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	**Microcontrollers & Applications**	
Course Code	CSE 411	
Academic Year	2022-2023	
Coordinator	Dr. Essam Nabil Ahmed	
Teaching Staff	Dr. Essam Nabil Ahmed	
Level	Level (4)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	1
	Lab	1
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	• Computers and Systems Engineering,	

2- Aim of the course

1. Develop a basic knowledge of programming the microcontroller with high efficiency and reliability using different embedded languages.
2. Having acquired a good knowledge of improving interfacing of the microcontroller with the outer media. In addition, to connect with the PC.
3. Encourage the student to analyze embedded devices and analyze the microcontroller different units and modules.
4. Assist the student to implement the experiments and projects using microcontroller related software and hardware components.

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	Difference between microprocessors and microcontrollers, General architecture of microcontrollers, Architecture of one of the available microcontrollers that will be used in this course, its assembly, Programming with either C or Basic, Input and output of data in this microcontroller, Timers, Counters, and Interrupts, Software and hardware applications will be assumed in each part. Dealing with A/D and D/A either internal or external, the student should build a complete project to control a simple process like controlling temperature and displaying it or controlling the speed of a motor and displaying it also. ***Laboratory:*** 01 Experimenting with the assembly language of the used microcontrollers, or the high-level language used with the simulator. 02 Experimenting with the assembly language of the used microcontrollers, or the high-level language used with the simulator. 03 Experimenting with the assembly language of the used microcontrollers, or the high-level language used with the simulator. 04 Experimenting with the assembly language of the used microcontrollers, or the high-level language used with the simulator. 05 Experiment on dealing with interrupts. 06 Experiment on dealing with interrupts. 07 Experiment on dealing with Timers, and Counters. 08 Experiment on dealing with Timers, and Counters.

	09 Doing a complete course project to use the microcontroller in controlling a physical variable like temperature or pressure and display that variable. The A/D, and D/A must be used in this project. 10 Doing a complete course project to use the microcontroller in controlling a Physical variable like temperature or pressure and display that variable. The A/D, and D/A must be used in this project. 11 Doing a complete course project to use the microcontroller in controlling a physical variable like temperature or pressure and display that variable. The A/D, and D/A must be used in this project.

# Topic	Lecture	Tutorial/Practical	No of hours
Difference between microprocessors and microcontrollers, General architecture of microcontrollers.	4	4	8
Architecture of one of the available microcontrollers that will be used in this course, its assembly, Programming with either C or Basic.	6	6	12
Input and output of data in this microcontroller.	6	6	12
Timers, Counters, and Interrupts, Software and hardware applications will be assumed in each part.	8	8	16
Dealing with A/D and D/A either internal or external, the student should build a complete project to control a simple process like controlling temperature and displaying it or controlling the speed of a motor and displaying it also.	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 : 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] Daniel Tobak, Kenneth J. Hintz, Microcontrollers: Architecture, Implementation and Programming, McGraw Hill, 1992. [2] Frederick M Cady "Microcontrollers and Microcomputers Principles of Software and Hardware Engineering", Prentice Hall, Jun 19, 2009. [3] F. E. V.-Perez, R. P.-Areny, Microcontrollers: Fundamentals and Applications with PIC, CRC Press, Feb., 2009. [4] Danny Cansey, Muhammed Ali Mazidi, PIC Microcontrollers and Embedded Systems Using Assembly and C, Pearson Prentice Hall, 2007. [5] Lucio Di Jasio, Tim Wilmshurst, Dogan Ibrahim, PIC Microcontrollers, Know it all, Elsevier Inc, 2008.
c- Periodicals, Web sites .....etc	https://www.microchip.com/design-centers/microcontrollers

11-Course ccontents – Course related program competencies					
	Level A		Level B		
	A.1	A.2	B.2	B.3	B.4
Difference between microprocessors and microcontrollers, General architecture of microcontrollers.	√		√		
Architecture of one of the available microcontrollers that will be used in this course, its assembly, Programming with either C or Basic.		√		√	√
Input and output of data in this microcontroller.		√		√	√
Timers, Counters, and Interrupts, Software and hardware applications will be assumed in each part.		√		√	√
Dealing with A/D and D/A either internal or external, the student should build a complete project to control a simple process like controlling temperature and displaying it or controlling the speed of a motor and displaying it also.	√	√	√	√	√

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

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Course Specification

1- Basic Information

Course Title	**Digital Communication Systems**	
Course Code	CCE412	
Academic Year	2022-2023	
Coordinator	Dr. Amira A. Mahmoud	
Teaching Staff	Dr. Amira A. Mahmoud	
Level	Level (4)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	2
	Lab	-
Department offering the program	• Electronics and Communications Engineering, • Communications and Computer Engineering	
Department offering the course	Electronics Engineering and Electrical Communication	

2- Aim of the course

1. To discuss the importance of digital communication systems in our daily life.
2. To be familiar with the concepts of sampling, multiplexing, pulse, and digital radio modulation.
3. To illustrate the tradeoffs between the different system parameters such as bandwidth, data rate, error rate and complexity.
4. To compare the specifications, operation and performance of multiplexing, access algorithms, line coding, pulse, and digital radio techniques.
5. To analyze the performance of higher orders of modulation techniques such as M-ary PSK and QAM.
6. To show how these digital modulation techniques are used in different communication systems such as satellite, radar, mobile, etc.
7. To understand the fundamentals of information theory.

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.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	Random processes: Gaussian process, narrow - band noise. Baseband pulse transmission: matched filter, inter - symbol interference. Signal space analysis: correlation receiver, probability of error. Performance of digital carrier modulation schemes. Spread - spectrum modulation. Multi - carrier modulation: OFDM. Fundamentals of information theory: source coding, channel capacity. Basic error - control coding.

