Course Specification

Course Code: ECE 3101 **Course Title: Communication System I**

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	ECE 3101			
Prerequisite	---			
Year/level	Third year / First Semester (1st Semester)			
Specialization	**Major**			
Prerequired Course	**----**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2	0	5

2. Course Aims

No.	Aim
1	Identify, formulate, and solve complex electric communications problems by applying electric engineering fundamentals, basic science, and mathematics. (AM1)
2	Use appropriate mathematical methods or IT tools for modelling and analysing electronic and communication systems. (AM5)

3. Learning Outcomes (LOs)

CLO.1	Identify, complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO.2	Formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO.28	Use appropriate mathematical methods or IT tools for modeling.
CLO.29	analyzing electronic and communication systems

4. Course Contents

Topics	Week
Analog Communication – Introduction. Parts of a Communication System, and Types of Signals.	1
Analog Communication – Modulation. What is Modulation, Need for Modulation, Advantages of Modulation, Types of Modulation, Continuous -wave Modulation "Amplitude / Angle Modulation", and Pulse Modulation.	2
Amplitude Modulation. Mathematical Expressions, Modulation Index, under -modulated wave, over-modulated wave, Bandwidth of AM Wave, Power Calculations of AM Wave, and Numerical problems.	3
AM Modulators. Square Law Modulator, Switching Modulator, amplitude sensitivity, and mathematical presentation.	4
AM Demodulators. Square Law Demodulator, and Envelope Detector, Demodulator.	5
Double Sideband Suppressed Carrier (DSBSC), Mathematical Expressions, Power Calculations of DSBSC Wave.	6
DSBSC Modulators, Balanced Modulator, Ring Modulator, and mathematical presentation.	7
DSBSC Demodulators, Coherent Detector Demodulators, and Costas Loop Demodulators.	8
Midterm Exam	9
Single Sideband Suppressed Carrier Modulators (SSBSC), Mathematical Expressions, and Bandwidth of SSBSC Wave. Power Calculations of SSBSC Wave. SSBSC Modulators.	10
Frequency discrimination method, and Phase discrimination method. SSBSC Demodulator, Coherent Detector Demodulator. Vestigial Side Band Suppressed Carrier (VSBSC) technique.	11
Angle Modulation, Frequency Modulation mathematical representation and derivation. Phase Modulation mathematical representation and derivation.	12
Phase Modulation/Demodulation, PLL, Power estimation. Frequency Modulation/Demodulation, Power estimation. Narrow/Wide FM.	13
Mixer and Phase locked loop, Automatic gain controller	14
What is Noise, Types of Noise, Effects of Noise, Signal-to-Noise Ratio (SNR), Figure of Merit. SNR Calculations of different communication systems.	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.1	√	√		√								
CLO.2	√	√		√								
CLO.28	√	√		√			√					√
CLO.29	√	√		√			√					√

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	√

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Written exam	CLO.1, CLO.2, CLO28
2	Quizzes and reports	CLO.1, CLO.2
3	Project applied on a practical field problem	CLO.28, CLO.29
4	Self-Learning	CLO.29
5	Simulations	CLO.28, CLO.29

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Attendance	Weekly
2	Sheets	Weekly
3	Quizzes	4 & 10
4	Mid-term Exam	9
5	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	**Weights%**	**Weights**	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets / Activities	%10	40	%10	10
	Attendance	%10		%10	10
	Quiz 1 / Quiz 2	%10		%10	10
	Mid-term exam	%10		%10	10
Final Exam		%60	60		60
Total		%100	100		100

8. List of References

[1] Haykin, "COMMUNICATION SYSTEMS", 4TH ED, 2006.
[2] Couch, "Digital and Analog Communication Systems", Seventh Edition ©2007.
[3] Sunil Bhooshan, "Fundamentals of Analogue and Digital Communication Systems", 2022

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Data show

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Analog Communication – Introduction. Parts of a Communication System, and Types of Signals.	1	CLO.1, CLO.2
2	Analog Communication – Modulation. What is Modulation, Need for Modulation, Advantages of Modulation, Types of Modulation, Continuous -wave Modulation "Amplitude / Angle Modulation", and Pulse Modulation.	1	CLO.1, CLO.2
3	Amplitude Modulation. Mathematical Expressions, Modulation Index, under -modulated wave, over-modulated wave, Bandwidth of AM Wave, Power Calculations of AM Wave, and Numerical problems.	1	CLO.1, CLO.2, CLO.29
4	AM Modulators. Square Law Modulator, Switching Modulator, amplitude sensitivity, and mathematical presentation.	1	CLO.1, CLO.2, CLO.29
5	AM Demodulators. Square Law Demodulator, and Envelope Detector, Demodulator.	1	CLO.1, CLO.2, CLO.29
6	Double Sideband Suppressed Carrier (DSBSC), Mathematical Expressions, Power Calculations of DSBSC Wave.	1	CLO.1, CLO.2, CLO.28, CLO.29
7	DSBSC Modulators, Balanced Modulator, Ring Modulator, and mathematical presentation.	1	CLO.1, CLO.2, CLO.29
8	DSBSC Demodulators, Coherent Detector Demodulators, and Costas Loop Demodulators.	1	CLO.1, CLO.2, CLO.29
9	Single Sideband Suppressed Carrier Modulators (SSBSC), Mathematical Expressions, and Bandwidth of SSBSC Wave. Power Calculations of SSBSC Wave. SSBSC Modulators.	1	CLO.1, CLO.2, CLO.28, CLO.29
10	Frequency discrimination method, and Phase discrimination method. SSBSC Demodulator, Coherent Detector Demodulator. Vestigial Side Band Suppressed Carrier (VSBSC) technique.	1	CLO.1, CLO.2, CLO.28, CLO.29
11	Angle Modulation, Frequency Modulation mathematical representation and derivation. Phase Modulation mathematical representation and derivation.	1	CLO.1, CLO.2
12	Phase Modulation/Demodulation, PLL, Power estimation. Frequency Modulation/Demodulation, Power estimation. Narrow/Wide FM.	1	CLO.1, CLO.2, CLO.29
13	Mixer and Phase locked loop, Automatic gain controller	1	CLO.1, CLO.2
14	What is Noise, Types of Noise, Effects of Noise, Signal-to-Noise Ratio (SNR), Figure of Merit. SNR Calculations of different communication systems.	1	CLO.1, CLO.2

