أجهزة القياس والمسجلات

# Topic	Lecture	Tutorial/Practical	No of hours
Explain concepts of electric circuit analysis: DC circuits, AC circuits, circuits under transient conditions.	6	3	9
Explain concepts of three - phase and single - phase motors, speed control of motors	6	3	9
Demonstrate Principles of design of electric power and machines: power systems, transformers, synchronous and induction generators.	8	4	12
Demonstrate methodologies of solving, three - phase and single - phase motors, speed control of motors, cables, transmission lines, switching circuits, electrical installations	8	4	12
Total sum	28	14	42
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork		
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice		
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance		

	5. Guidance for distance learning 6. Making small projects to facilitate the science material
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.
9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 4 - Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : 20 % - Mid-term examination: 10 % - Final – term examination: 70 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book
b- Text books/ References	Robert L Boylestad, Introductory Circuit Analysis, Pearson Education Limited Twelfth Edition, 2014
c- Periodicals, Web sites .....etc	https://www.khanacademy.org/science/electrical-engineering

11-Course contents – Course related program competencies									
	Level A				**Level B**				
	A.1	**A.2**	**A.3**	**A.10**	**B.1**	**B.2**	**B.3**	**B.4**	**B.5**
Explain concepts of electric circuit analysis: DC circuits, AC circuits, circuits under transient conditions.	√	√	√			√	√		

Explain concepts of three - phase and single - phase motors, speed control of motors	√	√	√	√		√	√	√	√
Demonstrate Principles of design of electric power and machines: power systems, transformers, synchronous and induction generators.		√	√	√				√	√
Demonstrate methodologies of solving, three - phase and single - phase motors, speed control of motors, cables, transmission lines, switching circuits, electrical installations	√	√	√	√	√	√	√	√	√

12-Teaching and learning methods - Course related program competencies									
	Level A				**Level B**				
	A.1	**A.2**	**A.3**	**A.10**	**B.1**	**B.2**	**B.3**	**B.4**	**B.5**
Lecture (online/in class)	√	√	√		√	√	√		
Discussion	√	√	√	√	√	√	√	√	√
Tutorial		√	√		√			√	√
Problem solving	√	√	√		√	√	√	√	√
Brain storming	√	√	√		√	√	√	√	√
Projects					√	√	√	√	√
Self-learning	√	√	√	√	√	√	√	√	√
Research and Reporting	√	√	√	√	√	√	√	√	√
Computer Simulation	√	√	√		√	√	√	√	√
Teamwork	√	√	√	√	√	√	√	√	√

13- Assessment methods - Course related program competencies		
Assessment methods	**Course related program comptencies**	
	Level A	**Level B**

	A.1	A.2	A.3	A.10	B.1	B.2	B.3	B.4	B.5
Mid Term Examination (written/ online)	√	√	√			√	√		
Practical Examination	√	√	√	√		√	√	√	√
Oral Examination		√	√	√	√	√	√	√	√
Formative (quizzes- presentation -reports)			√		√	√	√		
Final Term Examination (written	√	√	√		√	√	√	√	√

Authorized from board of the department at 1/9/2022

Course coordinator:

Dr Saad Awad M. Abdelwahab

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Course Specification

1- Basic Information

Course Title	**Electrical Measurements & Testing**	
Course Code	ELP 114	
Academic Year	2022-2023	
Coordinator	Assoc. Prof. Walid Salah Eldeen Abdellatif	
Teaching Staff	Assoc. Prof. Walid Salah Eldeen Abdellatif	
Level	Level (1)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	1
	Lab	2
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	Electronics Engineering and Electrical Communication	

2- Aim of the course

1. Develop a basic knowledge of electrical measurements and measuring instruments.
2. Acquire the main principles of moving coil and moving iron instruments and their applications in measuring electrical quantities.
3. Provide knowledge about basis of electromechanical instruments and the difference between dc and ac instruments.
4. Discuss the principles of different types of transducers and how to use them with electrical measuring instruments to measure non electrical quantities.
5. Help the students to measure voltage, current and resistance value.
6. Enhance dealing with oscilloscope to measure voltages of electrical signals.
7. Encourage defining different types of errors caused by inserting electrical measurement devices into electrical circuits.

3- Course related program competencies

Level A – General	A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
Level B - Speciality	B.4 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. B.5 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	Introduction about measurements, Errors in measurements, Statistical analysis of errors in measurements, Measurements of all electrical quantities (current, voltage, energy, and power) for dc and ac current, Measurement of resistances and capacitors, The multi-meter, The oscilloscope, Signal generators, Measurements of time period and frequency, Spectrum analyzers, Logic analyzers, Logic probe, Energy transducers (pressure, force, displacement, level, light, temperature, speed), A/D and D/A and applications, Data acquisition cards.

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Basic Definitions, accuracy, precision, Resolution, Sensitivity, types of errors, Statistical Analysis to calculate the measurement errors and .laboratory experiments	4	6	10
Electromechanical indicating instrument, Permanent Magnet (Moving Coil (PMMC Instrument, D.C Ammeter, DC voltmeter, Loading Errors, PMMC with rectifier, and .laboratory experiments	6	9	15
Resistance measurement & direct Current (D.C) bridges, Ohmmeter, (D.C) bridges (Wheatstone, Kelvin, and Kelvin Double Bridges), Meggar, and .laboratory experiments	6	9	10

Alternating Current (AC) Bridges (Capacitance Comparison Bridge, Inductive Comparison Bridge, Maxwell Bridge, Hay's Bridge, Schering Bridge, Frequency Measuring by Wien Bridge, and laboratory .experiments	6	9	10
Signal generators, Measurements of time period and frequency, Spectrum analyzers, Logic analyzers, Logic probe, Energy transducers (pressure, force, displacement, level, light, temperature, speed), A/D and D/A and applications, Data acquisition .cards	6	9	15
Total sum	28	42	70
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork		
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice		
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance		
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.		

9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 5 - Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : 20 % - Mid-term examination: 20 % - Final – term examination: 60 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	David Bell, Electronic instrumentation and measurements, Oxiford University Press, 3rd Edition, 2013. Larry D. Jones and A. Foster Chin, Electronic Instruments and Measurements, Prentice – Hall International, 2nd. Ed., 1991. A. V. Baksh, U. A. Baksh, Electronic Instrumentation, Technical Publications, 2009. Klaas B. Klaassen, Electronic Measurement and Instrumentation, Cambridge Univ. Press,1999. M. M. S. Anand, Electronic Instruments and Instrumentation technology, PHI Learning Pvt. Ltd, 2004.
c- Periodicals, Web sites .....etc	

11-Course contents – Course related program competencies							
	Level A			**Level B**			
	A.1	**A.3**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Basic Definitions, Statistical Analysis to calculate the measurement errors and laboratory experiments.	√					√	