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Random processes: Gaussian process, narrow - band noise	4	4	8
Baseband pulse transmission: matched filter, inter - symbol interference	4	4	8
Signal space analysis: correlation receiver, probability of error	4	4	8
Performance of digital carrier modulation schemes	6	6	12
Spread - spectrum modulation. Multi - carrier modulation: OFDM	4	4	8
Fundamentals of information theory: source coding, channel capacity. Basic error -	6	6	12

control coding			
Total sum	28	28	56
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork		
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice		
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students. 2. Provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance		
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.		
9- Students assessment			
a- Assessment methods	1. Mid Term Examination (written/ 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 pdf file.
b- Text books/ References	[1] Lathi, B. P. (Bhagwandas Pannalal) Modern digital and analog communication systems/ B. P. Lathi, Zhi Ding. -4th ed, 2009. [2] Simon Haykin, An introduction to analog and digital communication, John Wiley & Sons, 1989. [3] -L.W.Couch, Digital and analog communication systems, Macmillan Publishing company, 1990. [4] -R,P.Singh and S.D. Sapre, Communication systems: analog and digital, Tata McGraw-Hill book company, 1995.
c- Periodicals, Web sites .....etc	Web Sites related to Digital Communication Systems as: https://en.wikipedia.org/wiki/

11-Course contents – Course related program competencies

	Level A			Level B		
	A.1	**A.3**	**A.4**	**B.2**	**B.4**	**B.5**
Random processes: Gaussian process, narrow - band noise	√	√			√	√
Baseband pulse transmission: matched filter, inter - symbol interference	√	√		√	√	
Signal space analysis: correlation receiver, probability of error	√	√	√	√		
Performance of digital carrier modulation schemes	√	√	√	√	√	√
Spread - spectrum modulation. Multi - carrier modulation: OFDM	√		√	√	√	√
Fundamentals of information theory: source coding, channel capacity. Basic error - control coding	√	√	√	√	√	√

12-Teaching and learning methods - Course related program competencies

	Level A			Level B		
	A.1	**A.3**	**A.4**	**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			**Level B**		
	A.1	**A.3**	**A.4**	**B.2**	**B.4**	**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. Amira A. Mahmoud

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Course Specification

1- Basic Information

Course Title	**Digital Signal Processing**	
Course Code	CCE 413	
Academic Year	2022-2023	
Coordinator	Prof. Khalid Fawzy Ahmed Hussein	
Teaching Staff	Prof. Khalid Fawzy Ahmed Hussein	
Level	Level (4)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	1
	Lab	1
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	Electronics Engineering and Electrical Communication	

2- Aim of the course

1. To attain the concept and understand the z-transform: ROC and Properties.
2. To gain the knowledge of the transform analysis of LTI systems: System function and frequency response, linear – phase, minimum-phase, and all-pass systems.
3. To understand the structures for discrete time systems: Basic IIR and FIR structures.
4. To gain the skills of filter design techniques: Filter specifications, IIR design, and FIR design.
5. To understand the discrete Fourier transform: Sampling of the Fourier transform, properties of the DFT, circular convolution, and linear convolution using DFT, FFT.
6. To be aware of and get the practical experience of performing the spectral analysis using DFT.

3- Course related program competencies

Level A – General	A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. A.2 Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development A.3 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.
Level B - Specialty	B.1 To gain the knowledge and understand the z-transform: ROC and Properties. To attain the concept of the transform analysis of LTI systems: System function and frequency response, linear – phase, minimum-phase, and all-pass systems. B.2 To understand the structures for discrete time systems: Basic IIR and FIR structures. To get the practical skills of filter design techniques: Filter specifications, IIR design, and FIR design. B.3 To be capable of understanding and applying the discrete Fourier transform: Sampling of the Fourier transform, properties of the DFT, circular convolution, and linear convolution using DFT, FFT. To be able to perform the spectral analysis using DFT.
4- Course Contents	Z-Transform: ROC and Properties. Transform analysis of LTI systems: System function and frequency response, linear – phase, minimum-phase, and all-pass systems. Structures for Discrete Time Systems: Basic IIR and FIR structures. Filter Design Techniques: Filter specifications, IIR design, and FIR design. Discrete Fourier Transform: Sampling of the Fourier transform, properties of the DFT, circular convolution, and linear convolution using DFT, FFT. Spectral Analysis using DFT.

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Z-Transform: ROC and Properties.	6	6	12
Transform Analysis of LTI Systems.	6	6	12
Structures for Discrete Time Systems.	6	6	12
Filter Design Techniques.	6	6	12
Discrete Fourier Transform.	6	6	12

Total sum	30	30	60
5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving 5. Brain storming 6. Self-learning 7. Research and Reporting 8. Computer Simulation 9. Teamwork		
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice		
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. Provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance		
8- Teaching and learning methods for outstanding students	1. Assign course 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	Well prepared course notes are available on the Google classroom
b- Text books/ References	[1] Y. A. Bahrany, "Digital Signal Processing", McGraw Hill, 4th Ed. 2016.
c- Periodicals, Web sites .....etc	

11-Course contents – Course related program competencies						
	Level A			**Level B**		
	A.1	**A.2**	**A.3**	**B.1**	**B.2**	**B.3**
Integrated circuits trends and digital integrated circuits implementation methodology.		√		√		
MOS inverters, inverters switching characteristics, MOS logic gate circuits, clocking and timing.	√		√	√		
Interconnects issues and power dissipation in digital circuits.		√	√		√	
Combinational logic MOS circuits, sequential logic MOS circuits, memories and array circuits.	√		√		√	
Low power design, packaging, power and IO issues. Testing and design for testability methodologies and tools.	√		√			√

12-Teaching and learning methods - Course related program competencies						
	Level A			**Level B**		
	A.1	**A.2**	**A.3**	**B.1**	**B.2**	**B.3**
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**	**A.3**	**B.1**	**B.2**	**B.3**
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. Dr. Khalid Fawzy Ahmed Hussein

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Course Specification

1- Basic Information

Course Title	**Antenna &wave propagation**	
Course Code	ECE 414	
Academic Year	2022-2023	
Coordinator	Dr .Mohamed El-Khamry	
Teaching Staff	Dr .Mohamed El-Khamry	
Level	Level (4)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	2
	Lab	1
Department offering the program	• Electronics and Communications 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 Properties of electromagnetic waves Maxwell's equations, Plane waves, Polarization. To enhance students' ability for programming microcontrollers with high efficiency and reliability using different embedded languages.
2. To acquire students Propagation mechanisms: reflection, transmission and refraction, scattering, diffraction
3. To emphasize on Antenna fundamentals: antenna parameters, dipoles, arrays, loop antennas, helical antennas, patch antennas.
4. To analyze Propagation models path loss, free space loss, planet earth loss, link budget. Fading and shadowing