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PL1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO.1	Identify, complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
		CLO.2	Formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
PL16	Use appropriate mathematical methods or IT tools for modeling and analyzing electronic and communication systems.	CLO.28	Use appropriate mathematical methods or IT tools for modeling
		CLO.29	analyzing electronic and communication systems

Title	Name	Signature
Course coordinator	**Dr. Osama Elmowafy**	
Program coordinator	**Associate Prof. Dr. Osama El-Ghandour**	
Head of Department	**Associate Prof. Dr. Osama El-Ghandour**	
Date of Approval	**3/9/2022**	

Course Specification

Course Code: ECE3102 **Course Title: Measurements and Electronics Testing(1)**

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	**ECE3102**			
Prerequisite	**-----**			
Year/level	Third year / First Semester (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	--	1	3

2. Course Aims

No.	Aim
1	Acquire the required skills to perform laboratory and field experiments and interpret their results (AM4)

3. Learning Outcomes (LOs)

CLO.31	Use the appropriate tools and equipment to measure system performance
CLO.32	analyze the system performance's results correctly

4. Course Contents

Topics	Week
Types of Oscillators	1
AM modulator	2
AM demodulators	3
FM modulator.	4
FM demodulator.	5
Encoder and Decoder Simulation for LBC	6
Encoder and decoder simulation for Cyclic Code	7
Double sideband suppressed carrier (DSB-SC)	8
Mid Term Exam.	9
Single sideband suppressed carrier (SSB-SC).	10
Types of Filters.	11
Analog-to-Digital converter (ADC).	12
Digital-to-Analog converter (DAC)	13
Vestigial sideband modulation (VSB)	14
Practical Exam	15
Final Exam	16

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.31	√	√	√	√	√	√	√				√	√
CLO.32		√	√	√	√	√	√					√

6. Teaching and Learning methods of Disabled Students

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

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Reports / Sheets	CLO.31, CLO.3
3	Oral/ Practical Exam	CLO.31, CLO.3
4	Final Exam	CLO.31, CLO.3

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports / Sheets	5,11,13
3	Quiz 1 / Quiz 2	------
4	Mid-term Exam	--

5	Oral/ Practical Exam	15
6	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	20%	20	20%	درجة البند
	Attendance				
	Quiz 1 / Quiz 2			------	
	Mid-term exam				
Practical / Oral	Practical Attendance	40%	40		
	Lab. Reports			20%	
	Lab. Activities / Projects			----	
	Final oral / practical exam			20%	
Final Exam				40%	
Total				100%	

8. List of References

[1] Communication Lab Kit experiment Book. [Experiment Manual]

9. Facilities required for teaching and learning

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

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Types of Oscillators	1	CLO.31, CLO.3
2	AM modulator	1	CLO.31, CLO.3
3	AM demodulators	1	CLO.31, CLO.3
4	FM modulator.	1	CLO.31, CLO.3
5	FM demodulator.	1	CLO.31, CLO.3
6	Encoder and Decoder Simulation for LBC	1	CLO.31, CLO.3
7	Encoder and decoder simulation for Cyclic Code	1	CLO.31, CLO.3
8	Double sideband suppressed carrier (DSB-SC)	1	CLO.31, CLO.3
9	Mid Term Exam.	1	
10	Single sideband suppressed carrier (SSB-SC).	1	CLO.31, CLO.3
11	Types of Filters.	1	CLO.31, CLO.3
12	Analog-to-Digital converter (ADC).	1	CLO.31, CLO.3
13	Digital-to-Analog converter (DAC)	1	CLO.31, CLO.3
14	Vestigial Side Band	1	CLO.31, CLO.3
15	Practical Exam		
16	Fianl Exam		

11. Matrix of Program Los with Course Los

Program Los		Course Los	
PL18	Use the appropriate tools and equipment to measure system performance and analyze the results correctly	CLO.31	Use the appropriate tools and equipment to measure system performance
		CLO.32	analyze the system performance's results correctly