Electromechanical indicating instrument, Permanent Magnet Moving Coil (PMMC)Instrument, D.C Ammeter, DC voltmeter, Loading Errors, PMMC with rectifier, and laboratory experiments.							
Resistance measurement & direct Current (D.C) bridges, Ohmmeter, (D.C) bridges (Wheatstone, Kelvin, and Kelvin Double Bridges), Meggar, and laboratory experiments.	√						√
Alternating Current (AC) Bridges (Capacitance Comparison Bridge, Inductive Comparison Bridge, Maxwell Bridge, Hay's Bridge, Schering Bridge, Frequency Measuring by Wien Bridge, and laboratory experiments.						√	√
Cathode Ray Oscilloscope, Dual-Beam Oscilloscope, Analog Storage Oscilloscope, Digital Storage Oscilloscope, Oscilloscope Settings, and laboratory experiments	√						√
Signal generators, Measurements of time period and frequency, Spectrum analyzers, Logic analyzers, Logic probe, Energy transducers (pressure, force, displacement, level, light, temperature, speed), A/D and D/A and applications, Data acquisition cards.						√	

12-Teaching and learning methods - Course related program competencies

	Level A			**Level B**			
	A.1	**A.3**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Lecture (online/in class)	√						
Discussion	√					√	√
Tutorial	√						
Problem solving						√	
Brain storming						√	√
Projects						√	√
Self-learning							√
Research and Reporting						√	

Computer Simulation						√	√
Teamwork	√						

13- Assessment methods - Course related program competencies							
Assessment methods	**Course related program comptencies**						
	Level A			**Level B**			
	A.1	**A.3**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
1. Mid Term Examination (written/ online)	√						
2. Practical Examination						√	√
3. Oral Examination						√	
4. Formative (quizzes- presentation -reports)	√					√	√
5. Final Term Examination (written	√					√	√

Authorized from board of the department at 1/9/2022
Course coordinator:

Dr. Walid Salah Eldeen Abdellatif

Ministry of Higher Education
High Institute of Electronic Engineering
Ministerial Resolution 5053 - 12/10/2016
K 10, Bilbies – 10th of Ramadan

وزارة التعليم العالي
المعهد العالي للهندسة الإلكترونية
قرار وزاري 5053 – 2016/10/12
ك 10 طريق بلبيس العاشر من رمضان

Course Specification

1- Basic Information

Course Title	**Logic Design**	
Course Code	**CSE 115**	
Academic Year	2022-2023	
Coordinator	Dr: Dina Awny Amer	
Teaching Staff	Dr: Dina Awny Amer	
Level	Level (1)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	0
	Lab	2
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	• Computers and Systems Engineering	

2- Aim of the course

1. Learn and differentiate between combinational and sequential logic circuits.
2. Learn different types of Flip Flops as example for sequential logic circuits.
3. Learn the principles of counters and the design of synchronous and asynchronous Counters.
4. Learn the principles of Registers and the design of SISO, SIPO, PISO, and PIPO shift registers.
5. Demonstrate the principles of Programmable Logic Devices (PLDs).

3- Course related program competencies

Level A – General	A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics. A.2 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.
Level B - Speciality	B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design. B.3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools. B.4 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. B.5 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	Basics of sequential circuits: Basic latches and Flip-Flops, various types of Registers and counters, State table and state transition diagram, sequential circuits design methodology, design Counters, Registers, Shift registers, Ring Counter, and Irregular counter. Synchronous Sequential Circuits and Programmable Logic Devices. **Practical Laboratory:** • Satisfy the transition and truth table for all types of flip flops. • Experiments different types of counters. • Experiments on different types of registers and shift registers. Building a general-purpose shift register that can do a shift right, shift left, rotate right, and rotate left operations using control lines.

# Topic	Lecture	Tutorial/Practical	No of hours
Basics of sequential circuits: Basic latches and Flip-Flops,	4	4	8
various types of Registers and counters, State table and state transition diagram,	6	6	12
sequential circuits design methodology, design Counters,	8	8	16

Design of different Registers, Shift registers, Ring Counter, and Irregular counter	6	6	12
Synchronous Sequential Circuits and Programmable Logic Devices.	4	4	8
Total sum	28	28	56

5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.

9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 5 - Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12

	- Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : 10 % - Mid-term examination: 10 % - Lab/practical exam: 20 % - Final – term examination: 60 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	[1] Digital logic design, Brian Holdsworth, Clive Woods. British Library Cataloguing, 4th. Ed., 2002. [2] M. Morris Mano, "Digital Design With an Introduction to the Verilog HDL". FIFTH EDITION [3] M. Mano et al., Logic and Computer Design Fundamentals, New Jersey: Prentice Hall, 2004.
c- Periodicals, Web sites .....etc	https://www.sciencedirect.com/topics/engineering/logic-design

11-Course contents – Course related program competencies

	Level A		Level B			
	A.1	**A.2**	**B.2**	**B.3**	**B.4**	**B.5**
Basics of sequential circuits: Basic latches and Flip-Flops,	√				√	
various types of Registers and counters, State table and state transition diagram,	√	√	√	√	√	√
sequential circuits design methodology, design Counters,		√	√	√		
Design of different Registers, Shift registers, Ring Counter, and Irregular counter	√	√	√	√		
Synchronous Sequential Circuits and Programmable Logic Devices.	√	√				√

12-Teaching and learning methods - Course related program competencies

	Level A		Level B			
	A.1	**A.2**	**B.2**	**B.3**	**B.4**	**B.5**
Lecture (online/in class)	√					
Discussion	√	√	√	√	√	√
Tutorial	√	√	√	√		
Problem solving			√	√		
Brain storming			√	√	√	√
Projects			√	√	√	√
Self-learning						√
Research and Reporting					√	
Computer Simulation					√	√
Teamwork						

13- Assessment methods - Course related program competencies						
Assessment methods	**Course related program comptencies**					
	Level A		**Level B**			
	A.1	**A.2**	**B.2**	**B.3**	**B.4**	**B.5**
1. Mid Term Examination (written/ online)	√	√	√	√		
2. Practical Examination						
3. Oral Examination						
4. Formative (quizzes- presentation -reports)	√	√	√	√		
5. Final Term Examination (written	√	√	√	√		

Authorized from board of the department at 1/9/2022
Course coordinator:

Dr.Dina amer

Ministry of Higher Education
High Institute of Electronic Engineering
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وزارة التعليم العالي
المعهد العالي للهندسة الإلكترونية
قرار وزاري 5053 – 2016/10/12
ك 10 طريق بلبيس العاشر من رمضان

Course Specification

1- Basic Information

Course Title	**Technical Report**	
Course Code	**HUM 116**	
Academic Year	2022-2023	
Coordinator	Dr/ Somia Ahmed	
Teaching Staff	Dr/ Somia Ahmed	
Level	Level (1)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	1
	Tutorial	2
	Lab	0
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	Basic science	

2- Aim of the course

This course is designed for engineering students to:

- **Enhance their abilities in technical writing -as a communication skill.**
- **Introduce different types and uses of technical documents.**
- **Give students general guidelines for good engineering writing.**
- **Know the importance of using appropriate grammar and punctuation, and avoid the most common errors in technical writing.**
- **Enhance the students' presentational skills.**

3- Course related program competencies

Level A – General	**A.5 Practice research techniques and methods of investigation as an inherent part of learning** A.7 Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams. A.8 Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools A.9 Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations. A.10 Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
Level B - Speciality	
4- Course Contents	specification, Analysis, Design, and Implementation). Administrative (Directed to different operational and management levels). Levels of confidentiality for the different reports. Report Composition: Logical presentation of the report and coordination between its components. Importance of using correct grammar and punctuation. Enhancing communication effectiveness by the use of different media. Report Implementation: Use of the appropriate software packages including any graphics or multimedia packages العناصر الأساسية للتقرير الفني : المستخلص – الملخص – المحتويات – الأهداف – تفاصيل التقرير شاملة الأشكال , الصور , الفيديو ....الخ – الأستنتاجات – التوصيات – المراجع باستخدام الأشكال القياسية والمصادر الألكترونية المختلفة .تصنيف التقارير: فنية (المواصفات المطلوبة ,التحليل, التصميم, التنفيذ) ادارية (موجهة لمستويات التشغيل والادارة المختلفة). مستوي السرية للتقارير المختلفة. صياغة التقرير: التقديم المنطقي للتقرير والتنسيق بين اجزائه. أهمية استخدام الوسائط المختلفة . تنفيذ التقرير : استخدام البرمجيات المناسبة شاملة الرسومات والوسائط المتعددة .