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 - Specialty	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	Properties of electromagnetic waves: Maxwell's equations, Plane waves, Polarization. Propagation mechanisms: reflection, transmission and refraction, .scattering, diffraction Antenna fundamentals: antenna parameters, dipoles, arrays, loop antennas, helical antennas, patch antennas. Propagation models: path loss, free space loss, planet earth loss, link budget Fading and shadowing

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Properties of electromagnetic waves	4	4	8
Maxwell's equations, Plane waves, Polarization	6	6	12
Propagation mechanisms: . reflection, transmission and refraction, scattering, diffraction	8	8	16
Antenna fundamentals and	6	6	12

Propagation models			
Antenna parameters, dipoles, arrays, loop antennas, helical antennas, patch antennas.	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	Warfighting Publication (MCWP) 6-22 Communications and Information Systems Reference Publications (MCRPs) 6-22A TALK-II SINCGARS: Multiservice Communications Procedures for the Single-Channel Ground and Airborne Radio System 6-22C Radio Operator's Handbook (under development)Technical Manual (TM)2000-15/2B Principal Technical Characteristics of U.S. Marine Corps Communications-Electronic Equipment
c- Periodicals, Web sites …etc.	https://classroom.google.com/c/NTUxNTAwMzEwODcx

11-Course ccontents – Course related program competencies

	Level A			Level B			
	A.1	**A.2**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Properties of electromagnetic waves	√	√	√	√			
Maxwell's equations, Plane waves, Polarization	√	√		√	√	√	√
Propagation mechanisms: reflection, transmission and refraction, scattering, diffraction		√	√			√	√
Antenna fundamentals	√	√	√		√		
Propagation models			√		√	√	√

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

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	**Integrated Circuit Design**	
Course Code	ECE 415	
Academic Year	2022-2023	
Coordinator	Prof. Khalid Fawzy Ahmed Hussein	
Teaching Staff	Prof. Khalid Fawzy Ahmed Hussein	
Level	Level (4)	
Semester	First Term	
Number of Weekly Contact Hours	Lecture	2
	Tutorial	1
	Lab	1
Department offering the program	• Electronics and Communications Engineering, • Computers and Systems Engineering, • Communications and Computer Engineering	
Department offering the course	Electronics Engineering and Electrical Communication	

2- Aim of the course

1. To gain the basic knowledge of Integrated circuits trends and digital integrated circuits implementation methodology.
2. To understand the operation of MOS inverters, inverters switching characteristics, MOS logic gate circuits, clocking and timing.
3. To get acquainted with the IC interconnects issues and power dissipation in digital circuits.
4. To understand the operation of the combinational logic MOS circuits, sequential logic MOS circuits, memories and array circuits.
5. To gain the skills of low power design, packaging, power and IO issues.
6. To be capable of testing and to gain the skill of design for testability methodologies and tools.

3- Course related program competencies

Level A – General	A.1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics. A.2 Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical, and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development A.3 Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles.
Level B - Specialty	B.1 To gain the basic knowledge of Integrated circuits trends and digital integrated circuits implementation methodology. To understand the operation of MOS inverters, inverters switching characteristics, MOS logic gate circuits, clocking and timing. B.2 To get acquainted with the IC interconnects issues and power dissipation in digital circuits. To understand the operation of the combinational logic MOS circuits, sequential logic MOS circuits, memories and array circuits. B.3 To gain the skills of low power design, packaging, power and IO issues. To be capable of testing and to gain the skill of design for testability methodologies and tools.
4- Course Contents	Integrated circuits trends and digital integrated circuits implementation methodology. MOS inverters, inverters switching characteristics, MOS logic gate circuits, clocking and timing. Interconnects issues and power dissipation in digital circuits. Combinational logic MOS circuits, sequential logic MOS circuits, memories and array circuits. Low power design, packaging, power and IO issues. Testing and design for testability methodologies and tools.

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Integrated circuits trends and digital integrated circuits implementation methodology.	6	6	12
MOS inverters, inverters switching characteristics, MOS logic gate circuits, clocking and timing.	6	6	12
Interconnects issues and power dissipation in digital circuits.	6	6	12
Combinational logic MOS circuits, sequential logic MOS circuits, memories and array	6	6	12

circuits.			
Low power design, packaging, power and IO issues. Testing and design for testability methodologies and tools.	6	6	12
Total sum	30	30	60

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

assessment	- Mid-term examination: 20 % - Final – term examination: 70 % Total 100 %
10- List of text books and references:	
a- Course notes	Well prepared course notes are available on the Google classroom.
b- Text books/ References	[1] S. Kang, Y. Leblebici, "CMOS Digital Integrated Circuits: Analysis and Design", McGraw Hill, 3rd, Ed. [2] N. H. E. Weste and D. Harris, "CMOS VLSI Design: A Circuits and Systems Prospective", Addison - Wesley, 3rd Ed., 2004.
c- Periodicals, Web sites .....etc	

11-Course contents – Course related program competencies

	Level A			Level B		
	A.1	**A.2**	**A.3**	**B.1**	**B.2**	**B.3**
Integrated circuits trends and digital integrated circuits implementation methodology.		√		√		
MOS inverters, inverters switching characteristics, MOS logic gate circuits, clocking and timing.	√		√	√		
Interconnects issues and power dissipation in digital circuits.		√	√		√	
Combinational logic MOS circuits, sequential logic MOS circuits, memories and array circuits.	√		√		√	
Low power design, packaging, power and IO issues. Testing and design for testability methodologies and tools.	√		√			√

12-Teaching and learning methods - Course related program competencies

	Level A			Level B		
	A.1	**A.2**	**A.3**	**B.1**	**B.2**	**B.3**
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**	**A.3**	**B.1**	**B.2**	**B.3**
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. Dr. Khalid Fawzy Ahmed Hussein

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	**Optical Communications**	
Course Code	**ECE 465**	
Academic Year	2022-2023	
Coordinator	Dr. Heba Mohamed Emara	
Teaching Staff	Dr. Heba Mohamed Emara	
Level	Level (4)	
Semester	Second 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 teach student an overview of Optical Communications
2. To equip students with Components of optical fiber communication systems and its features
3. To acquire students a good idea to optical fiber cables: types of cables and transmission characteristics
4. To teach students the concepts and applications of Signal attenuation and link budget calculations. Dispersion over optical fiber cables and limitations of transmission rates
5. To provide students with the optical sources: light emitting diodes and laser diodes. Optical signal detectors.
6. To provide students the optical communication standard: Synchronous digital hierarchy. Wavelength division multiplexing systems.

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.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	Components of optical fiber communication systems and its features. Optical fiber Cables: types of cables and transmission characteristics. Signal attenuation and link budget calculations. Dispersion over optical fiber cables and limitations of transmission rates. Optical sources: light emitting diodes and laser diodes. Optical signal detectors. Receiver analysis, noise and limitations. Optical fiber communication standards: synchronous digital hierarchy. Wavelength division multiplexing systems.

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Theory of Optical Fiber equations	4	4	8
Types of cables and transmission characteristics	6	6	12
Communicate effectively of transmission characteristics.	8	8	16
Search for information	6	6	12

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

c- Weighting of assessment	- Class tutorial and quizzes: 10 % - Mid-term examination: 10 % - Oral and Practical work 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	1. Joseph C. Palais, Fiber Optic Communications, Prentice Hall, 5th. Ed., 2005. 2. John Senior, Optical Fiber Communications: Principles and Practice, Prentice Hall, 3rd. Ed.,2009.
c- Periodicals, Web sites .....etc	Web Sites related to Mathematics and Mathematical engineering as: **http://ctd.grc.nasa.gov/rleonard/regcontents.html** **http://www.aticourses.com/iridium.htm** **http://www.aticourses.com/global_positioning_system.htm** **http://www.mlesat.com/Article9.html** **http://www.mlesat.com/tutorial.html**

11-Course contents – Course related program competencies

	Level A			Level B			
	A.1	**A.3**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Theory of Optical Fiber equations	√						
Types of cables and transmission characteristics	√	√		√	√	√	√
Communicate effectively of transmission characteristics.		√	√			√	√
Search for information Frequency division multiple - access, time division multiple –access.	√	√	√				
Multiple - access code division			√				

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

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

Authorized from board of the department at 4/2/2023.

Course coordinator:

Dr. Heba M. Emara

Course Specification

1- Basic Information

Course Title	**Principles of Satellite Communications**	
Course Code	ECE 467	
Academic Year	2022-2023	
Coordinator	Dr .Mohamed El-Khamry	
Teaching Staff	Dr .Mohamed El-Khamry	
Level	Level (4)	
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	Electronics Engineering and Electrical Communication	

2- Aim of the course

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

1. An overview of satellite communication systems.
2. Orbital concepts: Orbital parameters, geostationary orbits, low earth and medium earth orbits.
3. System components: The space Link, space and earth segments. Earth stations technology.
4. Space link (uplink and downlink) analysis. Frequency division multiple -access, time division multiple - access, and code division multiple - access. Packet switching in satellite systems.
5. Examples of satellite communication systems.

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 - Specialty	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	An overview of satellite communication systems. Orbital concepts: Orbital parameters, geostationary orbits, low earth and medium earth orbits. System components: The space Link, space and earth segments. Earth stations technology. Space link (uplink and downlink) analysis. Frequency division multiple -access, time division multiple - access, and code division multiple - access. Packet switching in satellite systems. Examples of satellite communication systems.

# Topic	Lecture	Tutorial/Practical	No of hours
Properties of electromagnetic waves	4	4	8

Maxwell's equations, Plane waves, Polarization	6	6	12
Propagation mechanisms: . reflection, transmission and refraction, scattering, diffraction	8	8	16
Antenna fundamentals and Propagation models	6	6	12
Antenna parameters, dipoles, arrays, loop antennas, helical antennas, patch antennas.	4	4	8
Total sum	28	28	56

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

	- Quizz-1:	Week no. 4
	- Mid-Term exam:	Week no. 8
	- Quizz-2:	Week no. 12
	- Final – term examination:	Week no. 16
c- Weighting of assessment	- Class tutorial and quizzes :	10 %
	- Mid-term examination:	20 %
	- Final – term examination:	70 %
	Total	100 %
10- List of text books and references:		
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.	
b- Text books/ References	1- Dennis Roddy, Satellite Communications, Barnes and Noble, 4th. Ed., 2006. References: 1- Maral and Bousquet, Satellite Communication Systems, John Wiley & Sons, Inc., 3rd. Ed.,1998.	
c- Periodicals, Web sites …etc.	https://classroom.google.com/c/NTUxNTAwMzEwODcx	

11-Course ccontents – Course related program competencies

	Level A			Level B			
	A.1	**A.3**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Properties of electromagnetic waves	√	√	√	√			
Maxwell's equations, Plane waves, Polarization	√	√		√	√	√	√
Propagation mechanisms: reflection, transmission and refraction, scattering, diffraction		√	√			√	√
Antenna fundamentals	√	√	√		√		
Propagation models			√		√	√	√

12-Teaching and learning methods - Course related program competencies

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

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

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

Dr. Mohammed Elkhamry

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

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

Course Specification

1- Basic Information

Course Title	**Mobile Communications**	
Course Code	**ECE423**	
Academic Year	2022-2023	
Coordinator	Dr. Amira A. Mahmoud	
Teaching Staff	Dr. Amira A. Mahmoud	
Level	Level (4)	
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 understand the fundamentals of mobile wireless communication with special emphasis on cellular communications and signaling.
2. To present multiple access techniques such as TDMA, CDMA and OFDMA.
3. To access and core networks (from GSM to 5G) as well as their main functional network elements.
4. To cover the mobility and session management, together with standard communication protocols.
5. To analyze mobile communications with the interpretation of the call prints
6. To understand the basic principles of the modern mobile and wireless communication systems.
7. To understand the operation of mobile communications systems and their generation divisions.
8. To develop the concept of systems thinking in the context of mobile and wireless systems
9. To develop knowledge of the interplay of concepts and multiple sub-disciplines in mobile and wireless systems
10. To develop knowledge and experience in mobile interface and applications design, and development techniques and methodologies set in the context of a research project addressing a real-world application.
11. To gain knowledge and experience in applying various computation methods and algorithms as a part of software development
12. To gain experience in evaluating mobile computing applications, computation methods and algorithms through experiments and simulations.

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	Principles of wireless communications: basic concepts of cellular communications. System capacity. Mobile Propagation: multipath interference, small- and large-scale fading, Doppler shift and spread, empirical models for path loss. The GSM cellular system: architecture, air interface, signal processing and transmission. CDMA system, CDMA modulation and demodulation, CDMA air links, Link protocol, types of codes in CDMA, power control in CDMA, handoff, CDMA soft capacity

# Topic	**Lecture**	**Tutorial/Practical**	**No of hours**
Principles of wireless communications: basic concepts of cellular communications.	4	4	8
System capacity. Mobile Propagation: multipath interference, small- and large-scale fading, Doppler shift and spread, empirical models for path loss.	8	8	16
The GSM cellular system: architecture, air interface, signal processing and transmission.	8	8	16
CDMA system, CDMA modulation and demodulation, CDMA air links, Link protocol, types of codes in CDMA, power control in CDMA, handoff, CDMA soft capacity	8	8	16
Total sum	28	28	56

5- Teaching and learning methods	1. Lecture (online/in class) 2. Discussion 3. Tutorial 4. Problem solving

	5. Brain storming 6. Projects 7. Self-learning 8. Research and Reporting 9. Computer Simulation 10. Teamwork
6- Teaching and learning methods for disable students	1. Additional Tutorials 2. Online lectures and assignments 3. Using as many audio/visual aids as possible. 4. Providing extra opportunities for practice
7- Teaching and learning methods for low capacity students	1. Assign a portion of the office hours for those students and 2. provide them with specific tailored tasks. 3. Repeat the explanation of some of the material and tutorials. 4. Assign a teaching assistance to follow up their performance
8- Teaching and learning methods for outstanding students	1. Assign course project tasks to those students. 2. Give them advanced extra-curriculum topics. 3. Encourage them to take part in a pilot research and case studies.
9- Students assessment	
a- Assessment methods	1. Mid Term Examination (written/ online) 2. 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	▪ Theodore Rappaport, Wireless Communications: Principles and Practice, Prentice Hall, 2nd. Ed., 2002 ▪ "Wireless Internet and Mobile Computing: Interoperability and

	Performance," Kwok & Lau, Wiley 2007, ISBN 97880847186796884 ▪ "20 Recipes for Programming PhoneGap: Cross-Platform Mobile Development for Android and iPhone," Jamie Munro, O'Reilly Media, 2012. ▪ William Stallings, Wireless Communications and Networks, Prentice Hall, 2002
c- Periodicals, Web sites .....etc	Web Sites related to Mobile Communications.

11-Course contents – Course related program competencies

	Level A				Level B		
	A.1	**A.2**	**A.3**	**A.5**	**B2**	**B4**	**B5**
Principles of wireless communications: basic concepts of cellular communications.	√		√	√		√	√
System capacity. Mobile Propagation: multipath interference, small- and large-scale fading, Doppler shift and spread, empirical models for path loss.	√	√		√	√	√	
The GSM cellular system: architecture, air interface, signal processing and transmission.		√	√		√		
CDMA system, CDMA modulation and demodulation, CDMA air links, Link protocol, types of codes in CDMA, power control in CDMA, handoff, CDMA soft capacity	√	√	√		√	√	√

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 competencies**						
	Level A				**Level B**		
	A.1	**A.2**	**A.3**	**A.5**	**B.2**	**B.4**	**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 4/2/2023.
Course coordinator:

Dr. Amira A. Mahmoud

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

Department offering the course: Computers and Systems Engineering

Course Specification

1. Course Basic Information:			
Course Code: CSE 491	**Course Title: Graduation Project**	**Academic years: 2021/2022** **Level (4) – Semester : 2st**	
Institute Requirement	**Teaching hours:**		
	Lecture : 2	**Tutorial: 0**	**Lab : 2**

2. Course Objectives
1- Learn how to design web site . 2- define the different ways to design 3- chose hosting and domain 4- Be able to manage time, tasks, and resources. 5- Be able to work in a team. 6- Think in a creative and innovative way in solving, and design engineering problems. 7- Take decisions, lead, and motivate individuals.

3. Intended Learning Outcomes: ARS		**Course ILOs**
A. Knowledge and Understanding:	A4) Demonstrate principles of design including elements design, process and/or a system related to computer systems engineering. A11) Define professional ways to design and compare to obtain perfect way A18) Describe Computer Networking and Communication Systems. A21) Describe applications of Computer engineering.	A4.1) Demonstrate the Methodologies of Gathering literatures, A4.2) Demonstrate the steps of background survey. A11.1) Demonstrate the Implementation of prototype, and testing. A11.2) Learn the concepts of writing technical report. A18.1) Know how to Analyze, design, modeling and programming methods using computer based applications.