Title	Name	Signature
Course coordinator	**Prof. Dr. Osama El-Ghandour**	
Program coordinator	**Assoc. Prof. Dr. Osama ELghandour**	

Head of Department	**Assoc. Prof. Dr. Osama ELghandour**	
Date of Approval		**3/09/2022**

برنامج هندسة الالكترونيات والاتصالات
المعهد العالي للهندسة والتكنولوجيا
بالتجمع الخامس

Course Specification

Course Code: ECE 3103 **Course Title: electronic Devices**

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	ECE3103			
Prerequisite	ECE1211			
Year/level	Third year / First Semester (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

2. Course Aims

No.	Aim
1	Identify Engineering fundamentals based on physical science. (AM1)

3. Learning Outcomes (LOs)

CLO.21	Model an electronic component for a specific application
CLO.22	Analyze an electronic system or component for a specific application;
CLO.8	Practice research techniques and methods of investigation as an inherent part of learning.

4. Course Contents

Topics	Week
Semiconductor physics: Semiconductor material and Energy band theory	1
Semiconductor physics: Electron motion and Generation and recombination	2
Highly doped diodes. Bipolar junction transistor	3
Electronics devices: Physics of Metal-Oxide-Semiconductor FET (MOSFET)	4
Electronics devices: Short Channel MOSFETs	5
Electronics devices: MESFET	6
Other semiconductor devices: TFET part 1	7
Other semiconductor devices: TFET part 2	8
Midterm Exam	9
Other semiconductor devices: FinFET part 1	10
Other semiconductor devices: FinFET part 2	11
Other semiconductor devices: OrganicFET	12
Other semiconductor devices: HEMT	13
Other semiconductor devices: Solar Cells	14
Practical Exams	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.21	√	√			√							
CLO.22	√	√			√							
CLO.8						√					√	

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional tutorials	√

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Written exam	CLO.21, CLO.22
2	Presentation	CLO.8
3	Assignments	CLO.21, CLO.22
4	Researches	CLO.8

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Sheets	Bi-weekly
3	Presentation	15
4	Mid-term Exam	9
5	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	sheets	40%	40	5%	5
	Attendance			5%	5
	Presentation			10%	10
	Mid-term exam			20%	20
Final Exam		60%	60		60
Total			100		100

8. List of References

[1] Edward Yang, Microelectronic Devices, 1988
[2] Colinge, FinFETs and Other Multi-Gate Transistors, 2008
[3] Sneh Saurabh, Fundamentals Of Tunnel Field-Effect Transistors, 2017
[4] D. Nirmal and J. Ajayan, Handbook for III-V High Electron Mobility Transistor Technologies, Taylor & Francis Group, 2019

9. Facilities required for teaching and learning

Lecture

White board

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Semiconductor physics: Semiconductor material and Energy band theory	1	CLO.21, CLO.22
2	Semiconductor physics: Electron motion and Generation and recombination	1	CLO.21, CLO.22
3	Highly doped diodes. Bipolar junction transistor	2	CLO.21, CLO.22
4	Electronics devices: Physics of Metal-Oxide-Semiconductor FET (MOSFET)	1,2	CLO.21, CLO.22
5	Electronics devices: Short Channel MOSFETs	1	CLO.21, CLO.22
6	Electronics devices: MESFET	2	CLO.21, CLO.22
7	Other semiconductor devices: TFET part 1	2	CLO.21, CLO.22
8	Other semiconductor devices: TFET part 2	2	CLO.21, CLO.22
9	Midterm Exam		
10	Other semiconductor devices: FinFET part 1	2	CLO.21, CLO.22
11	Other semiconductor devices: FinFET part 2	2	CLO.21, CLO.22
12	Other semiconductor devices: OrganicFET	2	CLO.21, CLO.22
13	Other semiconductor devices: HEMT	2	CLO.21, CLO.22
14	Other semiconductor devices: Solar Cells	2	CLO.21, CLO.22

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PL12	Design model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	CLO.21	Model an electronic component for a specific application
		CLO.22	Analyze an electronic system or component for a specific application;
PL5	Practice research techniques and methods of investigation as an inherent part of learning.	CLO.8	Practice research techniques and methods of investigation as an inherent part of learning.

Title	Name	Signature
Course coordinator	**Dr. Amira Nabil**	Amira Nabil

Program coordinator	**Assoc. Prof. Dr. Osama ELghandour**	
Head of Department	**Assoc. Prof. Dr. Osama ELghandour**	
Date of Approval	**3/09/2022**	

Course Specification

Course Code: ECE 3104 **Course Title: Digital Circuits**

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	ECE3104			
Prerequisite	-----			
Year/level	Third year / First Semester (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2	0	5

2. Course Aims

No.	Aim
1	Characterization and Implementing of digital Logics systems. (AM5)

3. Learning Outcomes (LOs)

CLO.22	Analyze an electronic/digital system for a specific application
CLO.20	Design an electronic/digital system for a specific application

4. Course Contents

Topics	Week
Introduction to Digital circuits: Voltage transfer Characteristics, Fan out, Power dissipation, Transient analysis, Delay and Logic families	1
Resistor transistor family (RTL)	2
Diode Logic Family (DTL)	3
Transistor-transistor logic family (TTL)	4
NMOS family: Inverter (static analysis)	5
NMOS family: Inverter (Dynamic analysis)	6
NMOS family: Logic gates	7
CMOS family: Inverter (static analysis)	8
Midterm Exam	9
CMOS family: Inverter (Dynamic analysis)	10
CMOS family: Logic gates	11
Combinational circuits: Design	12
Sequential Circuits: Design (1)	13
Sequential Circuits: Design (2)	14
Practical Exams	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.22	√	√			√							
CLO.20	√	√			√							

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional tutorials	√

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Written exam	CLO.22, CLO.20
2	Assignments	CLO.22, CLO.20

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Sheets	Bi-weekly
3	Mid-term Exam	9

4	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	sheets	40%	40	15%	5
	Attendance			5%	5
	Mid-term exam			20%	20
Final Exam		60%	60		60
Total			100		100

8. List of References

[1] Johan Ayers, Digital Integrated Circuits: analysis and design, 2003
[2] Ayers, John E. Digital integrated circuits: analysis and design. CRC Press, 2018.

9. Facilities required for teaching and learning

Lecture

White board

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Introduction to Digital circuits: Voltage transfer Characteristics, Fan out, Power dissipation, Transient analysis, Delay and Logic families	1	CLO.22
2	Resistor transistor family (RTL)	1	CLO.22
3	Diode Logic Family (DTL)	1	CLO.22
4	Transistor-transistor logic family (TTL)	1	CLO.22
5	NMOS family: Inverter (static analysis)	1	CLO.22
6	NMOS family: Inverter (Dynamic analysis)	1	CLO.22
7	NMOS family: Logic gates	2	CLO.20
8	CMOS family: Inverter (static analysis)	1	CLO.22
9	Midterm Exam		
10	CMOS family: Inverter (Dynamic analysis)	1	CLO.22
11	CMOS family: Logic gates	2	CLO.20

12	Combinational circuits: Design	2	CLO.20
13	Sequential Circuits: Design (1)	2	CLO.20
14	Sequential Circuits: Design (2)	2	CLO.20

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PL12	Design model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	CLO.22	Analyze an electronic/digital system for a specific application
		CLO.20	Design an electronic/digital system for a specific application

Title	Name	Signature
Course coordinator	**Dr. Amira Nabil**	Amira Nabil
Program coordinator	**Assoc. Prof. Dr. Osama ELghandour**	
Head of Department	**Assoc. Prof. Dr. Osama ELghandour**	
Date of Approval	**3/09/2022**	

برنامج هندسة الالكترونيات والاتصالات
المعهد العالي للهندسة والتكنولوجيا
بالتجمع الخامس

`

Course Specification

Course Code: ECE 3105 **Course Title: Electromagnetic Waves**

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	**ECE 3105**			
Perquisite	**------**			
Year/level	third year / First Semester (1st Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

2. Course Aims

No.	Aim
1	Identify, analyze, and solve practical problems, making use of appropriate engineering tools, programs and techniques. (AM3)

3. Course Learning Outcomes (LOs)

CLO1	Identify, complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO2	Formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO.3	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
CLO.25	Estimate the performance of an electrical/electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.
CLO.26	Measure the performance of an electrical system and circuit under specific input excitation and evaluate its suitability for a specific application

4. Course Contents

Topics	Week
Introduction to Electromagnetics waves	1
Transverse Elecromagantiec waves along a parallel palte Transmission line	2
General Transmission Line Equations	3
Tl as circuit Elements	4
Analytical method of TL solution	5
Transient on TL	6
Pulse Excition on TL	7
The Smith Chart	8
Mid Term Exam	9
Trasnsmssion Impdence Matching	10
General wave behaviours	11
Parallel plate WaveGuide	12
Rectangular Waveguide	13
Circular Waveguide	14
Practical exam	15
Final exam	16

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.1	√	√										
CLO.2	√	√			√					√	√	
CLO.3	√	√				√						
CLO.25	√	√									√	√
CLO.26	√	√									√	√

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional tutorials	√

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	CLOS
1	Written exam	CLO.1, CLO.2,CLO.3, CLO.25,CLO.26
2	Assignments	CLO.1, CLO.2,CLO.3, CLO.25,CLO.26

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Sheets	Bi-weekly
3	Quizzes	5&11
4	Mid-term Exam	9
6	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Attendance	40%	40	5%	5
	Quizzes			5%	5
	Mid-term exam			20%	20
	sheets			10%	10
Final Exam		60%	60	60%	60
Total				100%	100

8. List of References

[1] D. M. Pozar; Microwave Engineering, 3rd Ed.; John Wiley & Sons Inc.
[2] Lehpamer, H; Microwave Transmission Network; McGraw-Hill Professional,2010
[3] Cameron, Richard J and Kudsia, Chandra M and Mansour; Microwave filters for communication systems; John Wiley \& Sons
[4] Merill Skolnik; Introduction to Radar Systems, 3rd Edition; Tata McGraw Hill
[5] East, Peter W; Microwave System Design Tools and EW Applications; Artech

`

House;2008
[6] Saber. M. Aly, Electromagnatic Waves Engineering, 2015.
[7]Micheal steer, Microwave and RF Design Transmission Lines, NC State University,2019

9. Facilities required for teaching and learning

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

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	CLO's
1	Introduction to Electromagnetics waves	2	CLO.1, CLO.3, CLO.2
2	Transverse Elecromagantiec waves along a parallel palte Transmission line	2,1	CLO.1, CLO.3, CLO.2
3	General Transmission Line Equations	2	CLO.1, CLO.3, CLO.2
4	Tl as circuit Elements	2,1	CLO.1, CLO.3, CLO.2
5	Analytical method of TL solution	2	CLO.25, CLO.26 ,CLO.1, CLO.3, CLO.2
6	Transient on TL	1	CLO.1, CLO.3
7	Pulse Excition on TL	1	CLO.3, CLO.2
8	The Smith Chart	1	CLO.1, CLO.3
9	Mid Term Exam	2,1	CLO.26, CLO.25 ,CLO.1, CLO.3, CLO.2
10	Trasnsmssion Impdence Matching	1	CLO.1, CLO.3, CLO.2
11	General wave behaviours	1	CLO.1, CLO.3, CLO.2
12	Parallel plate WaveGuide	1	CLO.25, CLO.26, CLO.1, CLO.3,
13	Rectangular Waveguide	1	CLO.1, CLO.3,CLO.25, CLO.26
14	Circular Waveguide		CLO.1, CLO.3,CLO.2
15	Practical exam		
16	Final exam		CLO.25, CLO.26 ,CLO.1, CLO.3, CLO.2

`

11. Matrix of Program LOs with Course Los

Program Los		Course Los	
PL.1 .	Identify, formulate , solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics	CLO1	Identify, complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
		CLO2	Formulate complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
		CLO3	Solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.
PL14	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.	CL.25	Estimate the performance of an electrical/electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.
		CL.26	Measure the performance of an electrical/electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.

Title	Name	Signature
Course coordinator	**Dr. Ahmed Fawzy**	
Program coordinator	**Assoc. Prof. Dr. Osama ELghandour**	
Head of Department	**Prof. Dr. Osama.ElGhandour**	
Date of Approval	**3/09/2022**	

برنامج هندسة الالكترونيات والاتصالات
المعهد العالي للهندسة والتكنولوجيا
بالتجمع الخامس

Course Specification

Course Code: HUM 3105 **Course Title:** Management and Marketing

1. Basic information

Program Title	Electronic and communication Engineering Department			
Department offering the program	Electronic and communication Engineering Department			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	HUM 3101			
prerequisites	None			
Year/level	Forth year / first Semester (5^{th}level)			
Specialization	**Minor**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	1	0	3

2. Course Aims

No.	Aim
1	Adapt successfully to changing technologies, techniques, and skills to recognize the concepts, principles, problems, and applications of marketing and management. (AM6)

3. Learning Outcomes (LOs)	
CLO1	Identify environmental factors that affect both global and domestic marketing decisions.
CLO3	Analyze the importance of social responsibility and ethics on marketing.
CLO14	Use creativity to Explain the concepts of the marketing mix in the development of marketing strategy and tactics.

4- course contents

Topics	Week
An Overview of Marketing.	1
Strategic Planning for Competitive Advantage	2
Social Responsibility, Ethics, and the Marketing Environment.	3
Social Responsibility, Ethics, and the Marketing Environment.	4
Developing a Global Vision.	5
Consumer Decision Making.	6
Business Marketing.	7
Segmenting and Targeting Markets.	8
Mid Term Exam	9
Product Concepts.	10
Services and Non-profit Organization Marketing.	11
Marketing Channels and Supply Chain Management.	12
Advertising and Public Relations.	13
Sales Promotion and Personal Selling.	14
Pricing Concepts.	15

5-Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO1	√	√									√	
CLO3	√	√			√	√		√			√	
CLO14	√	√			√	√		√			√	

6. Teaching and Learning methods of Disabled Students

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

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	------
2	Reports	CLO3,CLO14
3	Quizzes	------
4	Mid-term Exam	-------
5	Final Exam	CLO1,CLO3,CLO14

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Attendance	Weekly
2	Reports	Bi-weekly
3	Quizzes	-
4	Mid-term Exam	9
5	Final Exam	16

7.3 Weighting of Assessments			
	Assessment Method	**Weights%**	**Weights**
Teacher Opinion	Reports	30%	30
	Attendance	10%	10
	Quizzes	-	-
	Mid-term exam	0%	0
Final Exam		60%	60
Total		100%	100

8. List of References

1. Course notes.
2. Essential books (text books) - Lamb, Hair and McDaniel, MKTG, South-Western Publishing U.S.A. 2009.
3. Recommended books. - Kotler, Philip, Kevin Lane Keller, Marketing management, Prentice hall, Europe,4th edition,(2019).
4. Periodicals, Web sites, etc http://marketing.about.com http://www.slideshare.net http://www.knowthis.com http://www.studymarketing.org Course Prof:Dr: - Kotler, Philip , Kevin Lane Keller ,Marketing management, Prentice hall, Europe,2008.

9. Facilities required for teaching and learning

Lecture/Classroom
White board

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

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	An Overview of Marketing.	1	CLO1
2	Strategic Planning for Competitive Advantage	1	CLO1,CLO3,CLO14
3	Social Responsibility, Ethics, and the Marketing Environment.	1	CLO1,CLO3,CLO14
4	Social Responsibility, Ethics, and the Marketing Environment.	1	CLO1,CLO3,CLO14
5	Developing a Global Vision.	1	CLO1,CLO3,CLO14
6	Consumer Decision Making.	1	CLO1,CLO3,CLO14
7	Business Marketing.	1	CLO1,CLO3,CLO14
8	Segmenting and Targeting Markets.	1	CLO1,CLO3,CLO14
10	Product Concepts.	1	CLO1,CLO3,CLO14
11	Services and Non-profit Organization Marketing.	1	CLO1,CLO3,CLO14
12	Marketing Channels and Supply Chain Management.	1	CLO1,CLO3,CLO14
13	Advertising and Public Relations.	1	CLO1,CLO3,CLO14
14	Sales Promotion and Personal Selling.	1	CLO1,CLO3,CLO14
15	Pricing Concepts.	1	CLO1,CLO3,CLO14

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL1	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	CLO1	Identify environmental factors that affect both global and domestic marketing decisions.
		CLO3	Analyze the importance of social responsibility and ethics on marketing.
PL9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO14	Use creativity to Explain the concepts of the marketing mix in the development of marketing strategy and tactics.

Title	Name	Signature
Course coordinator	**Dr. Ahmed Abdelbary**	
Program coordinator	**Ass.Prof. Dr. Osama Elgandour**	
Head of Department	**Ass.Prof. Dr. Osama Elgandour**	
Date of Approval	**3/9/2022**	

برنامج هندسة الالكترونيات والاتصالات
المعهد العالي للهندسة والتكنولوجيا
- بالتجمع الخامس

Course Specification

Course Code: ECE 3201 **Course Title: Communication System II**

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	ECE 3201			
Prerequisite	ECE 3101			
Year/level	Third year / Second Semester (2st Semester)			
Specialization	**Major**			
Prerequired Course	ECE 3101			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2	0	5

2. Course Aims

No.	Aim
1	Identify, formulate, and solve complex electric communications problems by applying electric engineering fundamentals, basic science, and mathematics. (AM1)
2	Use appropriate mathematical methods or IT tools for modelling and analysing electronic and communication systems. (AM5)

3. Learning Outcomes (LOs)

CLO.20	Design, an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.
CLO.21	Model an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.
CLO.28	Use appropriate mathematical methods or IT tools for modeling

4. Course Contents

Topics	Week
Analog to Digital, Necessity of Digitization, and Types of Signals.	1
Elements of Digital Communication, Input/output Transducer, source Encoder, channel Encoder, Digital Modulator, source Decoder, channel decoder, and Digital Demodulator.	2
Basic Elements of Pulse code modulation PCM, Encoding, and reconstruction.	3
Sampling process, and its different types. Sampling rate, and Nyquist rate. Sampling Theorem.	4
Quantization process, and quantization error. COMPANDING techniques.	5
Differential Pulse code modulation (DPCM). DPCM Transmitter, Delta Modulation/ Demodulation, and Adaptive Delta modulation/ demodulation.	6
Multiplexing systems. Frequency division multiplexing, Time division multiplexing, and Quadratic-carrier modulation/multiplexing.	7
Pulse width modulation signal generation, and PWMS Demodulation.	8
Midterm Exam	9
Pipeline Photography black and white screens.	10
Transmitter and receivers for the black and white TV and its circuits.	11
Black and white TV Screen, Color TV screen and signals.	12
Encoders colored television systems (PAL \ SECAM\NTSC).	13
Transmitter and receivers for the colored TV.	14
High-Definition TV, Data compression, and transmit ion.	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.1	√	√		√								
CLO.2	√	√		√								
CLO.28	√	√		√			√					√

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	√

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Written exam	CLO.20, CLO.21
2	Quizzes and reports	CLO.20, CLO.21
5	Project applied on a practical field problem	CL.20, CL.21, CLO.28
9	Self-Learning	CLO.28

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Attendance	Weekly
2	Reports / Sheets	Bi-weekly
3	Quizzes	4 & 10
4	Mid-term Exam	9
5	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	**Weights%**	**Weights**	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets / Activities	%10	40	%10	10
	Attendance	%10		%10	10
	Quiz 1 / Quiz 2	%10		%10	10
	Mid-term exam	%10		%10	10
Final Exam		%60	60		60
Total		%100	100		100

8. List of References

[1] Haykin, "COMMUNICATION SYSTEMS", 4TH ED, 2006.
[2] Couch, "Digital and Analog Communication Systems", Seventh Edition ©2007.
[3] Kennedy & Davis, "Electronic Communication System", 4th Edition 1992.
[4] Sunil Bhooshan, "Fundamentals of Analogue and Digital Communication Systems", 2022

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Data show

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Analog to Digital, Necessity of Digitization, and Types of Signals.	1	CLO.20, CLO.21
2	Elements of Digital Communication, Input/output Transducer, source Encoder, channel Encoder, Digital Modulator, source Decoder, channel decoder, and Digital Demodulator.	1	CLO.20, CLO.21
3	Basic Elements of Pulse code modulation PCM, Encoding, and reconstruction.	1	CLO.20, CLO.21
4	Sampling process, and its different types. Sampling rate, and Nyquist rate. Sampling Theorem.	1	CLO.20, CLO.21
5	Quantization process, and quantization error. COMPANDING techniques.	1	CLO.20, CLO.21
6	Differential Pulse code modulation (DPCM). DPCM Transmitter, Delta Modulation/ Demodulation, and Adaptive Delta modulation/ demodulation.	1	CLO.20, CLO.21, CLO.28
7	Multiplexing systems. Frequency division multiplexing, Time division multiplexing, and Quadratic-carrier modulation/multiplexing.	1	CLO.20, CLO.21
8	Pulse width modulation signal generation, and PWMS Demodulation.	1	CLO.20, CLO.21
9	Pipeline Photography black and white screens.	1	CLO.20, CLO.21
10	Transmitter and receivers for the black and white TV and its circuits.	1	CLO.20, CLO.21
11	Black and white TV Screen, Color TV screen and signals.	1	CLO.20, CLO.21
12	Encoders colored television systems (PAL \ SECAM\NTSC).	1	CLO.20, CLO.21
13	Transmitter and receivers for the colored TV.	1	CLO.20, CLO.21
14	High-Definition TV, Data compression, and transmit ion.	1	CLO.20, CLO.21

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PL.12	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics.	CLO.20	Design, an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.
		CLO.21	Model an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.

PL.16	Use appropriate mathematical methods or IT tools for modeling and analyzing electronic and communication systems.	CLO.28	Use appropriate mathematical methods or IT tools for modeling

Title	Name	Signature
Course coordinator	**Dr. Osama Elmowafy**	Osama Elmowafy
program coordinator	**Associate Prof. Dr. Osama El-Ghandour**	
Head of Department	**Associate Prof. Dr. Osama El-Ghandour**	
Date of Approval	**3/9/2022**	

برنامج هندسة الالكترونيات والاتصالات
المعهد العالي للهندسة والتكنولوجيا
بالتجمع الخامس

Course Specification

Course Code: ECE 3202 **Course Title: Measurements and Electronics Testing(2)**

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	ECE 3202			
prerequisite	----			
Year/level	Third year / Second Semester (2^{nd} Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	1	1	4

2. Course Aims

No.	Aim
1	Acquire the required skills to perform laboratory and field experiments and interpret their results (AM4)

3. Learning Outcomes (LOs)

CLO.31	Use the appropriate tools and equipment to measure system performance
CLO.32	analyze the system performance's results correctly

4. Course Contents

Topics	Week
BJT characteristic behavior	1
OP-AMP applications (inverters)	2
OP-AMP applications (non inverters)	3
. OP-AMP applications(subtraction)	4
OP-AMP applications(Adder)	5
Logic Family	6
J-FET characteristics behavior	7
MOS-FET Characteristics	8
Mid Term Exam.	9
Filters characteristics (LPF)	10
Filters characteristics (HPF)	11
OP-AMP applications (integration)	12
OP-AMP applications (differential)	13
Problem solving	14
Practical Exam	15
Final Exam	16

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.31	√	√	√	√	√	√	√				√	√
CLO.32		√	√	√	√	√	√					√

6. Teaching and Learning methods of Disabled Students

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

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Reports / Sheets	CLO.31, CLO.3
3	Oral/ Practical Exam	CLO.31, CLO.3
4	Final Exam	CLO.31, CLO.3

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports / Sheets	5,11,13
3	Quiz 1 / Quiz 2	------
4	Mid-term Exam	

5	Oral/ Practical Exam	15
6	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	10	10%	10%	10
Practical / Oral	Practical Attendance	50%	50%		
	Lab. Reports			10%	
	Lab. Activities / Projects			20%	
	Final oral / practical exam			20%	
Final Exam				40%	
Total				100%	

8. List of References

[1] Communication Lab Kit experiment Book.

9. Facilities required for teaching and learning

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

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	BJT characteristic behavior	1	CLO.31, CLO.3
2	OP-AMP applications (inverter s)	1	CLO.31, CLO.3

3	OP-AMP applications (non inverters)	1	CLO.31, CLO.3
4	. OP-AMP applications(subtraction)	1	CLO.31, CLO.3
5	OP-AMP applications(Adder)	1	CLO.31, CLO.3
6	Logic Family	1	CLO.31, CLO.3
7	J-FET characteristics behavior	1	CLO.31, CLO.3
8	MOS-FET Characteristics	1	CLO.31, CLO.3
9	Mid Term Exam.	1	
10	Filters characteristics (LPF)	1	CLO.31, CLO.3
11	Filters characteristics (HPF)	1	CLO.31, CLO.3
12	OP-AMP applications (integration)	1	CLO.31, CLO.3
13	OP-AMP applications (differential)	1	CLO.31, CLO.3
14	Problem solving	1	CLO.31, CLO.3
15	**Practical Exam**		
16	**Final Exam**		

11. Matrix of Program Los with Course Los

Program Los		Course Los	
PL18	Use the appropriate tools and equipment to measure system performance and analyze the results correctly	CLO.31	Use the appropriate tools and equipment to measure system performance
		CLO.32	analyze the system performance's results correctly

Title	Name	Signature
Course coordinator	**Prof. Dr. Osama El-Ghandour**	
Program coordinator	**Assoc. Prof. Dr. Osama ELghandour**	
Head of Department	**Assoc. Prof. Dr. Osama ELghandour**	
Date of Approval		**3/09/2022**

برنامج هندسة الالكترونيات والاتصالات
المعهد العالي للهندسة والتكنولوجيا
بالتجمع الخامس

Course Specification

Course Code: ECE 3203 **Course Title: Opto-Electronics**

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	ECE 3203			
Prerequisite	ECE 1211			
Year/level	Third year / Second Semester (2nd Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

2. Course Aims

No.	Aim
1	Dealing and characterization of electronic circuits. (AM5)

3. Learning Outcomes (LOs)

CLO.8	Explain the concept of optoelectronics with discussing its theories and applications
CLO.12	How to steer a circuit? Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams.

4. Course Contents

Topics	Week
Introduction to Optoelectronics.	1
Properties of Light.	2
Wave matter interaction.	3
Einstein Coefficient prove.	4
Light Amplification for Stimulated Emission (LASER)	5
Fabri Perot Resonator	6
Optical Cavity	7
Comb Drive Actuator.	8
Midterm Exam.	9
External Cavity Tunable Laser.	10
Differential and Multistage Amplifiers.	11
Building Blocks of Integrated Circuit Amplifiers.	12
Drive Circuit Project.	13
Project discussion.	14
Discussing, presenting and test the project.	15
Final Exam.	16

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.8	√		√	√						√		
CLO.12		√				√	√				√	

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional tutorials	√

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Written exam	CLO.8, CLO.12
2	Assignments	CLO.8, CLO.12

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports / Sheets	Bi-weekly
3	Quiz	4 & 10
4	Mid-term Exam	9
5	Oral/ Practical Exam	15
6	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	35%	35	5%	5
	Attendance			5%	5
	Quiz			5%	5
	Mid-term exam			20%	20
Practical / Oral	Practical Attendance	5%	5		
	Lab. Reports				
	Lab. Activities / Projects			5%	5
	Final oral / practical exam				
Final Exam				60%	60
Total				100%	100

8. List of References

[1] S. O. Kasap, "Optoelectronics and Photonics: Principles and Practices," SECOND EDITION, 2013
[2] Sedra/Smith Microelectronic Circuits, Seventh Edition, Adel S. Sedra university of Waterloo, Kenneth C. Smith university of Toronto, 2015
[3] Kumar, "Principles Of Optical Communications & Opto Electronics", SECOND EDITION, 2007.
[4] Yeh, "Photonics Optical Electronics in Modern Communications", SIXTH EDITION, 2007.

9. Facilities required for teaching and learning

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

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Introduction to Optoelectronics.	1	CLO.8
2	Properties of Light.	1	CLO.8
3	Wave matter interaction.	1	CLO.8
4	Einstein Coefficient prove.	1	CLO.8
5	Light Amplification for Stimulated Emission (LASER)	1	CLO.8
6	Fabri Perot Resonator	1	CLO.8
7	Optical Cavity	1	CLO.8
8	Comb Drive Actuator.	1	CLO.8
9	External Cavity Tunable Laser.	1	CLO.8
10	Differential and Multistage Amplifiers.	1	CLO.8
11	Building Blocks of Integrated Circuit Amplifiers.	1	CLO.12
12	Drive Circuit Project.	1	CLO.12
13	Project discussion.	1	CLO.12
14	Discussing, presenting and test the project.	1	CLO.12

11. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PL7	Practice research techniques and methods of investigation as an inherent part of learning.	CLO.8	Explain the concept of optoelectronics with discussing its theories and applications.
PL5	Function efficiently as an individual and as a member of multi-disciplinary and multi-cultural teams.	CLO.12	How to steer a circuit? Function efficiently as an individual and as a member of multi-disciplinary and multi- cultural teams.

Title	Name	Signature
Course coordinator	**Dr. Ahmed Fawzy**	
Program coordinator	**Assoc. Prof. Dr. Osama ELghandour**	
Head of Department	**Prof. Dr. Osama El-Ghandour**	
Date of Approval	**3/09/2022**	

Course Specification

Course Code: ECE 3204 **Course Title: Electronic Circuit (2)**

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	ECE3204			
Prerequisite	ECE2111			
Year/level	Third year / Second Semester (2^{nd} Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	4	2	0	6

2. Course Aims

No.	Aim
1	Analyse and solve electronic circuits based on specific application (AM3)

3. Learning Outcomes (LOs)

CLO.22	Analyze an electronic system
CLO.21	Model an electronic system for a specific application.

4. Course Contents

Topics	Week
Negative Feedback amplifiers Configurations, