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 (4)**	
Course Code	**BAS 211**	
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 concept of complex numbers.
2. Understand the methods to solve the differential calculus of complex functions.
3. Understand the Cauchy' theorems to complex integrals.
4. Be familiar with Gamma , Beta Functions.
5. Understand the methods to find the eigenvalues , eigenvectors.
6. 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:** Functions of complex variables – Matrices – Eigenvalues – Eigenvectors of Matrices – Special Functions (GAMA – BETA – LEGANDERE – BESSEL)-system of differential equations – geometric approaches – mathematical modeling of real – world phenomena – Mathematical Models –Numerical Methods – Linear Systems and Matrices – Vector Spaces – Higher – Order Linear Differential Equations – Linear Systems Of Differential Equations – Matrix Exponential Methods – Nonlinear Systems – Solution Of ordinary differential equations using Laplace Methods.

# Topic	Lecture	Tutorial/Practical	No of hours
Functions of complex variables – Matrices – Eigenvalues – Eigenvectors of Matrices	4	4	8
Special Functions (GAMA – BETA – LEGANDERE – BESSEL)-system of differential equations – geometric approaches	6	6	12

– mathematical modeling of real – world phenomena – Mathematical Models –Numerical			
Methods – Linear Systems and Matrices – Vector Spaces – Higher – Order Linear Differential Equations	8	8	16
Linear Systems Of Differential Equations – Matrix Exponential Methods – Nonlinear Systems –	6	6	12
Solution Of ordinary differential equations using Laplace Methods.	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**
Functions of complex variables – Matrices – Eigenvalues – Eigenvectors of Matrices	√			
Special Functions (GAMA – BETA – LEGANDERE – BESSEL)-system of differential equations – geometric approaches – mathematical modeling of real – world phenomena – Mathematical Models –Numerical	√	√		√
Methods – Linear Systems and Matrices – Vector Spaces – Higher – Order		√	√	

Linear Differential Equations				
Linear Systems Of Differential Equations – Matrix Exponential Methods – Nonlinear Systems	√	√	√	
Solution Of ordinary differential equations using Laplace Methods			√	

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	√	√	√	√

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

Dr. Gamal El-Anany

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Course Specification

1- Basic Information

Course Title	**Electrical Machines &Transformers**	
Course Code	ELP 212	
Academic Year	2022-2023	
Coordinator	Assoc. Prof. Saad Awad Mohamed Abdelwahab	
Teaching Staff	Assoc. Prof. Saad Awad Mohamed Abdelwahab	
Level	Level (2)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	2
	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. • Computers and Systems Engineering.	

2- Aim of the course

1. To introduce students to concepts of Direct Current Machines, Armature Winding.
2. To teach Open Circuit and Short Circuit Tests of Single - Phase Transformers.
3. To provide students with Three - Phase and Multi - Winding Transformer Connections for Three -Phase Circuits.
4. To provide students with the basics of Characteristics of Separately - excited, Shunt and Compound DC Generators and Motors.
5. To equip students with Separation of Iron, Friction Losses and Estimation of Parameters of DC Machines.
6. Training students on practical experiences in electrical machines.

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.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.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.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	Direct Current Machines, Armature Winding, Armature Reaction and Commutation, Methods of Excitation, Characteristics of DC Generators, Load Characteristics of DC Motors, Speed Control of DC Motors, Construction of Single phase Transformers, Equivalent Circuits, Determination of Transformer Parameters, Voltage Regulation, Efficiency, Autotransformers, Poly - phase Transformers and Their Connections. **الآت التيار المستمر، ملفات عضو الانتاج ، رد فعل عضو الانتاج ، طرق الإثارة للمولد ، خصائص مولدات التيار المستمر ، خصائص الحمل لمحركات التيار المستمر ، التحكم في سرعة محركات التيار المستمر ، بناء المحولات أحادية الطور ، الدوائر المكافئة ، تحديد متغيرات المحولات ، تنظيم الجهد ، الكفاءة ، المحولات الأوتوماتيكية ، المحولات متعددة الطور واتصالاتها.**

# Topic	Lecture	Tutorial/Practical	No of hours
Explain concepts of principle Direct Current Machines, Armature Winding, Armature Reaction and Commutation, Methods of Excitation, Characteristics of DC Generators, Load Characteristics of DC Motors, Speed Control of DC Motors	8	12	20
Construction of Single phase Transformers, Equivalent Circuits	6	9	15
Determination of Transformer Parameters, Voltage Regulation, Efficiency,	6	9	15
Autotransformers, Poly - phase Transformers and Their Connections	8	12	20
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 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: 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
b- Text books/ References	▪ G. R. Slemon and A. Straughen, Electric Machines, Addison Wesley Publishing Company, 1980. J. Rosenblatt and M. H. Friedman, Direct and Alternating Current Machinery, Charles E. Merrill Publishing Company, A Bell& Howell Company, 2nd. Ed., 1984.
c- Periodicals, Web sites .....etc	https://www.amazon.com/Direct-Alternating-Current-Machinery-2nd/dp/0675201608

11-Course contents – Course related program competencies			
	Level A	**Level B**	

	A.1	A.3	A.4		B.1	B.2	B.3	B.4	B.5
Explain concepts of principle Direct Current Machines, Armature Winding, Armature Reaction and Commutation, Methods of Excitation, Characteristics of DC Generators, Load Characteristics of DC Motors, Speed Control of DC Motors	√	√	√			√	√		
Construction of Single phase Transformers, Equivalent Circuits	√	√	√			√	√	√	√
Determination of Transformer Parameters, Voltage Regulation, Efficiency,	√	√	√			√	√	√	√
Autotransformers, Poly - phase Transformers and Their Connections	√	√	√		√	√	√	√	√

12-Teaching and learning methods - Course related program competencies									
	Level A				**Level B**				
	A.1	**A.3**	**A.4**		**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.3**	**A.4**		**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	**Electromagnetic Fields**	
Course Code	ELP 213	
Academic Year	2022-2023	
Coordinator	Dr. Essam A. Alim Gomah Elaraby	
Teaching Staff	Dr. Essam A. Alim Gomah Elaraby	
Level	Level (2)	
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	Electronics Engineering and Electrical Communication	

2- Aim of the course

1. To provide the students with the basic theories and definitions of electric and electrostatic fields and their applications in the real world.
2. To provide the students with the basic theories and definitions of magnetic fields and their practical applications.
3. To provide the students with the basic theories and definitions of electromagnetic fields and to understand wave propagation, transmission and reflection in space and media as well as their practical applications.
4. To enhance students' ability to apply the vector mathematical analysis to analyze and understand the theories and related applications of electrostatic and electromagnetic fields.
5. To equip students with the application of Poisson's equation, Laplace's equation, and Maxwell's equations
6. To familiarize students with the characteristics of radio frequency transmission lines and the application of Smith chart.

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.5 Practice research techniques and methods of investigation as an inherent part of learning. A.8 Communicate effectively – graphically, verbally and in writing – with a range of audiences using contemporary tools
+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.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	Vector Analysis, Coordinate Systems and Transformation, Coulomb's Law, Electric Field Intensity due to line charge and sheet of charge, Streamlines and Sketches of Fields, Electric flux density, Gauss Law and Applications, Maxwell's First Equation, Divergence Operator, Energy and Potential, Line Integration, Potential Gradient, Electric Dipole, Energy density in Electrostatic Fields. Applications of Electrostatics, Conductors, Dielectrics and Semiconductors Properties, Current density and Continuity of current, Boundary conditions, Method of Images, Capacitance, Capacitance of Two - Wire Line, Experimental Mapping, Poisson's and Laplace's Equations, Example of the solution of Poisson's equation, Steady magnetic field; Biot Savart and Ampere circuital laws, Magnetic Forces, Torque, Magnetic Materials, Calculation of Self and Mutual inductance, Time Varying Field and Maxwel's Equations, Uniform Plane Wave; the transverse Electromagnetic (TEM) Wave, Poynting theorem, Transmission and Reflection of TEM Wave Through Non-Homogenous Media, Transmission Lines; Primary and Secondary Constants of Transmission Lines, Transmission Line Equivalent Circuits, Characteristics of Radio Frequency Transmission Lines - Applications of Smith Chart.

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Revision on vector analysis, vector algebra, various types of co-ordinates.	2	2	4
Introduction of Coulombs law and electric field intensity, field distribution of point, line, volume, and sheet	2	2	4

charges.			
Explaining Electric flux density, discussing Gauss law, and Maxwell's first equation and their applications.	2	2	4
Explaining energy and potential, the potential field of point charge , as well as a system of charges, defining the potential gradient, and the electric dipole.	4	4	8
Discussing the electrostatic fields in conductors and dielectric materials, as well as the electrostatic field in the capacitors, discussing Poisson's and Laplace's equations.	2	2	4
Presenting and explaining the steady magnetic field, and the related topics of Ampere's circuital law, - and Biot-Savart law, defining the vector magnetic field potentials, magnetic flux and magnetic flux density,	4	4	8
Differentiating between the magnetic forces , explaining the force and the torque, the magnetization and permeability, the closed magnetic circuit.	4	4	8
Studying Maxwell equations, the magnetic fields in transmission lines, the graphical	4	4	8

methods and Smith chart of analysis.			
The electromagnetic waves of uniform plane waves, and the plane wave reflection and disprsion.	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. Self-learning
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. Formative (quizzes- presentation -reports) 3. 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	[1] W. Hayt and J. Buck, Engineering Electromagnetics, McGraw - Hill, 7th. Ed., 2008. [2] M. N. O. Sadku, Elements of Electromagnetics. Saunders College Publishing. Harcourt Brace College Publishers, 1989.
c- Periodicals, Web sites .....etc	https://engineering.purdue.edu/wcchew/ece604f19/EMFTAll20191204.pdf https://onlinecourses.nptel.ac.in/noc22_ee40/preview

11-Course contents – Course related program competencies					
Competencies	**Level A**			**Level B**	
	A.1	**A.5**	**A.8**	**B.2**	**B.5**
Revision on vector analysis, vector algebra, various types of co-ordinates.	√		√		√
Introduction of Coulombs law and electric field intensity, field distribution of point, line, volume, and sheet charges.	√	√			√
Explaining Electric flux density, discussing Gauss law, and Maxwell's first equation and their applications.		√	√	√	
Explaining energy and potential, the potential field of point charge , as well as a system of charges, defining the potential gradient, and the electric dipole.	√	√			√
Discussing the electrostatic fields in conductors and dielectric materials, as well as the electrostatic field in the capacitors, discussing Poisson's and Laplace's equations.		√	√	√	
Presenting and explaining the steady magnetic field, and the related topics of Ampere's circuital law, -and Biot-Savart law, defining the vector magnetic field potentials, magnetic flux and magnetic flux density,	√		√		√
Differentiating between the magnetic forces , explaining the force and the torque, the magnetization and permeability, the closed magnetic circuit.	√	√			√

Studying Maxwell equations, the magnetic fields in transmission lines, the graphical methods and Smith chart of analysis.	√		√	√	
The electromagnetic waves of uniform plane waves, and the plane wave reflection and dispersion.	√	√	√		√

12-Teaching and learning methods - Course related program competencies

Competencies	Level A			Level B	
	A.1	A.5	A.8	B.2	B.5
Lecture (online/in class)	√		√	√	√
Discussion	√		√		√
Tutorial	√		√		√
Problem solving		√	√	√	√
Brain storming	√			√	√
Self-learning	√	√		√	√

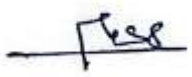
13- Assessment methods - Course related program competencies

Assessment methods	Course related program comptencies

Competencies	Level A			Level B	
	A.1	A.5	A.8	B.2	B.5
1. Mid Term Examination (written/ online)	√		√	√	√
2. Formative (quizzes- presentation -reports)	√	√			√
3. Final Term Examination (written	√		√	√	√

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

Course coordinator:



Dr. Essam Abdel Alim Gomah

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Course Specification

1- Basic Information

Course Title	**Computer Organization**	
Course Code	**CSE 214**	
Academic Year	2022-2023	
Coordinator	Doctor. Soheir metwaly afifi	
Teaching Staff	Doctor. Soheir metwaly afifi	
Level	Level (2)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	2
	Lab	0
Department offering the program	• Communications and Computer Engineering	
Department offering the course	• Communications and Computer Engineering	

2- Aim of the course

1. To introduce students to concepts of Arithmetic and logic unit construction, Micro-operations, Register transfer language.
2. To teach CPU organization architectures.
3. To provide students with Single Accumulator organization for basic machine.
4. To provide students with instruction cycle.
5. To provide students with the basics of Characteristics of General Register organization and Stack organization.
6. To provide students with program interrupt and Micro-programmed control.
7. To provide students with a simple microprocessor case study.

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. Demonstrate principles of design including elements design, process and/or a system related to specific disciplines. 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**. A3. **Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.** A.5 **Practice research techniques and methods of investigation as an inherent part of learning.**

Level B - Speciality	B1 **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.** B4. **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.** B5. **Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.**
4- Course Contents	**This course covers the register transfer and micro-operations: Register transfer languagebus and memory transfers, Micro-operations: arithmetic micro-operations, logic micro-operations, shift micro-operations, hardware implementation: binary adder, binary subtractor, binary adder subtractor, incrementer, arithmetic circuit, and finally arithmeticlogic shift unit. Basic computer organization and design: concepts of machine levelarchitecture, instruction formats, addressing modes, computer instructions, instructioncycle, timing and control, memory-reference instructions, input-output referenceinstructions and program interrupt instructions, interrupt cycle, complete computeSyllabus. Design of basic**

	computers: control unit Syllabus and design of control logicgates for registers, memory, common bus, AC register, Adder and logic circuit. Central Processing Unit (CPU) Design: general register organization and control word, stackorganization: register stack and memory stack, Reverse Polish Notation (RPN), different instruction formats (three, two, one and zero address instructions) and their effect oncomputer performance, data transfer and manipulation instructions (arithmetic, logic, shift and bit manipulation). Program control, status bit conditions, branch (conditional andunconditional, subroutine call and return, program interrupt. Micro-programmed control: control memory, address sequencing, subroutines, design of control unit, micro-programsequencer. Finally, the course presents a simple microprocessor case study. **نقل البيانات بين المسجلات والعمليات الجزئية (العمليات الحسابية والمنطقية والإزاحة والدوران) وتصميم المكونات المادية الداخلية الخاصة بتنفيذ العمليات الجزئية وتصميم محدة الحساب والمنطق.أساسيات تنظيم الحاسبات والتصميم: التعليمات – دورة التعليمات – أنماط العنونة – تعليمات الذاكرة – تعليمات المسجلات.اساسيات تصميم وحدة الحساب والمنطق : تصميم المسجلات – تنظيم الكومات – أنواع التعليمات المختلفه وتأثيرها على أداء الحاسب. التحكم المبرمج الصغير: تحكم الذاكرة – تصميم التحكم المبرمج. دراسة حالة لأحد أنواع المعالجات الدقيقة .**

# Topic	Lecture	Tutorial/Practical	No of hours
Register transfer language	4	4	8
Methods of common bus, binary adder/subtractor circuit construction Characteristics ofALU unit and its implementation	6	6	12
ALU function table	4	4	8
Single register organization and its instruction format	6	6	12
General register organization and	8	8	16

instruction cycle			
Total sum	28	28	56
5- Teaching and learning methods	1. Lectures 2. Tutorials. 3. Homework Exercises 4. Reports		
6- Teaching and learning methods for disable students	1. Assign a portion of the office hours for those students. 2. Give them specific tasks and evaluate them in it. 3. Repeat the explanation of some of the course material and tutorials. 4. Assign a teaching assistance to follow up the performance of this group of students.		
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. Oral Examination 3. Formative (quizzes- presentation -reports) 4. 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	▪ V. Rajarman and T. Radhakrishnan, Computer Organization & Architecture, PHILearning Private Limited, New Delhi, 2007. M. Morris Mano, Computer system architecture, 3rd edition, Prentice-Hall, Inc., 1993.
c- Periodicals, Web sites .....etc	https://www.javatpoint.com/computer-organization-and-architecture-tutorial

11-Course contents – Course related program competencies

	Level A					Level B			
	A.1	**A2**	**A.3**	**A.4**	**A5**	**B1**	**B.2**	**B.3**	**B.4**	**B.5**
Register transfer language	√	√				√				
Methods of common bus, binary adder/subtractor circuit construction Characteristics ofALU unit and its implementation	√		√				√	√	√	√
ALU function table		√	√	√	√				√	√
Single register organization and its instruction format	√		√	√				√	√	
General register organization and instruction cycle	√		√	√	√		√		√	√

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:

Doctor. Soheir afifi

Course Specification

1- Basic Information

Course Title	**Engineering Economics**	
Course Code	IEN 215	
Academic Year	2022-2023	
Coordinator	Dr .Mohamed Elkhamry	
Teaching Staff	Dr .Mohamed Elkhamry	
Level	Level (2)	
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. To provide the students Introduction To Engineering Economy: Engineering Decision Making, Break – Even Analysis, Production Function, Payback Period Method, Payback Period Method.
2. To enhance students' ability for Engineering Economy: Engineering Decision Making, Break – Even Analysis, Production Function, Payback Period Method, Payback Period Method.
3. To acquire students Time Value of Money: Simple Interest Rate, Compound Interest, Discreet cash flow and Economic Equivalence, Evaluating of the Projects (Present Worth, Annual worth, and Capitalized Cost), Nominal and Effective Interest Rate.
4. To emphasize on comprehensive treatment of embedded hardware and real time operating systems along with case studies.
5. To analyze Rate of Return calculations using A Present worth PW, Rate of Return Calculation by Using Annual worth EAW, Rate of Return Evaluation for Multiple Alternatives.

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.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	Introduction to Economy: Basic Concepts, Varieties of Market Structure, The Law of Supply And Demand, Elasticity, Different 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.

# 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	8	8	16

Method			
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 :	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	**1.** N.M. Fraser and E.M. Jewkes, Engineering economics: Financial decision making for engineers, 5th edition, Pearson, Toronto, Ontario, (2013). 2. D.G. Newnan, J. Whittaker, T.G. Eschenbach and J.P. Lavelle, Engineering economic analysis, 3rd edition, Don mills, Toronto, Ontario, (2014).
2c- Periodicals, Web sites .....etc.	https:// classroom.google.com/c/NDE0OTM2NjgyODc4

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**
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.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. Mohammed Elkhamry

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

Course Specification

1- Basic Information

Course Title	**Principles of Design & Manufacturing Engineering**	
Course Code	MED 111	
Academic Year	2022-2023	
Coordinator	Dr. Essam Nabil Ahmed	
Teaching Staff	Dr. Essam Nabil Ahmed	
Level	Level (2)	
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	• Design & Manufacturing Engineering	

2- Aim of the course

1. To equip students with the principles, facts and concepts of design and manufacturing engineering.
2. To teach students basic machining processes.
3. To provide students with mechanical components, motion and power transmission elements and standard machine elements.
4. To provide students with the basics of machine elements design.
5. Training students on automatic control applications e.g. robotics.

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.
4- Course Contents	Mechanical components, Motion and power transmission elements, Standard machine elements (threads, fasteners, locking devices, keys, splines, gears, pulleys, bearings, pipe connections, etc.), Welding and riveting conventions, Basics of Machine elements design, Stress analysis, Basic machining processes, Applications of robotics technology

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Mechanical components.	4	2	6
Motion and power transmission elements.	6	3	9
Standard machine elements (threads, fasteners, locking devices, keys, splines, gears, pulleys, bearings, pipe connections, etc.), Welding and riveting conventions.	6	3	9
Basics of Machine elements design, Stress analysis, Basic machining processes.	8	4	12
Applications of robotics technology.	4	2	6
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
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	[1] Jonathan Wickert, An Introduction to Mechanical Engineering, CL - Engineering, 2nd. Ed., 2005. [2] D.K. Singh, Fundamentals of Manufacturing Engineering, CRC Press, 2008. [3] Robert L. Mott, Machine Elements in Mechanical Design, Prentice

	Hall, 4th. Ed., 2003
c- Periodicals, Web sites ……etc	https://www.sciencedirect.com/topics/engineering/manufacturing-process-control https://www.amazon.com/Industrial-Controls-Manufacturing-Engineering-Edward/dp/0123948509 https://www.indeed.com/q-Manufacturing-Controls-Engineer-jobs.html?vjk=4e52a811a46e8840

11-Course ccontents – Course related program competencies					
	Level A		**Level B**		
	A.1	**A.2**	**B.2**	**B.3**	**B.4**
Mechanical components.	√		√		
Motion and power transmission elements.	√	√		√	√
Standard machine elements (threads, fasteners, locking devices, keys, splines, gears, pulleys, bearings, pipe connections, etc.), Welding and riveting conventions.	√	√	√	√	√
Basics of Machine elements design, Stress analysis, Basic machining processes.	√	√		√	√
Applications of robotics technology.	√	√	√	√	√

12-Teaching and learning methods - Course related program competencies					
	Level A		**Level B**		
	A.1	**A.2**	**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 competencies**				
	Level A		**Level B**		
	A.1	**A.2**	**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 1/9/2022

Course coordinator:

Dr. Essam Nabil Ahmed

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	**Statistics and Probability Theory**	
Course Code	**BAS 221**	
Academic Year	2022-2023	
Coordinator	Dr. Gamal El-Anani	
Teaching Staff	Dr. Gamal El-Anani	
Level	Level (2)	
Semester	Second 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 concept of statistics and probability theory.
2. Understand the methods to calculate the measures of central tendency and the measures of dispersion.
3. Understand the coefficient of skewness.
4. Be familiar with probability and the rules of probability.
5. Understand the methods to find the conditional probability, Bayes' theorem.
6. Be familiar with discrete and continuous probability, 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	Introduction: The birth of statistics, definition of statistics, functions of statistics, collection and organization of statistical date, presentations of Statistical data. Sets and Probabilities: random experiments, sample spaces, sets operations, counting data, probability, conditional probabilities, Baye's theorem. Tendency and Dispersion Measures: Introduction, different types of data, tendency measures, variability measures, frequency distributions. Random Variables: Discrete random variables, the Hyper – geometric distribution, Binomial distribution, the Poisson distribution, Poisson approximation of binomial probabilities, continuous random variables. Moments: central moments, Skewness measures, kurtosis measures, moment generating function. Sampling Theory and inferences: the concept Of a sampling distribution, sampling distribution of the mean, central limit theorem, tests of hypothesis and

	Confidence intervals for the mean, tests of hypothesis and confidence intervals for the difference between two means, tests of hypothesis and confidence intervals for the difference between tow means, tests of hypothesis and confidence intervals for the population proportion, tests of hypothesis and confidence intervals, for the difference between tow proportions, tests of hypothesis and confidence intervals of sample variance, tests of hypothesis and confidence interval for ratio of sample variances. Simple regression and correlation: Simple linear regression by least square method, validation the model, correlation coefficient

# Topic	Lecture	Tutorial/Practical	No of hours
The birth of statistics, definition of statistics, functions of statistics, collection and organization of statistical date, presentations of Statistical data.	4	4	8
Sets and Probabilities: random experiments, sample spaces, sets operations, counting data, probability, conditional probabilities, Baye's theorem.	6	6	12
Tendency and Dispersion Measures: Introduction, different types of data, tendency measures, variability measures, frequency distributions.	8	8	16
Random Variables: Discrete random variables, the Hyper – geometric distribution, Binomial distribution, the Poisson distribution, Poisson approximation of binomial probabilities, continuous random variables. Moments:	6	6	12

central moments, Skewness measures, kurtosis measures, moment generating function. Sampling Theory and inferences: the concept Of a sampling distribution, sampling distribution of the mean, central limit theorem, tests of hypothesis and Confidence intervals for the mean, tests of hypothesis and confidence intervals for the difference between two means, tests of hypothesis and confidence intervals for the difference between tow means, tests of hypothesis and confidence intervals for the population proportion, tests of hypothesis and confidence intervals, for the difference between tow proportions, tests of hypothesis and confidence intervals of sample variance,			
tests of hypothesis and confidence interval for ratio of sample variances. Simple regression and correlation: Simple linear regression by least square method, validation the model, correlation coefficient	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 birth of statistics, definition of statistics, functions of statistics, collection and organization of statistical date, presentations of Statistical data.	√			
Sets and Probabilities: random experiments, sample spaces, sets operations, counting data, probability, conditional probabilities, Baye's theorem.	√	√		√
Tendency and Dispersion Measures: Introduction, different types of data, tendency measures, variability measures, frequency distributions.		√	√	
Random Variables: Discrete random variables, the Hyper – geometric distribution, Binomial distribution, the Poisson distribution, Poisson approximation of binomial probabilities, continuous random variables. Moments: central moments, Skewness measures, kurtosis measures, moment generating function. Sampling Theory and inferences: the concept Of a sampling distribution, sampling distribution of the mean, central limit theorem, tests of hypothesis and Confidence intervals for the mean, tests of hypothesis and confidence intervals for the difference between two means, tests of hypothesis and confidence intervals for	√	√	√	

the difference between tow means, tests of hypothesis and confidence intervals for the population proportion, tests of hypothesis and confidence intervals, for the difference between tow proportions, tests of hypothesis and confidence intervals of sample variance,				
tests of hypothesis and confidence interval for ratio of sample variances. Simple regression and correlation: Simple linear regression by least square method, validation the model, correlation coefficient			√	

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	√	√	√	√

Authorized from board of the department at 4/2/2023
Course coordinator:

Dr. Gamal El-Anany

Ministry of Higher Education
High Institute of Electronic Engineering
Ministerial Resolution 5053 - 12/10/2016
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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	**Electronic Devices**	
Course Code	**ECE 222**	
Academic Year	2022-2023	
Coordinator	Dr. Amira A. Mahmoud	
Teaching Staff	Dr. Amira A. Mahmoud	
Level	Level (2)	
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 study the PN junction diodes, special diodes, diode circuits applications, rectifiers, and peak detectors.
2. To study the Bipolar junction transistors (BJT), dc models, modes of operation, bias and stabilization, graphical analysis, small signal ac models.
3. To study the Junction field effect transistors (JFETs).
4. To study the Metal oxide semiconductor field effect transistors (MOSFETs), dc models, modes of operation, bias and stabilization, small signal ac models, amplifier configurations.
5. To study the Logic circuits: BJT logic families, construction, properties, speed, and 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	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.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	PN junction diodes, special diodes, diode circuits applications, rectifiers, and peak detectors Bipolar junction transistors (BJT), dc models, modes of operation, bias and stabilization, graphical analysis, small signal ac models Junction field effect transistors (JFETs). Metal oxide semiconductor field effect transistors (MOSFETs), dc models, modes of operation, bias and stabilization, small signal ac models, amplifier configurations. Logic circuits: BJT logic families, construction, properties, speed, and applications. **Laboratory:** 01 Characterization of PN junction diodes and Zener diodes. 02 Half wave and full wave rectifier circuits and peak detectors. 03 AC and dc characterization of bipolar junction transistors. 04 AC and dc characterization of Junction field effect transistors. 05 AC and dc characterization of Metal oxide semiconductor field effect.

# Topic	Lecture	Tutorial/Practical	No of hours
PN junction diodes, special diodes, diode circuits applications, rectifiers, and peak detectors	6	6	12
Bipolar junction transistors (BJT), dc models, modes of operation, bias and stabilization, graphical analysis, small signal ac models	8	8	16
Junction field effect transistors (JFETs). Metal oxide semiconductor field effect transistors (MOSFETs), dc models, modes of operation, bias and stabilization, small signal ac models, amplifier configurations.	8	8	16
Logic circuits: BJT logic families, construction, properties, speed, and applications.	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 : 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 power point.
b- Text books/ References	▪ A. Sedra, K. Smith, Microelectronic Circuits, Oxford Press, 5th. Ed., 2004. ▪ D.A. Neaman, Semiconductor Physics and Devices, McGraw Hill, 4th. Ed., 2011. ▪ B. Streetmann & S. Banerjee, Solid State Electronic Devices, Prentice Hall, 6th. Ed., 2005.
c- Periodicals, Web sites .....etc	Web Sites related to Electronics and Electronic engineering.

11-Course contents – Course related program competencies

	Level A				Level B		
	A.1	A.2	A.3	A.5	B.2	B.4	B.5
PN junction diodes, special diodes, diode circuits applications, rectifiers, and peak detectors.	√		√	√	√	√	√
Bipolar junction transistors (BJT), dc models, modes of operation, bias and stabilization, graphical analysis, small signal ac models - Junction field effect transistors (JFETs).	√	√		√		√	√
Metal oxide semiconductor field effect transistors (MOSFETs), dc models, modes of operation, bias and stabilization, small signal ac models, amplifier configurations.		√	√		√		√
Logic circuits: BJT logic families, construction, properties, speed, and applications.	√	√	√			√	√

12-Teaching and learning methods - Course related program competencies							
	Level A				Level B		
	A.1	A.2	A.3	A.5	B.2	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						
	A.1	A.2	A.3	A.5	B.2	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 4/2/2023
Course coordinator:

Dr. Amira A. Mahmoud

Course Specification

1- Basic Information

Course Title	Microprocessors & Applications	
Course Code	**CSE223**	
Academic Year	2022-2023	
Coordinator	Dr. Soheir Afifi	
Teaching Staff	Dr. Soheir Afifi	
Level	Level (2)	
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	• Computers and Systems Engineering,	

2- Aim of the course

1. Learn and **understand what a microprocessor is, what it does, and how it works**
2. Learn **Microprocessors Advancements.**
3. Learn How do you write a microprocessor program?
4. Learn addressing modes
5. What is assembly language programming in microprocessor?
6. Microcontrollers are typically programmed in higher-level languages such as C++ or **Java**.

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:** Introduction and historical review about microprocessors, Computer architecture, Difference between microprocessor and microcontroller, Definition of a CPU The 8 bits CPU, Assembly language for the used processor, Different busses of the microprocessor and the function and properties of each, Addressing modes, Interfacing with memory, Interfacing with inputand output ports, Developing a simple microcomputer using an 8 bit CPU the 16 bit CPU Interfacing with memory and input and output ports, Assembly language of the 8086 CPU Architecture of the 80186, 80286, 80386, 80486, an d Pentium microprocessors, Interrupts, DirectMemory Access, Cache memory, Register file. ***Laboratory:*** 01-04 Exp. # 1 - 4: Experiments on programming the 8 bits microprocessor used in this course either on a simulator or a kit. These programs must be gradually increased in difficulty from handling data between the microprocessor registers, and transferring data to and from memory using different addressing modes, and transferring data to and from input and

	output ports. 05 Monitoring the signal on all the microprocessor control lines while executing a very short closed loop program. 06 Building a microcomputer card consisting of the microprocessor, flash memory contain the program, a ram chip to store some data, at least one input and one output port. 07-09 Exp. # 7 - 9: Programming the 16 bit microprocessor with its assemblylanguage. These programs should deal with memory with different addressing modes, Input and output programs, and dealing with subroutines.

# Topic	Lecture	Tutorial/Practical	No of hours
• Learn and understand what a microprocessor is, what it does, and how it works • Learn Microprocessors Advancements.	4	4	8
Learn How do you write a microprocessor program?	6	6	12
Learn How do you write a microprocessor program?	4	4	8
Addressing modes	8	8	16
What is assembly language programming in microprocessor?	8	8	16
Intruppt	4	4	8
Prorammes by assembly,	2	2	4
Total sum	36	36	72
5- Teaching and learning methods	1. Lectures 2. Tutorials. 3. Homework Exercises 4. Reports 5. Projects		
6- Teaching and learning methods for disable	1. Assign a portion of the office hours for those students.		

students	2. Give them specific tasks and evaluate them in it. 3. Repeat the explanation of some of the course material and tutorials. 4. Assign a teaching assistance to follow up the performance of this group of students.
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
b- Text books/ References	▪ Renu Singh, B. P. Singh, Microprocessors Interfacing and Application, New Age International Publishers, 2002. ▪ Micro-Processor and Assembly Language

	▪ Directorate of Distance Education Maharshi Dayanand University ROHTAK – 124 001
c- Periodicals, Web sites .....etc	

11-Course contents – Course related program competencies				
	Level A			
	A.1	**A.2**	**A.3**	**A.5**
• Learn and understand what a microprocessor is, what it does, and how it works • Learn Microprocessors Advancements.	√			
Learn How do you write a microprocessor program?	√	√		
Learn How do you write a microprocessor program?	√	√	√	
Addressing modes	√	√	√	
What is assembly language programming in microprocessor?	√	√	√	
Intruppt	√	√		
Prorammes by assembly,	√			

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	√	√	√	√

Authorized from board of the department at 16/2/2023

Course coordinator:

Doctor. Soheir afifi

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

وزارة التعليم العالي
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Course Specification

1- Basic Information

Course Title	**Signal Analysis**	
Course Code	**ECE 224**	
Academic Year	2022-2023	
Coordinator	Dr. Amira A. Mahmoud	
Teaching Staff	Dr. Amira A. Mahmoud	
Level	Level (2)	
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	Electronics and Communications Engineering	

2- Aim of the course

1. To learn about Signals and systems: continuous - time and discrete – time.
2. To study the elementary signals.
3. To explain Linear Time Invariant Systems: continuous - time and discrete - time convolution, system properties.
4. To study the Fourier series representation of periodic signals: continuous - time and discrete - time.
5. To define Continuous - time and discrete - time Fourier transforms and their properties.
6. To study the Frequency response of LTI systems.
7. To study the sampling of continuous - time signals.

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	Signals and systems: continuous - time and discrete - time, elementary signals, basic system properties. Linear Time Invariant Systems: continuous - time and discrete - time convolution, system properties. Fourier series representation of periodic signals: continuous - time and discrete - time. Continuous - time and discrete - time Fourier transforms and their properties. Frequency response of LTI systems. Sampling of continuous - time signals.

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Signals and systems: continuous - time and discrete - time, elementary signals, basic system properties.	6	6	12
Linear Time Invariant Systems: continuous - time and discrete - time convolution, system properties.	8	8	16

Fourier series representation of periodic signals: continuous - time and discrete - time. Continuous - time and discrete - time Fourier transforms and their properties.	8	8	16
Frequency response of LTI systems. Sampling of continuous - time signals.	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. Formative (quizzes- presentation -reports) 3. 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 power point.
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	Web Sites related to signals and systems.

11-Course contents – Course related program competencies				
	Level A			
	A.1	**A.2**	**A.3**	**A.5**
Signals and systems: continuous - time and discrete - time, elementary signals, basic system properties.	√		√	√
Linear Time Invariant Systems: continuous - time and discrete - time convolution, system properties.	√	√		√
Fourier series representation of periodic signals: continuous - time and discrete - time. Continuous - time and discrete - time Fourier transforms and their properties.	√	√	√	√
Frequency response of LTI systems. Sampling of continuous - time signals.	√	√	√	

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 competencies**			
	Level A			
	A.1	**A.2**	**A.3**	**A.5**
1. Mid Term Examination (written/ online)	√	√	√	√
2. Formative (quizzes- presentation -reports)	√	√	√	√
3. Final Term Examination (written	√	√	√	√

Authorized from board of the department at 4/2/2023
Course coordinator:

Dr. Amira A. Mahmoud

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	Modeling & Simulation of Engineering Systems	
Course Code	**CSE225**	
Academic Year	2022-2023	
Coordinator	Dr. Soheir Afifi	
Teaching Staff	Dr. Soheir Afifi	
Level	Level (2)	
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	• Computers and Systems Engineering,	

2- Aim of the course

1. Define the basic terminologies used in controls systems.
2. Explain advantages and drawbacks of open-loop and closed loop control systems.
3. Obtain models of linear control systems in ordinary differential equation, transfer function, state space, or block diagram form.
4. Obtain overall transfer function of a linear control system using block diagram algebra
5. Simplify complex control system models using block diagram
6. Explain the relationship between system output response and transfer function characteristics

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:** Mathematical modeling of linear dynamic systems; transfer function and impulseresponse function; Modeling of mechanical, electrical, fluid and thermal systems; Modeling in state space; State - space representation of scalar differential equation systems; State - space representation of transfer function systems.

# Topic	Lecture	Tutorial/Practical	No of hours

• Define the basic terminologies used in controls systems.	4	4	8
Explain advantages and drawbacks of open-loop and closed loop control systems.	6	6	12
Obtain models of linear control systems in ordinary differential equation, transfer function, state space, or block diagram form	4	4	8
Automatic Controllers ***Closed-Loop System Subjected to a Disturbance*** ***Procedures for Drawing a Block Diagram***	8	8	16
Block Diagram Reduction	8	8	16
Modeling In State Space ***Correlation Between Transfer Functions and State-Space Equations.***	4	4	8
Total sum	34	34	68
5- Teaching and learning methods	1. Lectures 2. Tutorials. 3. Homework Exercises 4. Reports 5. Projects		
6- Teaching and learning methods for disable students	1. Assign a portion of the office hours for those students. 2. Give them specific tasks and evaluate them in it. 3. Repeat the explanation of some of the course material and tutorials. 4. Assign a teaching assistance to follow up the performance of this group of students.		
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. Oral Examination 3. Formative (quizzes- presentation -reports) 4. 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
b- Text books/ References	▪ K. Ogata, Modern Control Engineering, Pearson, 5th. Ed., 2009
c- Periodicals, Web sites .....etc	

11-Course contents – Course related program competencies

	Level A			
	A.1	**A.2**	**A.3**	**A.5**
Define the basic terminologies used in controls systems.				
Explain advantages and drawbacks of open-loop and closed loop control systems.				
Obtain models of linear control systems in ordinary differential equation, transfer function, state space, or block diagram form.				
Automatic Controllers ***Closed-Loop System Subjected to a Disturbance*** ***Procedures for Drawing a Block Diagram***	√	√	√	
Block Diagram Reduction	√	√	√	

Modeling In State Space ***Correlation Between Transfer Functions and State-Space Equations.***	√	√	√	

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	√	√	√	√

Authorized from board of the department at 16/2/2023

Course coordinator:

Doctor. Soheir afifi

Course Specification

1- Basic Information

Course Title	**Principles of Negotiation**	
Course Code	**HUM 226**	
Academic Year	2022-2023	
Coordinator	Dr/ aya salem	
Teaching Staff	Dr/ aya salem	
Level	Level (2)	
Semester	second 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	Electronics Engineering and Electrical Communication Computers and Systems Engineering	

2- Aim of the course

1. introduce Negotiation: concept, attributes, and principles - Dynamic nature of negotiation – Interdependence - Ethics of negotiation - Psychological and social aspects of negotiation - Cooperative and competitive negotiations
2. - develop Good preparation of negotiation –
3. management in Strategies and tactics of negotiation - Organizing negotiation - Using power in negotiation - Using questions and dealing with objections - Handling failures in negotiations –
4. expose the students to Best practices in negotiations (case studies).

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	**Syllabus:** Negotiation: concept, attributes, and principles - Dynamic nature of negotiation – Interdependence - Ethics of negotiation - Psychological and social aspects of negotiation - Cooperative and competitive negotiations - Good preparation of negotiation - Strategies and tactics of negotiation - Organizing negotiation - Using power in negotiation - Using questions and dealing with objections - Handling failures in negotiations - Best practices in negotiations (case studies). - العلاقات الاعتمادية - الطبيعة الديناميكية للتفاوض - مفهوم وخصائص ومبادئ التفاوض التفاوض التعاوني والتفاوض - الجوانب النفسية والاجتماعية للتفاوض الجيد -اخلاقيات التفاوض الجوانب التنظيمية للجلسة - استراتيجيات وتكتيكات التفاوض - الاعداد الجيد للتفاوض -التنافسي التعامل مع - استخدام الاسئلة والرد علي الاعتراضات -النفوذ والتأثير في التفاوض -التفاوضية حالة عملية(افضل الممارسات في التفاوض -فشل التفاوض المواقف الصعبة وحالات).

# Topic	Lecture	Tutorial/Practical	No of hours
Negotiation: concept, attributes, and principles – Dynamic nature of negotiation – Interdependence – Ethics of negotiation – Psychological and social aspects	6	0	0

of negotiation –			
and Cooperative competitive negotiations – Good preparation of negotiation – tactics and Strategies of negotiation –	6	0	0
Organizing negotiation - Using power in negotiation – and questions Using dealing with objections – in failures Handling negotiations –sses	8	0	0
Best practices in negotiations (case studies).	10	0	0
Total sum	28	0	0
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. brain storming 4. Projects 5. Self-learning 6. Research and Reporting 7. Computer Simulation 8. 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. 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	- 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	- 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	▪ Acuff, F. L. (1993). How to negotiate anything with anyone anywhere around the world. New York: AMACOM. ▪ Adair, W„ Brett, J., Lcmpereur, A., Okumura, T„ Shikhircv, R, Tinsley, C„ & Lytle, A. (2004). Culture and negotiation strategy. Negotiation Journal, 20, 87- 110. ▪ Adair, W. L., & Brett, J. M. (2005). The negotiation dance: Time, culture, and behavioral sequences in negotiation. Organization Science, 16 (1), 33-51. ▪ Adair, W. L„ Okumura, T„ & Brett, J. M. (2001). Negotiation behavior when cultures collide: The United States and Japan. Journal of Applied Psychology, 86, 371-85. Adler, R. S. (2007). Negotiating with liars. MIT Sloan Management Review, 48 (4), 69-74.
c- Periodicals, Web sites .....etc	

11-Course contents – Course related program competencies	

	Level A				
	A.5	**A.7**	**A.8**	**A.9**	**A.10**
Negotiation: concept, attributes, and principles –	√	√			
Dynamic nature of negotiation – Interdependence – Ethics of negotiation – Psychological and social aspects of negotiation	√	√			
Cooperative and competitive negotiations – Good preparation of negotiation		√	√		
Strategies and tactics of negotiation – Organizing negotiation - Using power in negotiation –		√	√		
Using questions and dealing with objections – Handling failures in negotiations –sses Best practices in negotiations (case studies				√	√

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.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 11/2/2023

Course coordinator:

Dr./ aya .m. salem

Department offering the program: Electronics and Communications Engineering, Computers and Systems Engineering, Communications and Computer Engineering

Department offering the course: General

Course Specification

1. Course Basic Information:			
Course Code: 291	**Course Title: Field Training 1** **تدريب ميدانى 1**	**Academic years: 2021/2022** **Level (2) – Semester : 2nd**	
Institute Requirement	**Teaching hours:**		
	Lecture : 0	**Tutorial: 0**	**Lab : 6**

2. Course Objectives
قضى الطالب تدريبا ميدانيا بعد استكمالة لمقررات المستوى الثانى بالمعهد العالى للهندسة الالكترونية لمدة اربعة اسابيعوقد اظهار المهارات المهنية والعمليه التى اكتسبها خلال المناقشة بعد تسليم تقرير مفصل على مدى الاستفادة

3. Intended Learning Outcomes: ARS		**Course ILOs**
A. Knowledge and Understanding:	A.1 تم التعرف على احد البرامج الهامه فى مجالا الكهرباء وهو برنامج الماتلاب	A.1-1 Explain concepts of Fundamentals of MATLAB
B. Intellectual Skills		
C. Professional Skills	C.1. التدريب العملى على دوائر القوى الكهربيه وكذلك الالات الكهربيه.	C.1-1. التدريب على دوائر المحول من التيار المتمر الى التيار المتغير والعكس

D. General Skills	D.3. التفاعل داخل العمل الجامعى اثناء التدريب	D.3- قام الطلاب بتقديم تقرير مفصل على الاجزاء التى استفادة منها وتم المناقشة فى التقدير من اللجنة

4. Course Contents

Syllabus: Students should spend 4 weeks in field training, after completing the Second level, in any Engineering Institution or Engineering Firms. Students should demonstrate the professional and practical skills they acquired during discussion with their assigned tutors.

يقضى الطالب تدريبا ميدانيا بعد استكمالة لمقررات المستوى الثانى باحد المؤسسات الهندسية او المعاهد الهندسية ولمدة اربعة اسابيع. وعلى الطلاب اظهار المهارات المهنية والعمليه التى اكتسبها خلال المناقشة مع المشرف الاكاديمى.

5. Teaching and Learning Methods

- Lectures
- Power point
- Research assignments

6. Teaching and Learning Methods for disable students

كان التدريب من خال الاتى
التدريب على اهم اوامر برنامج الماتلاب وكيفية العمل وتنفيذ الدوائر الكهربيه والعمليات الرياضية عليه
التدريب على معمل الكترونيات القدرة
التدريب علبى اهم قواعد البرمجه فى نظم الحاسبات

7. Student Assessment

a. Assessment Methods	▪ اعمال السنه + المناقشة والتقرير
b. Assessment Schedule	التقرير + المناقشة
c. Weighting of Assessment	▪ اعمال السنه 50 % ▪ التقرير والمناقشة 50 % Total 100 %

8. List of text books and references

a. Course notes	التدريب العملى وعرض البور بونت
b. Text books	التدريب العملى
c. Recommended books	
d. Periodicals, Web sites	

…etc	

Course contents - ILOs Matrix

Content Topics	Week	A- Knowledge & Understanding	B- Intellectual Skills	C- Professional and Practical Skills	D- General and Transferable Skills
برنامج الماتلاب	1	A.1		C.1	D3
الكترونيات القدرة	2			C.1	D.3
الات كهربيه	3			C.1	D.3
برمجة الحاسب	4			C.1	D.3

Teaching and Learning Methods - ILOs Matrix

Teaching and Learning Methods	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Lectures				
tutorials				
Labs	A.1		C.1	D.3
Research assignments				

Assessment Methods - ILOs Matrix

Assessment Methods	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Weekly sheet exercises				
Labs	A.1		C.1	D.3
Quizzes				
Midterm exams				

Course coordinator:

Dr Saad Awad M. Abdelwahab