B. Intellectual Skills	B1) Select appropriate computer-based methods for modeling and analyzing problems. B2). Select appropriate solutions for engineering problems based on analytical thinking. B3). Think in a creative and innovative way in problem solving and design. B4). Combine, exchange, and assess different ideas, views, and knowledge from a range of sources. B5). Assess and evaluate the characteristics and performance of components, systems and processes.	B1.1) Select the analysis technique. B1.2) Use appropriate Gathering literatures. B2.1) Choose suitable hosting and domain B2.2) Use testing method. B3.1) Design Problem definition. B3.2) Develop background survey. B4.1). Combine the Analysis, design, modeling and programming. B4.2). Exchange circuitry construction. B5.1). Evaluate the Implementation. B5.2). Judge the Prototype. B6.1). Search the failure in Implementation. B6.2). Design a Prototype for that failure. B9.1). Develop and Enhance circuitry construction. B9.2). Develop background survey.
C. Professional Skills	C1) Apply knowledge of mathematics, science, information technology, design, business context and engineering practice integrally to solve engineering problems. C2) Professionally merge the engineering knowledge, understanding, and feedback to improve design, products and/or services. C3) Create and/or re-design a process, component or system, and carry out specialized engineering designs. C4) Practice the neatness and aesthetics in design and approach. C5) Use computational facilities and techniques, measuring instruments, workshops and laboratory equipment to design experiments, collect, analyze and interpret results. C6) Use a wide range of analytical tools, techniques, equipment, and software packages pertaining to the discipline and develop required computer programs. C7) Apply numerical modeling methods to engineering problems. C11) Exchange knowledge and skills with engineering community and industry.	C1.1) Apply Problem definition. C1.2) Merge knowledge of science, to solve engineering problems. C1.3) Use knowledge of information technology to solve engineering problems. C2.1). Merge the engineering knowledge to improve design. C2.2). Consolidate the engineering understanding to improve products. C2.3). Combine the engineering feedback to improve services C3.1). Create a process, component and system. C3.2). Perform specialized engineering designs. C4.1). Develop the design in a neatness way. C4.2). Prepare the approaches in a style and fineness method. C5.1). Apply computational facilities and techniques, to design experiments. C5.2). Use measuring instruments to analyze and interpret results. C5.3). Select workshops and laboratory equipment to collect results. C6.1). Utilize a wide range of analytical tools and techniques to investigate computer programs. C6.2). Prepare a verity range of equipment, and software packages to develop computer programs.

D. General Skills	D1) Collaborate effectively within multidisciplinary team. D2). Work in stressful environment and within constraints. D3). Communicate effectively. D4). Demonstrate efficient IT capabilities. D5). Lead and motivate individuals.	D1.1) Work as an individual. D1.2) Work as a member team. D1.3) Work as a leader. D2.1) Work under pressure environment D2.2) Work within constraints D3.1). How can you communicate with others in an effective way. D3.2). How can you communicate with team leader in appropriate way. D4.1). Understand IT ability. D4.2). Develop IT efficiency. D5.1) Work as an individual. D5.2) Work as a member team. D5.3) Work as a leader.

4. Course Contents

Syllabus: The aim of the project is to give students a major design experience that will both develop and demonstrate the knowledge and skills acquired in earlier course work and will incorporate engineering standards and realistic constraints including economic, environmental, sustainability, manufacturability, ethical and safety considerations. In addition, the project should represent an actual problem or need of the industry or the community. The purpose of Part 1 of the Graduation Project is to explore a chosen topic and to discover and define the project problem. After initial introductory lectures, students will perform research work to explore different approaches to the problem at hand. Based on this research study, students will perform system level analysis to explore specifications. The output of Project 1 is a major report outlining the project feasibility results and laying the ground for the detailed design and implementation phase to be conducted in Project 2. This document should include a detailed project plan indicating major project implementation milestone with clear assignment of tasks among project team members.

يهدف المشروع الي اكساب الطلبة خبرة العمل بتصميم كبير يظهر قدراتهم ومهارتهم التي اكتسبوها في المواد التي سبق لهم دراستها وينميها في نفس الوقت. كما يهدف المشروع الي تطبيق المعايير الهندسية وادخال القيود الواقعية في الاعتبار سواء كانت قيودا اقتصادية, بيئية, تصنيعية, اخلاقية او قيود تتعلق بالأمان. بالإضافة الي ذلك يجب ان يتعامل المشروع مع مشكلة واقعية او احتياج حقيقي للصناعة والمجتمع .
يهدف الجزء الاول من المشروع الي استطلاع ودراسة الموضوع الذي تم اختياره من اجل تحديد وتوصيف المشكلة المراد حلها. يقوم الطلبة في هذا الجزء, بعد عدد من المحاضرات, بعمل بحث يستطلع الاساليب المختلفة لمعالجة المشكلة ثم يلي ذلك دراسة تحليلية تهدف الي استطلاع جدوي المشروع والوصول الي تصميم اولي علي مستوي النظام بالإضافة الي تركيبة ومواصفات النظام المقترح . ويكون المخرج الاساسي لمادة المشروع 1 تقريرا مفصلا يعرض دراسة جدوي المشروع ومهد للمرحلة القادمة والتي تشتمل علي التصميم المفصل وتنفيذ النظام المقترح ويجب ان يحوي هذا التقرير خطة مفصلة لتنفيذ المشروع توضح المراحل المختلفة وتوزيع الادوار علي فريق العمل من الطلبة

5. Teaching and Learning Methods

- Lectures
- Labs and workshops
- Research assignments

6. Teaching and Learning Methods for disable students
• Assign a portion of the office hours for those students. • Give them specific tasks and evaluate them in it. • Repeat the explanation of some of the course material and tutorials. • Assign a teaching assistance to follow up the performance of this group of students.

7. Student Assessment	
a. Assessment Methods	- Weekly following up. - Monthly assignments. - Presentations. ▪ - Final oral exam.
b. Assessment Schedule	▪ - Meeting and following up: Weekly ▪ presentation 1: Week no 3 ▪ presentation 2: Week no 6 ▪ presentation 3: Week no 10 ▪ presentation 4: Week no 13 ▪ Final – Oral examination: Week no 14
c. Weighting of Assessment	- Year work: 50 % - Oral examination: 50 % --- - Total 100 %

8. List of text books and references	
a. Course notes	▪ None
b. Text books	▪ None
c. Recommended books	▪ It depends on Project subject.
d. Periodicals, Web sites …etc	▪ It depends on Project subject.

Course contents - ILOs Matrix

Content Topics	Week	A- Knowledge & Understanding	B- Intellectual Skills	C- Professional and Practical Skills	D- General and Transferable Skills
Problem definition	1-4	A4, A11, A18,A21	B.4	C11, C22	D1,D3,D7,D9
Gathering literatures, and background survey	3	A4, A11, A18,A21	B.4	C11, C22	D1,D3,D7,D9
Analyze, design, modeling and programming	4-5	A4, A11, A21	B1,B2,B3, B11,B18	C1,C2,C3, C4,C5, C6,C7,C14	D2,D4,D6

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	A4, A11, A18,A21			
tutorials	A4, A11, A18	B1,B2,B3, B11,B18	C1,C2,C3, C4,C11,C12, C14,C22	D1,D3,D5, D7,D9
Labs		B4,B5,B6, B9,B10	C1,C2,C3, C4,C5, C6,C7,C11,C12, C14, C19, C20, C22,C23	
Research assignments		B1,B2,B3, B11,B18		D2,D4,D6, D8

Assessment Methods - ILOs Matrix

Assessment Methods	A- Knowledge & Understanding	B- Intellectual skills	C- Professional and practical skills	D- General and transferable skills
Weekly assignment		B1,B2,B3, B11,B18	C1,C2,C3, C4,C5,C6, C7,C11,C12, C14, C19, C20, C22,C23	
Reports and presentation		B1,B2,B3, B11,B18		D1,D3,D5, D7,D9
Quizzes	A4, A11, A18			D2,D4,D6, D8
Final exam	A4, A11, A18	B4,B5,B6, B9,B10	C1,C2,C3, C4,C5,C6, C7,C11,C12, C14,C22,C23	

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

Course Specification

1- Basic Information

Course Title	**Project Management**	
Course Code	IEN 425	
Academic Year	2022-2023	
Coordinator	Dr .Mohamed El-Khamry	
Teaching Staff	Dr .Mohamed El-Khamry	
Level	Level (4)	
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	Electronics Engineering and Electrical Communication	

2- Aim of the course

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

1. To teach student Project management
2. To equip students with methods of organizational structures
3. To acquire students a good idea to use assessing success, planning, and learning curves,
4. To teach students the concepts and applications of cost management, and risk management,
5. To provide students with the CPM analysis, and precedence network scheduling techniques

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 - Specialty	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	Project management overview, organizational structures و assessing success, Planning, learning curves, network scheduling techniques, CPM analysis, precedence networking, resource allocation and constraints, cost management, risk management, project performance measurement and control.

# Topic	Lecture	Tutorial/Practical	No of hours
Properties of electromagnetic waves	4	4	8
Maxwell's equations, Plane waves, Polarization	6	6	12
Propagation mechanisms: . reflection, transmission and refraction, scattering, diffraction	8	8	16

Antenna fundamentals and Propagation models	6	6	12
Antenna parameters, dipoles, arrays, loop antennas, helical antennas, patch antennas.	4	4	8
Total sum	28	28	56

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

c- Weighting of assessment	- Class tutorial and quizzes : 10 % - Mid-term examination: 20 % - Final – term examination: 70 % Total 100 %
10- List of text books and references:	
a- Course notes	There are lectures notes prepared in the form of a book authorized by the department.
b- Text books/ References	1- A Guide to the PROJECT MANAGEMENT BODY OF KNOWLEDGE (PMBOK® GUIDE) Sixth Edition 2- THE STANDARD FOR PROJECT MANAGEMENT
c- Periodicals, Web sites …etc.	https://classroom.google.com/c/NTUxNTAwMzEwODcx

11-Course ccontents – Course related program competencies

	Level A			Level B			
	A.1	**A.3**	**A.4**	**B.2**	**B.3**	**B.4**	**B.5**
Properties of electromagnetic waves	√	√	√	√			
Maxwell's equations, Plane waves, Polarization	√	√		√	√	√	√
Propagation mechanisms: reflection, transmission and refraction, scattering, diffraction		√	√			√	√
Antenna fundamentals	√	√	√		√		
Propagation models			√		√	√	√

12-Teaching and learning methods - Course related program competencies

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

Problem solving			√	√	√		
Brain storming				√	√	√	√
Projects				√	√	√	√
Self-learning							√
Research and Reporting						√	
Computer Simulation						√	√
Teamwork							

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

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

Dr. Mohammed Elkhamry

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

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

Course Specification

1- Basic Information

Course Title	مقدمة في المحاسبة	
Course Code	**HUM 121**	
Academic Year	2022-2023	
Coordinator	Dr. Gamal El-Anani	
Teaching Staff	Dr. Gamal El-Anani	
Level	Level (4)	
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	Basic Science	

2- Aim of the course

1. Learn the principles of accounting concept & objectives , acceptable principals of accounting
2. Learn the accounting branches , types of institutions – financial statemen
3. Learn the principles of balance sheet , income statement , ownership proprietary statement , cash flow statement
4. Learn double entry & analysis of financial position formula , debit & credit items financial position formula.

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	The scientific frame of accounting : accounting concept & objectives , acceptable principals of accounting , accounting branches , types of institutions – financial statement – balance sheet , income statement , ownership proprietary statement , cash flow statement – double entry & analysis of financial position formula , debit & credit items financial position formula – the accounting cycle , business documents , the journals, the ledgers commercial documents according to the Egyptian laws , journalizing & recording the commercial transactions of the owner of the firm , commercial papers & documents different types of revenues & expenditure. Trail balance , trail balance concept & objectives , its balance & imbalance corrections in the imbalance cases . A brief presentations of accounting in she types of companies as partnership & corporation

# Topic	Lecture	Tutorial/Practical	No of hours
The scientific frame of accounting : accounting concept & objectives , acceptable principals of accounting , accounting branches , types of institutions	4	4	8
financial statement – balance sheet , income statement , ownership proprietary statement , cash flow statement – double entry & analysis of financial position formula	6	6	12
debit & credit items financial position formula – the accounting cycle , business documents , the journals, the ledgers commercial documents according to the Egyptian laws , journalizing & recording the commercial transactions of the owner of the firm	8	8	16
commercial papers & documents different types of revenues & expenditure. Trail balance , trail balance concept & objectives , its balance & imbalance corrections in the imbalance cases	6	6	12

A brief presentations of accounting in she types of companies as partnership & corporation	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	Mohammed Sabry El Attar , Mansoura Hamed & Ahmed El sabagh , Principals of financial accounting , Cairo University
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 scientific frame of accounting : accounting concept & objectives , acceptable principals of accounting , accounting branches , types of institutions	√			
financial statement – balance sheet , income statement , ownership proprietary statement , cash flow statement – double entry & analysis of financial position formula	√	√		√
debit & credit items financial position formula – the accounting cycle , business documents , the journals, the ledgers commercial documents according to the Egyptian laws , journalizing & recording the commercial		√	√	

transactions of the owner of the firm				
commercial papers & documents different types of revenues & expenditure. Trail balance , trail balance concept & objectives , its balance & imbalance corrections in the imbalance cases	√	√	√	
A brief presentations of accounting in she types of companies as partnership & corporation			√	

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
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	**Monitoring & Quality Control Systems**	
Course Code	**IEN 427**	
Academic Year	2022-2023	
Coordinator	Dr/ aya salem	
Teaching Staff	Dr/ aya salem	
Level	Level (4)	
Semester	second Term	
Number of Weekly Contact Hours	Lecture	1
	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. *Learn history of quality, the dimensions of quality. Quality Control Concepts: quality assurance, total quality management.*
2. *Learn Control systems: objectives of control systems, quality systems, top management communicatingLearn the principles of multi-meter, the oscilloscope, signal generators.*
3. *Learn about Hazard Analysis: high - quality recommendations, commitment monitoring, follow up Systems, the base line of hazard analysis critical point (HACCP).*
4. *Demonstrate Sampling and Inspection: Sample size, sampling error, sampling designs and inspection, acceptance sampling plans. Quality Control Tools and Techniques: tools for creating new concepts, tools for organization and analysis of data, tools for determine and solving problems (Control Charts for Variables - Control Charts for Attributes - PRE - control - analysis - flow charts).*

5. *Understand International Standards Accreditation: Accreditation meaning, ISO requirements and recommendations, Audit program, Certification body. Analyzing Process Capability: Process capability indices, process performance* indices	
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:** Introduction: history of quality, the dimensions of quality. Quality Control Concepts: quality assurance, total quality management. Control systems: objectives of control systems, quality systems, top management communicating. Hazard Analysis: high - quality recommendations, commitment monitoring, follow up Systems, the base line of hazard analysis critical point (HACCP). Sampling and Inspection: Sample size, sampling error, sampling designs and inspection, acceptance sampling plans. Quality Control Tools and Techniques: tools for creating new concepts, tools for organization and analysis of data, tools for determine and solving problems (Control Charts for Variables - Control Charts for Attributes - PRE - control - analysis - flow charts). International Standards Accreditation: Accreditation meaning, ISO requirements and recommendations, Audit program, Certification body. Analyzing Process Capability: Process capability indices, process performance indices. المقدمة: تاريخ الجودة, ابعاد الجودة. مفاهيم مراقبة الجودة: توكيد الجودة, ادارة الجودة الشاملة. التحكم والمراقبة: اهداف نظم المراقبة, نظم الجودة, الادارة العليا وقنوات الاتصال. تحليل نظم توصيات الجودة العالية, المراقبة الدائمة, نظم المتابعة المتتالية, اساسيات تحليل الخطر :الخطر الضبط والتفتيش: حجم العينة, خطأ العينة, تصميم المعاينة والتفتيش, .) HACCP) والنقاط الهامة والقبول. تقنيات وادوات الضبط الاحصائى للجودة: ادوات خلق مفهوم جديد, ادوات خطط الفحص البيانات, ادوات حل المشاكل) خرائط التحكم للمتغيرات خرائط التحكم للخواص تنظيم وتحليل التأهيل للاعتماد الدولي: معني التأهيل, متطلبات الحصول علي شهادات – –)خرائط اخري الالتزامات المترتبة علي الشهادة. مقدرة العملية الصناعية: اهم المؤشرات ,الايزو, برامج التفتيش

	المستخدمة لتقدير المقدرة. .

# Topic	Lecture	Tutorial/Practical	No of hours
history of quality, the dimensions of quality. Quality Control Concepts: quality assurance, total quality management. Control systems: objectives of control systems, quality systems, top management communicating..	2	0	0
Hazard Analysis: high - quality recommendations, commitment monitoring, follow up Systems, the base line of hazard analysis critical point (HACCP)	2	0	0
Sampling and Inspection: Sample size, sampling error, sampling designs and inspection, acceptance sampling plans.	2	0	0
Quality Control Tools and Techniques: tools for creating new concepts, tools for organization and analysis of data, tools for determine and solving problems (Control Charts for Variables - Control Charts for Attributes - PRE - control - analysis - flow charts).	3	0	0
International Standards Accreditation: Accreditation meaning, ISO requirements and recommendations, Audit program, Certification body.	1	0	0
Analyzing Process Capability: Process capability indices,	2	0	0

process performance indices			
history of quality, the dimensions of quality. Quality Control Concepts: quality assurance, total quality management. Control systems: objectives of control systems, quality systems, top management communicating..	1	0	0
Hazard Analysis: high - quality recommendations, commitment monitoring, follow up Systems, the base line of hazard analysis critical point (HACCP)	1	0	0
Total sum	14	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	Besterfield, D., Quality Control, Prentice Hall, Englewood Cliffs NJ, USA, 6th. Ed., 2000.	
c- Periodicals, Web sites .....etc		

11-Course contents – Course related program competencies					
	Level A				
	A.5	**A.7**	**A.8**	**A.9**	**A.10**
4- Course Contents	√	√			
# Topic	√	√			
history of quality, the dimensions of quality. Quality Control Concepts: quality assurance, total quality management. Control systems: objectives of control systems, quality systems, top management communicating..		√	√		
Hazard Analysis: high - quality recommendations, commitment monitoring, follow up Systems, the base line of hazard analysis critical point (HACCP)		√	√		
Sampling and Inspection: Sample size, sampling error, sampling designs and inspection, acceptance sampling plans.			√	√	
Quality Control Tools and Techniques: tools for creating new concepts, tools for organization and analysis of data, tools for determine and solving problems (Control Charts for Variables - Control Charts for			√	√	

Attributes - PRE - control - analysis - flow charts).					
International Standards Accreditation: Accreditation meaning, ISO requirements and recommendations, Audit program, Certification body.				√	√

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