# Topic	Lecture	Tutorial/Practical	No of hours
Introduction ○ Goals ○ Types of report	2	4	6
○ Types of report .	2	4	6

Report structure ○ **Findings** ○ **Observations** ○ **Discussions**	2	4	6
○ Conclusion ○ Recommendations ○ Executive summary ○ Other sections (title page, table of contents, lists, appendices, references)	2	4	6
Importance of using correct grammar and punctuation	2	4	6
Enhancing communication effectiveness by the use of different media	2	4	6
Report Implementation: Use of the appropriate software packages including any graphics or multimedia packages	2	4	6
Total sum	14	28	42
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Brain storming 5. Projects 6. Self-learning 7. Research and Reporting 8. Computer Simulation 9. Teamwork		
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice		
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance		
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.		

9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 5 - Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : 15 % - Mid-term examination: 15 % - Final – term examination: 70 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	• Gary Johns and Alan M. Saks, Organizational Behavior, Addison Wesley Longman, 2009. • Scgermerhorn, Jr., R. J., Hunt, G. J., and Osborn, N. R., Organizational Behavior, John Wiley & Sons, Inc., New York, 10th. Ed., 2008.
c- Periodicals, Web sites .....etc	

11-Course contents – Course related program competencies				
	Level A			
	A.7	**A.8**	**A.9**	**A.10**
Introduction o Goals o Types of report	√			

○ Types of report .	√	√		
Report structure ○ **Findings** ○ **Observations** ○ **Discussions**	√		√	√
○ Conclusion ○ Recommendations ○ Executive summary ○ Other sections (title page, table of contents, lists, appendices, references)		√	√	√
Importance of using correct grammar and punctuation		√	√	
Enhancing communication effectiveness by the use of different media			√	√
Report Implementation: Use of the appropriate software packages including any graphics or multimedia packages	√		√	√

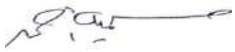
12-Teaching and learning methods - Course related program competencies					
	Level A				
	A.5	**A.7**	**A.8**	**A.9**	**A.10**
Lecture (online/in class)	√				
Discussion	√	√			
Tutorial	√	√	√	√	
Problem solving		√		√	
Brain storming			√		
Projects			√	√	
Self-learning					√
Research and Reporting			√		√
Computer Simulation					
Teamwork					√

13- Assessment methods - Course related program competencies				
Assessment methods	**Course related program comptencies**			
	Level A			
	A.5	**A.8**	**A.9**	**A.10**
1. Mid Term Examination (written/ online)	√		√	
2. Practical Examination	√	√		
3. Oral Examination	√	√		
4. Formative (quizzes- presentation -reports)		√	√	
5. Final Term Examination (written			√	√

Authorized from board of the department at 1/9/2022

Course coordinator:

Dr. Somaia Desouky



Ministry of Higher Education
High Institute of Electronic Engineering
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K 10, Bilbies – 10th of Ramadan

وزارة التعليم العالي
المعهد العالي للهندسة الإلكترونية
قرار وزاري 5053 – 2016/10/12
ك 10 طريق بلبيس العاشر من رمضان

Course Specification

1- Basic Information

Course Title	**Communication & Presentation Skills**	
Course Code	**117**	
Academic Year	2022-2023	
Coordinator	Dr/ aya salem	
Teaching Staff	Dr/ aya salem	
Level	Level (1)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	1
	Tutorial	2
	Lab	0
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	Electronics Engineering and Electrical Communication Computers and Systems Engineering	

2- Aim of the course

1. To provide the students with Plan a presentation keeping the audience in mind
2. To enhance students' ability for developing clear objectives for their presentation
3. To acquire students the skills for Use 'attention grabbers' to enhance their opening
4. To emphasize on comprehensive treatment of embedded hardware and real time
5. To analyze Develop effective visual aids
6. .To Use several different methods and tools for presenting
7. To Use positive presentation style behaviours
8. To Practice their skills of presenting

3- Course related program competencies

Level A – General	A.7 Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams. A.8 Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools A.9 Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations. A.10 Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
Level B - Speciality	
4- Course Contents	Course Aims to providing the student with the latest knowledge about the concepts, characteristics, and types of managerial and interpersonal communications, as well as the concepts and requirement of good listening and presentation, and Developing the student's abilities and skills of effective communication, and good listening, as well as how to use the interpersonal and managerial communication methods and the presentation techniques in performance and dealing with others inside and outside the organization. Course Contents: Concept and nature of communication - Communication model - Formal and informal communications - Interpersonal and managerial communications - Body language - Written communications (Reports and memos) – Ten Commandments of effective communication - Good listing - Elements of effective presentation model - Preparation of good presentation - Carrying out presentations - Discussion and dealing with objections - Evaluating presentation performance. مفاهيم وخصائص وأنواع إدارية وشخصية تهدف الدورة إلى تزويد الطالب بأحدث المعلومات حول الاتصالات ، فضلا عن مفاهيم ومتطلبات حسن الاستماع والعرض ، وتنمية قدرات ومهارات الطالب طرق الاتصال التواصل ، والاستماع الجيد ، وكذلك كيفية استخدام العلاقات الشخصية و بشكل فعال المحتويات: مفهوم الأداء والتعامل مع الآخرين داخل وخارج المنظمة. دورة الإداري وتقنيات العرض في والاتصالات غير الرسمية - الاتصالات الشخصية والإدارية الاتصال وطبيعته - نموذج الاتصال – رسمي وصايا الاتصال الفعال - القائمة الجيدة - لغة الجسد - الاتصالات الكتابية (التقارير والمذكرات) – عشرة - المناقشة والتعامل - نموذج العرض - إعداد عرض تقديمي جيد - إجراء العروض التقديمية عناصر الفعالية مع الاعتراضات. - تقويم أداء العرض. .

# Topic	Lecture	Tutorial/Practical	No of hours

- Concept and nature of communication	2	4	6
-Communication model	3	6	9
-Formal and informal communications	4	8	12
	3	6	9
- Interpersonal and managerial communications	2	4	6
Total sum	14	28	42

5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Brain storming 5. Projects 6. Self-learning 7. Research and Reporting 8. Computer Simulation 9. Teamwork
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.
9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 5

	- Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : 15 % - Mid-term examination: 15 % - Final – term examination: 70 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	• Gary Johns and Alan M. Saks, Organizational Behavior, Addison Wesley Longman, 2009. • Scgermerhorn, Jr., R. J., Hunt, G. J., and Osborn, N. R., Organizational Behavior, John Wiley & Sons, Inc., New York, 10th. Ed., 2008.
c- Periodicals, Web sites .....etc	

11-Course contents – Course related program competencies

	Level A			
	A.7	**A.8**	**A.9**	**A.10**
- Concept and nature of communication	√			
-Communication model	√	√		
-Formal and informal communications	√	√		
		√	√	
- Interpersonal and managerial communications		√	√	
-Body language			√	√
-Written communications			√	√

12-Teaching and learning methods - Course related program competencies					
	Level A				
	A.5	A.7	A.8	A.9	A.10
Lecture (online/in class)	√				
Discussion	√	√			
Tutorial	√	√	√	√	
Problem solving		√		√	
Brain storming			√		
Projects			√	√	
Self-learning					√
Research and Reporting			√		√
Computer Simulation				√	
Teamwork					√

13- Assessment methods - Course related program competencies				
Assessment methods	Course related program comptencies			
	Level A			
	A.7	A.8	A.9	A.10
1. Mid Term Examination (written/ online)	√			
2. Practical Examination	√	√		
3. Oral Examination	√	√		
4. Formative (quizzes- presentation -reports)		√	√	
5. Final Term Examination (written			√	√

Authorized from board of the department at 1/9/2022

Course coordinator:

Dr./ aya .m. salem

Course Specification

1- Basic Information

Course Title	Principles of Electronic Engineering	
Course Code	ECE 121	
Academic Year	2022-2023	
Coordinator	Dr. Mohamed Elkhamry	
Teaching Staff	Dr. Mohamed Elkhamry	
Level	Level (1)	
Semester	Second Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	1
	Lab	0
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	Electronics Engineering and Electrical Communication	

2- Aim of the course

This course aims to provide the student the knowledge and the skills required to understand:

1. Electronic components.
2. Electronic devices such as diodes, transistors, and integrated circuits are made of a semiconductive material.
3. An important concept of the pn junction that is formed when two different types of semiconductive material are joined.
4. The pn junction is fundamental to the operation of devices such as the solar cell, the diode, and certain types of transistors.
5. To understand how these devices work, you should have a basic knowledge of the structure of atoms and the interaction of atomic particles.
6. Diode circuits applications, Rectifiers and peak detectors.
7. Bipolar junction transistors (BJT),

3- Course related program competencies	
Level A – General	A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics. A.2 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. A.4 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.
Level B - Specialist	B.1 Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and .distribution of electrical power systems B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to .optimize this design B.3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and .professional tools B.4 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 B.5 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	Revision (atomic structure, energy levels, energy bands,) Semiconductors materials and doping process. Electronic components: PN junction diodes, special diodes, diode circuit's applications, rectifiers and peak detectors. Electronic devices such as diodes, transistors, and integrated circuits are made of a semiconductive material. An important concept of the pn junction that is formed when two different types of semiconductive material are joined. The pn junction is fundamental to the operation of devices such as the solar cell, the diode, and certain types of transistors. To understand how these devices work, you should have a basic knowledge of the structure of atoms and the interaction of atomic particles. Bipolar junction transistors (BJT),

# Topic	Lecture	Tutorial/Practical	No of hours
Introduction to Economy: Basic Concepts, Varieties of Market Structure	4	4	8
Types Of Economy, Accounting Income And Cash Flow, The Objectives Of The Firms, Balance .Sheet (BS)	6	6	12
Introduction To Engineering Economy: Engineering Decision Making, Break – Even Analysis, Production Function, Payback Period Method, Payback Period Method	8	8	16
Time Value of Money: Simple Interest Rate, Compound Interest, Discreet cash flow and Economic Equivalence, Evaluating of the Projects	6	6	12
Depreciation Models: Nature of . Depreciation, Depreciation Conventional Methods, Methods Based on Asset Usage, Switching Between Depreciation Models	4	4	8
Total sum	28	28	56
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork		
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice		
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and provide them with specific tailored tasks. 2. Repeat the explanation of some of the material and tutorials.		

	3. Assign a teaching assistance to follow up their performance
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.
9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 4 - Mid-Term exam: Week no. 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : 10% - Mid-term examination: 20 % - Final – term examination: 70% Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	**1- W. Road strum and D. H. Wolver, Electrical Engineering for All Engineers, J. Wiley & Sons, Inc., New York, 1994.** **2- Renu Singh, B. P. Singh, Microprocessors Interfacing and Application, New Age International Publishers, 2002.**
2c- Periodicals, Web sites .....etc.	https:// classroom.google.com/c/NDE0OTM2NjgyODc4

11-Course ccontents – Course related program competencies							
	Level A			**Level B**			
	A.1	**A.3**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Introduction to Economy: Basic Concepts, Varieties of	√						

Market Structure,							
Types Of Economy, Accounting Income And Cash Flow, The Objectives Of The Firms, Balance Sheet (BS).	√	√		√	√	√	√
Introduction To Engineering Economy: Engineering Decision Making, Break – Even Analysis, Production Function, Payback Period Method, Payback Period Method.		√	√			√	√
Time Value of Money: Simple Interest Rate, Compound Interest, Discreet cash flow and Economic Equivalence, Evaluating of the Projects	√	√	√		√		√
Depreciation Models: Nature of Depreciation, Depreciation Conventional Methods			√	√	√	√	

12-Teaching and learning methods - Course related program competencies							
	Level A			**Level B**			
	A.1	**A.3**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Lecture (online/in class)	√						
Discussion	√	√	√	√	√	√	√
Tutorial	√	√	√	√	√		
Problem solving			√	√	√		
Brain storming				√	√	√	√
Projects				√	√	√	√
Self-learning							√
Research and Reporting						√	
Computer Simulation						√	√
Teamwork							

13- Assessment methods - Course related program competencies							
Assessment methods	**Course related program competencies**						
	Level A			**Level B**			
	A.1	**A.3**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**

1. Mid Term Examination (written/ online)	√	√	√	√	√		
2. Practical Examination							
3. Oral Examination	√	√	√	√	√		
4. Formative (quizzes- presentation -reports)	√	√	√	√	√		
5. Final Term Examination (written	√	√	√	√	√		

Authorized from board of the department at 11/2/2023
Course coordinator:

Dr. Mohammed Elkhamry

Ministry of Higher Education
High Institute of Electronic Engineering
Ministerial Resolution 5053 - 12/10/2016
K 10, Bilbies – 10th of Ramadan

وزارة التعليم العالي
المعهد العالي للهندسة الإلكترونية
قرار وزاري 5053 – 2016/10/12
ك 10 طريق بلبيس العاشر من رمضان

Course Specification

1- Basic Information

Course Title	Data structures	
Course Code	**CSE 122**	
Academic Year	2022-2023	
Coordinator	Dr. Gafary Mahmoud	
Teaching Staff	Dr. Gafary Mahmoud	
Level	Level (1)	
Semester	Second Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	0
	Lab	2
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	•Computers and Systems Engineering	

2- Aim of the course

1. To teach student basics of data structures such as stacks, and queues.
2. To equip students with skills of developing computer algorithms such as programs for storing and matrix algebra.
3. To acquire students a good idea to the study of data structures and algorithms.
4. To teach students the concepts and applications of data structures in C++. Classes to represent the linear lists, arrays matrices, structures, pointers, and stack.
5. To provide students with the design steps of programming projects and algorithm analysis.

3- Course related program competencies

Level A – General	**A.1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and C++ programming skills.** **A.2. 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** **A.3. 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.** **A.5. Practice research techniques and methods of investigation as an inherent part of learning.**
Level B - Speciality	
4- Course Contents	Data types and representation – Data structures representation by structures and arrays – Dynamic data storage and memory allocation – trees, graphs – searching and sorting algorithms and their analysis – hashing, programming project.

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Data types and representation	2	2	4
Data structures representation by structures and arrays	4	4	8
Dynamic data storage and memory allocation allocation	4	4	8
allocation	4	4	8
trees	1	1	2
graphs	1	1	2
hashing	1	1	2

searching and sorting algorithms and their analysis	2	2	4
Total sum	19	19	38

5- Teaching and learning methods	1. Lecture (/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.
9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 5 - Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of	- Class tutorial and quizzes : 10 %

assessment	- Mid-term examination: 20 % - Final – term examination: 70 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a pdf.
b- Text books/ References	Sartaj sahni, data structures and algorithms, and applications in C++, McGraw.Hill 1ST ED.
c- Periodicals, Web sites .....etc	Web Sites related to Data structures engineering as: https://www.onlinegdb.com/ www. data structures.hmc.edu, www.tutorial. Data Sructures.edu,

11-Course contents – Course related program competencies

	Level A				Level B			
	A.1	**A.2**	**A.3**	**A.5**	**B.1**	**B.2**	**B.3**	**B.5**
C++ general code frame structure review	√	√	√		√	√	√	
C++ Control statements review such as selection statements and loops	√	√	√		√	√	√	
Linear lists, Arrays, Structures and Functions	√	√	√	√	√	√	√	√
Pointers, trees, graphs and hashing	√	√	√		√	√	√	
Dynamic data storage and memory allocation	√	√	√		√	√	√	

12-Teaching and learning methods - Course related program competencies								
	Level A				Level B			
	A.1	A.2	A.3	A.5	B.1	A.2	A.3	A.5
Lecture (online/in class)		√	√	√		√	√	√
Discussion		√	√	√		√	√	√
Tutorial	√	√	√	√	√	√	√	√
Problem solving	√	√	√	√	√	√	√	√
Brain storming	√	√	√	√	√	√	√	√
Projects	√	√	√	√	√	√	√	√
Self-learning		√				√		
Research and Reporting			√				√	
Computer Simulation								
Teamwork								

13- Assessment methods - Course related program competencies								
Assessment methods	Course related program comptencies							
	Level A				Level B			
	A.1	A.2	A.3	A.5	B.1	B.2	B.3	B.5
1. Mid Term Examination (written/ online)	√	√	√	√	√	√	√	√
2. Practical Examination								
3. Oral Examination								
4. Formative (quizzes- presentation -reports)	√	√	√	√	√	√	√	√
5. Final Term Examination (written	√	√	√	√				

Authorized from board of the department at 15/3/2023

Course coordinator:

Dr. Gafary Mahmoud

Ministry of Higher Education
High Institute of Electronic Engineering
Ministerial Resolution 5053 - 12/10/2016
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وزارة التعليم العالي
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Course Specification

1- Basic Information

Course Title	**Electrical Circuits 2**	
Course Code	ELP 123	
Academic Year	2022-2023	
Coordinator	D. Nader Mohamed Abd Elmohsen	
Teaching Staff	D. Nader Mohamed Abd Elmohsen	
Level	Level (4)	
Semester	Second Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	1
	Lab	1
Department offering the program	• Electronics and Communications Engineering , • Computers and Systems Engineering , • Communications and Computer Engineering	
Department offering the course	Electronics and Communications Engineering	

2- Aim of the course

1. To introduce students to fundamental theories and methodologies for analyzing DC, and AC Network structures.
2. To equip students a good knowledge of operational amplifier circuits.
3. To provide students the ability to formulate transient analysis and responses first order and second order circuits.
4. To provide students some skills to understand three - phase circuits.
5. To prepare students to understand mutual inductance, Laplace and Fourier transforms in electric circuits
6. To teach students the use of circuit simulation and software packages for DC, and AC steady-state and transient analysis.

3- Course related program competencies

Level A – General	A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics. A.2 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 A.3 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.
Level B - Speciality	B.1 Select, model and analyze electrical power systems applicable to the specific discipline by applying the concepts of: generation, transmission and distribution of electrical power systems. B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design. B.3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools. B.4 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.
4- Course Contents	Introduction to embedded systems. Introduction to HDL: entities and architecture, RTL, structural, dataflow and behavioral description. FPGA Structure: architecture, configurable logic blocks, routing, lookup tables, memory and I/O blocks. FPGA design flow. Sequential processes and finite state machines. Soft processors, busses and peripherals. Embedded design tools structure and programming.

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Network structures, Operational Amplifier	4	4	8
Response of First Order Circuits, Response of Second Order Circuits	4	6	10
Three - phase Circuits, Mutual Inductance	6	6	12
Laplace and Fourier Transforms in Electric Circuits, Transfer Function, Two port	6	4	10

Networks			
Introduction to Frequency Selective Circuits, Fourier Series, Circuit Analysis using PSPICE Software.	8	8	16
Total sum	28	28	56

5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.
9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 5 - Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12

	- Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : % - Mid-term examination: % - Final – term examination: % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	▪ J. W. Nilsson and S. A. Riedel, Electric Circuits, Prentice - Hall, 8th. Ed., 2008.
c- Periodicals, Web sites .....etc	www.hyperstaffs.info/work/physics/child/index.html www.andythelwell.com/blobz www.zephyrus.co.uk/circuits1.html www.ddpp.com/DDPP3_pdf/elecCkts.pdf http://www.allaboutcircuits.com/textbook/direct-current/chpt-2/computer-simulation-electric-circuits/ www.teachersdomain.org/.../phy03.sci.phys.mfw.zalarm

11-Course contents – Course related program competencies

	Level A			Level B			
	A.1	**A.2**	**A.3**	**B.1**	**B.2**	**B.3**	**B.4**
Network structures, Operational Amplifier	√						
Response of First Order Circuits, Response of Second Order Circuits	√	√		√	√	√	√
Three - phase Circuits, Mutual Inductance		√	√			√	√
Laplace and Fourier Transforms in Electric Circuits, Transfer Function, Two port Networks	√	√	√				
Introduction to Frequency Selective Circuits, Fourier Series, Circuit Analysis using PSPICE Software.			√		√	√	√

12-Teaching and learning methods - Course related program competencies

	Level A	Level B

	A.1	A.2	A.3	B.1	B.2	B.3	B.4
Lecture (online/in class)	√						
Discussion	√	√	√	√	√	√	√
Tutorial	√	√	√	√	√		
Problem solving			√	√	√		
Brain storming				√	√	√	√
Projects				√	√	√	√
Self-learning							√
Research and Reporting						√	
Computer Simulation						√	√
Teamwork							

13- Assessment methods - Course related program competencies							
Assessment methods	**Course related program comptencies**						
	Level A			**Level B**			
	A.1	**A.2**	**A.3**	**B.1**	**B.2**	**B.3**	**B.4**
1. Mid Term Examination (written/ online)	√	√	√	√	√		
2. Practical Examination				√	√	√	√
3. Oral Examination							
4. Formative (quizzes- presentation -reports)	√	√	√	√	√		√
5. Final Term Examination (written	√	√	√	√	√	√	√

Authorized from board of the department at 11/2/2023
Course coordinator:

Dr. Nader Mohamed Abd

Elmohsen

Ministry of Higher Education
High Institute of Electronic Engineering
Ministerial Resolution 5053 - 12/10/2016
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وزارة التعليم العالي
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Course Specification

1- Basic Information

Course Title	**Electrical Materials**	
Course Code	ELP 124	
Academic Year	2022-2023	
Coordinator	Dr. Bassam A. Hemade	
Teaching Staff	Dr. Bassam A. Hemade	
Level	Level (1)	
Semester	Second Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	2
	Lab	-
Department offering the program	• Electronics and Communications Engineering , • Computers and Systems Engineering , • Communications and Computer Engineering	
Department offering the course	Electrical power Engineering	

2- Aim of the course

1. To introduce the students to the basic principles of atoms and atomic structure
2. To enhance students' ability to define the different classifications of the material.
3. To analyze the crystal structure of different materials.
4. To acquire students the skills for classifying materials according to exhibit properties such as electrical, magnetic, and optical properties of materials.
5. To emphasize the comprehensive treatment of semiconductor materials of electronics industries.

3- Course related program competencies

Level A – General	A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. A.2 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. A.4 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.
Level B - Speciality	B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design. B.3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools. B.4 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. B.5 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	Atoms and atomic structure, Materials Classification, Conductors, High/low - Resistive Materials, Semiconductors, Insulators, Magnetic Materials, Study and Measurement of Electrical, Magnetic, and Optical Properties of Materials, Materials for Electronic Components

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Atoms and atomic structure	4	4	8
Materials Classification, Conductors, High/low - Resistive Materials, Semiconductors, Insulators, Magnetic Materials.	6	6	12
Study and Measurement of Electrical, Magnetic, and Optical Properties of Materials	6	6	12
Materials for Electronic Components	6	6	12

Magnetic and optical properties of materials.	6	6	12
Total sum	28	28	56

5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.

9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 5 - Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : % - Mid-term examination: %

	- Final – term examination: % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book
b- Text books/ References	A. J. Dekker, Electrical Engineering Materials, Prentice Hall, 1970. S. O. Kasap, Principles of Electrical Engineering Materials, McGraw - Hill, 2000
c- Periodicals, Web sites .....etc	www.sites.google.com\view\bassam-awny

11-Course contents – Course related program competencies

	Level A			Level B			
	A.1	**A.2**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Atoms and atomic structure	√						
Materials Classification, Conductors, High/low - Resistive Materials, Semiconductors, Insulators, Magnetic Materials.	√	√		√	√	√	√
Study and Measurement of Electrical, Magnetic, and Optical Properties of Materials		√	√			√	√
Materials for Electronic Components	√	√	√				
Magnetic and optical properties of materials.			√	√	√		

12-Teaching and learning methods - Course related program competencies

	Level A			Level B			
	A.1	**A.2**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Lecture (online/in class)	√						
Discussion	√	√	√	√	√	√	√
Tutorial	√	√	√	√	√		
Problem solving			√	√	√		
Brain storming				√	√	√	√

Projects				√	√	√	√
Self-learning							√
Research and Reporting						√	
Computer Simulation						√	√
Teamwork							

13- Assessment methods - Course related program competencies							
Assessment methods	**Course related program comptencies**						
	Level A			**Level B**			
	A.1	**A.2**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
1. Mid Term Examination (written/ online)	√	√	√	√	√		
2. Practical Examination							
3. Oral Examination							
4. Formative (quizzes- presentation -reports)	√	√	√	√	√		
5. Final Term Examination (written	√	√	√	√	√		

Authorized from board of the department at 1/9/2022
Course coordinator:

Dr Bassam A. Hemad

Ministry of Higher Education
High Institute of Electronic Engineering
Ministerial Resolution 5053 - 12/10/2016
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وزارة التعليم العالي
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Course Specification

1- Basic Information

Course Title	**Energy Conversion**	
Course Code	ELP 125	
Academic Year	2022-2023	
Coordinator	Assoc. Prof. Saad Awad Mohamed Abdelwahab	
Teaching Staff	Assoc. Prof. Saad Awad Mohamed Abdelwahab	
Level	Level (1)	
Semester	2 Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	2
	Lab	0
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	• Electronics Engineering and Electrical Communication. • Computers and Systems Engineering.	

2- Aim of the course

1. Learn the principles of atoms and atomic structure
2. Learn the **Energy Conversion** soureses
3. Study and measurement of Fundamentals of Energy conversion, Photovoltaic Energy Conversion, Energy Conversion in Fuel Cells, Fuel and Combustion, Thermoelectric Power Generation, Magneto Hydrodynamic Power Generation, Thermo Ionic Power Generation, Electro Ionic Power Generation.
4. Learn the Electro Chemical Power Generation, Electromechanical Power Generation, Nuclear Power Generation, Illumination Engineering, Electric Traction Systems, Environmental Effects of Energy Resources.

3- Course related program competencies

Level A – General	A.1 Identify, formulate, Fundamentals of Energy conversion, . A.2 Develop and conduct appropriate experimentation and/or Demonstrate Principles of Energy Conversion in Fuel Cells, Fuel and Combustion, Thermoelectric Power Generation, A.3 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. A.10 Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.
Level B - Speciality	B.1 Select, model and analyze electrical power systems applicable to mathematical and computer-based methods for modeling and analyzing problems. B.2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design. B.3 Design and implement elements Magneto Hydrodynamic Power Generation, Thermo Ionic Power Generation, Electro Ionic Power Generation B.4 Estimate and Electro Chemical Power Generation, Electromechanical Power Generation, Nuclear Power Generation, Illumination Engineering, Electric Traction Systems, Environmental Effects of Energy Resources B.5 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	**Syllabus:** Fundamentals of Energy conversion, Photovoltaic Energy Conversion, Energy Conversion in Fuel Cells, Fuel and Combustion, Thermoelectric Power Generation, Magneto Hydrodynamic Power Generation, Thermo Ionic Power Generation, Electro Ionic Power Generation, Electro Chemical Power Generation, Electromechanical Power Generation, Nuclear Power Generation, Illumination Engineering, Electric Traction Systems, Environmental Effects of Energy Resources. أساسيات تحويل الطاقة ، تحويل الطاقة الكهروضوئية ، تحويل الطاقة في خلايا الوقود ، الوقود والاحتراق ، توليد الطاقة الكهروحرارية ، توليد الطاقة الكهرومغناطيسية المغناطيسية ، توليد الطاقة الحرارية الأيونية ، توليد الطاقة الكهربائية الأيونية ، توليد الطاقة الكهربائية الكيميائية ، توليد الطاقة الكهروميكانيكية ، توليد الطاقة النووية هندسة الإضاءة ، أنظمة الجر الكهربائية ، الآثار البيئية لموارد الطاقة.

# Topic	Lecture	Tutorial/	No of hours
Fundamentals of Energy conversion, Photovoltaic Energy Conversion,	6	6	12
Energy Conversion in Fuel Cells, Fuel and Combustion, Thermoelectric Power Generation, Magneto Hydrodynamic Power Generation, Thermo Ionic Power Generation, Electro Ionic Power Generation	6	6	12
Electro Chemical Power Generation, Electromechanical Power Generation, Nuclear Power Generation,	8	8	16
Illumination Engineering, Electric Traction Systems, Environmental Effects of Energy Resources.	8	8	16
Total sum	28	28	56
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork		
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice		
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance 5. Guidance for distance learning 6. Making small projects to facilitate the science material		

8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.
9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Oral Examination 3. Formative (quizzes- presentation -reports) 4. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 4 - Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : 20 % - Mid-term examination: 10 % - Final – term examination: 70 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book
b- Text books/ References	R. Bailie, Energy Conversion Engineering, Addison - Wesley Publishing Company, Inc, 1983 A. R. Foster and R. L. Wright, Basic Nuclear Engineering, Allyn and Bacon, Inc, 1989.
c- Periodicals, Web sites .....etc	https://www.khanacademy.org/science/electrical-engineering

11-Course contents – Course related program competencies

	Level A				Level B				
	A.1	**A.2**	**A.3**	**A.10**	**B.1**	**B.2**	**B.3**	**B.4**	**B.5**
Fundamentals of Energy conversion, Photovoltaic Energy Conversion,	√	√	√			√	√		
Energy Conversion in Fuel Cells, Fuel and Combustion, Thermoelectric Power Generation, Magneto Hydrodynamic Power Generation, Thermo Ionic Power Generation,	√	√	√	√		√	√	√	√

Electro Ionic Power Generation									
Electro Chemical Power Generation, Electromechanical Power Generation, Nuclear Power Generation,		√	√	√				√	√
Illumination Engineering, Electric Traction Systems, Environmental Effects of Energy Resources.	√	√	√	√	√	√	√	√	√

12-Teaching and learning methods - Course related program competencies									
	Level A				**Level B**				
	A.1	**A.2**	**A.3**	**A.10**	**B.1**	**B.2**	**B.3**	**B.4**	**B.5**
Lecture (online/in class)	√	√	√		√	√	√		
Discussion	√	√	√	√	√	√	√	√	√
Tutorial		√	√		√			√	√
Problem solving	√	√	√		√	√	√	√	√
Brain storming	√	√	√		√	√	√	√	√
Projects					√	√	√	√	√
Self-learning	√	√	√	√	√	√	√	√	√
Research and Reporting	√	√	√	√	√	√	√	√	√
Computer Simulation	√	√	√		√	√	√	√	√
Teamwork	√	√	√	√	√	√	√	√	√

13- Assessment methods - Course related program competencies									
Assessment methods	**Course related program comptencies**								
	Level A				**Level B**				
	A.1	**A.2**	**A.3**	**A.10**	**B.1**	**B.2**	**B.3**	**B.4**	**B.5**
Mid Term Examination (written/ online)	√	√	√			√	√		
Practical Examination									

Oral Examination		√	√	√	√	√	√	√	√
Formative (quizzes- presentation -reports)			√		√	√	√		
Final Term Examination (written	√	√	√		√	√	√	√	√

Authorized from board of the department at 11/2/2023

Course coordinator:

Dr Saad Awad M. Abdelwahab

Ministry of Higher Education
High Institute of Electronic Engineering
Ministerial Resolution 5053 - 12/10/2016
K 10, Bilbies – 10th of Ramadan

وزارة التعليم العالي
المعهد العالي للهندسة الإلكترونية
قرار وزاري 5053 – 2016/10/12
ك 10 طريق بلبيس العاشر من رمضان

Course Specification

1- Basic Information

Course Title	**Analysis & Research Skills**	
Course Code	**HUM 126**	
Academic Year	2022-2023	
Coordinator	Dr. **Somaia Ahmed Desouky**	
Teaching Staff	Dr. **Somaia Ahmed Desouky**	
Level	Level (1)	
Semester	Second Term	
Number of Weekly Contact Hours	Lecture	1
	Tutorial	2
	Lab	0
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	Basic Science	

2- Aim of the course

1. Understand the fundamentals of Analysis Skills: Framework for analyzing engineering problems taking into account technical, economic, environmental, and ethical issues.
2. Role of creativity in the analysis. SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis for different alternatives.
3. Learn the principles of Phrase, title, domain, URL, and link search. Evaluating search results, choosing the appropriate search engine. Importance of evaluating the credibility of the different Web sites.

3- Course related program competencies

Level A – General	A.1. Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics. A.7. Function efficiently as an individual and as a member of .multi-disciplinary and multicultural teams. A.8. Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary A.9.Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
Level B - Speciality	
4- Course Contents	Analysis Skills: Framework for analyzing engineering problems taking into account technical, economic, environmental, and ethical issues. Phases of problem solving (Understanding the problem and formulating it, Solution plan, Implementation plan, Evaluation, and Revision). Role of creativity in the analysis. SWOT (Strengths, Weaknesses, Opportunities, and Threats) analysis for different alternatives. Detailed Cost - Benefit analysis and Risk analysis. Role of cooperation and team - work in analyzing large engineering problems. Importance of finding the relevant data, information, and knowledge. Search Skills: Basic Web search methods and how to formulate search engine queries using logical connectives (e.g. AND, OR, NOT). Phrase, title, domain, URL, and link search. Evaluating search results, choosing the appropriate search engine. Importance of evaluating the credibility of the different Web sites.

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Analysis Skills: Framework for analyzing engineering problems taking into account technical, economic, environmental, and ethical issues. Phases of problem solving	3	6	9
- Phrase, title, domain, URL, and link search. Evaluating search results, choosing the appropriate search engine. Importance of	3	6	9

evaluating the credibility of the different Web sites.			
- Importance of finding the relevant data, information, and knowledge. Search Skills:).	2	4	6
Basic Web search methods and how to formulate search engine queries using logical connectives (e.g. AND, OR, NOT	2	4	6
Role of creativity in the analysis.	2	4	6
Understanding the problem and formulating it, Solution plan, Implementation plan, Evaluation, and Revision).	2	4	6
Total sum	14	28	42
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork		
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice		
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance		
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.		

9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)
b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 5 - Mid-Term exam: Week no . 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : 10 % - Mid-term examination: 20 % - Final – term examination: 70 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	▪ D. Newnan, T. Eshenbach, and J. Lavelle, Engineering Economic Analysis, Oxford University Press, 2011.
c- Periodicals, Web sites .....etc	G. R. Notess, Teaching Web Search Skills, Information Today Inc., 2004.

11-Course contents – Course related program competencies				
	Level A			
	A.1	**A.7**	**A.8**	**A.9**
Analysis Skills: Framework for analyzing engineering problems taking into account technical, economic, environmental, and ethical issues. Phases of problem solving	√			√
- Phrase, title, domain, URL, and link search. Evaluating search results, choosing the appropriate search engine. Importance of evaluating the credibility of the different Web sites.	√	√		

- Importance of finding the relevant data, information, and knowledge. Search Skills:).	√			√
Basic Web search methods and how to formulate search engine queries using logical connectives (e.g. AND, OR, NOT		√	√	√
Role of creativity in the analysis.				
Understanding the problem and formulating it, Solution plan, Implementation plan, Evaluation, and Revision).			√	

12-Teaching and learning methods - Course related program competencies

	Level A			
	A.1	**A.7**	**A.8**	**A.9**
Lecture (online/in class)	√	√	√	
Discussion	√			√
Tutorial	√		√	√
Problem solving	√		√	
Brain storming	√	√	√	
Projects		√	√	√
Self-learning	√			√
Research and Reporting			√	√
Computer Simulation				
Teamwork				

13- Assessment methods - Course related program competencies

Assessment methods	**Course related program comptencies**			
	Level A			
	A.1	**A.7**	**A.8**	**A.9**
1. Mid Term Examination (written/ online)	√			√
2. Practical Examination				

3. Oral Examination				
4. Formative (quizzes- presentation -reports)	√	√		√
5. Final Term Examination (written	√			√

Authorized from board of the department at //2023
Course coordinator:

Dr. Somaia Desouky

Course Specification

1- Basic Information

Course Title	ثقافة عامه اختيارى أ الحضارة العربية والاسلامية	
Course Code	**2A1 (X75)**	
Academic Year	2022-2023	
Coordinator	**أ.د امين سعيد**	
Teaching Staff	**أ.د امين سعيد**	
Level	Level (2)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	0
	Lab	0
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	Humanities & Social Sciences	

2- Aim of the course

1. Learn the principles of errors in measurements, statistical analysis of errors in measurements, measurements of all electrical quantities
2. Learn the measurement of resistances and capacitors.
3. Learn the principles of multi-meter, the oscilloscope, signal generators.
4. Learn the measurements of time period and frequency, spectrum analyzers, logic analyzers, logic probe
1. Demonstrate the energy transducers (pressure, force, displacement, level, light, temperature, speed), a/d and d/a and applications, data acquisition cards.

3- Course related program competencies

Level A – General	A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics. A.2 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. A.4 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.
Level B - Specialist	
4- Course Contents	**Syllabus:** اسس الحضارة الاسلامية (القران والسنة - **الامة العربية – اللغه – الاطار الجغرافى – الشعوب المفتوحة – التاثيرات الاجنبية) – النظم السياسى (الخلافة – الوزارة – الكتابة – الحجابة) النظام الادارى (الادارات المحلية – دواوين الجند والخراج والرسائل والبريد .....الخ) النظام المالى (موارد بيت المال – النفقات - السكة) النظم العسكرية (الجيش وتكوينة واسلحته واساليبه – الاسطول) – التعليم والثقافه (العلوم الشرعية " علم الكلام والفقة ..." – العلوم العقلية) – الفنون والاقار والعمارة – القضاؤ والتقاضى – المجتمع الاسلامى (عناصرة واجناسة – الطوائف الدينية والمذهبية)- البناء الطبقى : الحكام والفقهاء والعلماء والتجار واصحاب الحرف والصناعات .....الخ.**

# Topic	Lecture	Tutorial/Practical	No of hours
اسس الحضارة الاسلامية (القران والسنة - **الامة العربية – اللغه – الاطار الجغرافى – الشعوب المفتوحة – التاثيرات الاجنبية)**	4	0	0
– النظم السياسى (الخلافة – الوزارة – الكتابة – الحجابة) النظام الادارى (الادارات المحلية – دواوين الجند والخراج والرسائل والبريد .....الخ.	6	0	0
النظام المالى (موارد بيت المال – النفقات - السكة) النظم العسكرية (الجيش وتكوينة واسلحته واساليبه – الاسطول) – التعليم والثقافه (العلوم	8	0	0

الشرعية " علم الكلام والفقة ..." – العلوم العقلية) – الفنون والاقار والعمارة			
القضاؤ والتقاضى – المجتمع الاسلامى (عناصرة واجناسة – الطوائف الدينية والمذهبية)	6	0	0
.)- البناء الطبقى : الحكام والفقهاء والعلماء والتجار واصحاب الحرف والصناعات .....الخ.	4	0	0
Total sum	28	0	0

5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and provide them with specific tailored tasks. 2. Repeat the explanation of some of the material and tutorials. 3. Assign a teaching assistance to follow up their performance
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.
9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. Practical Examination 3. Oral Examination 4. Formative (quizzes- presentation -reports) 5. Final Term Examination (written)

b- Assessment schedule	- Exercise sheet/ Lab assignment : Weekly - Quizz-1: Week no. 4 - Mid-Term exam: Week no. 8 - Quizz-2: Week no. 12 - Final – term examination: Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes : 10% - Mid-term examination: 20 % - Final – term examination: 70% Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	• احمد عبد الرزاق، الحضارة الاسلامية في العصور الوسطي، 2004 • فتحية النبراوي، تاريخ النظم والحضارة الاسلامية، 1985 • عبد المنعم ماجد، تاريخ الحضارة الاسلامية في العصور الوسطي، 1978
2c- Periodicals, Web sites .....etc.	

11-Course contents – Course related program competencies

	Level A		
	A.1	**A.2**	**A.4**
اسس الحضارة الاسلامية (القران والسنة - **الامة العربية – اللغه – الاطار الجغرافى – الشعوب المفتوحة – التاثيرات الاجنبية)**	√		
– النظم السياسى (الخلافة – الوزارة – الكتابة – الحجابة) النظام الادارى (الادارات المحلية – دواوين الجند والخراج والرسائل والبريد .....الخ.	√	√	
النظام المالى (موارد بيت المال – النفقات - السكة) النظام العسكرية (الجيش وتكوينة واسلحته واساليبه – الاسطول) – التعليم والثقافه (العلوم الشرعية " علم الكلام والفقة ..." – العلوم العقلية) – الفنون والاقار والعمارة		√	√
القضاؤ والتقاضى – المجتمع الاسلامى (عناصرة واجناسة – الطوائف الدينية والمذهبية)	√	√	√
.)- البناء الطبقى : الحكام والفقهاء والعلماء والتجار واصحاب الحرف والصناعات .....الخ.			√

12-Teaching and learning methods - Course related program competencies	Level A		
Problem solving	√	√	√
Brain storming		√	√
Projects		√	√
Self-learning			
Research and Reporting			
Computer Simulation		√	√
Teamwork			

13- Assessment methods - Course related program competencies			
Assessment methods	**Course related program comptencies**		
	Level A		
	A.1	**A.2**	**A.4**
1. Mid Term Examination (written/ online)	√	√	√
2. Practical Examination			
3. Oral Examination	√	√	√
4. Formative (quizzes- presentation -reports)	√	√	√
5. Final Term Examination (written	√	√	√

Authorized from board of the department at 1/9/2022

Course coordinator:

Prof. Amin Said Abd-Elghany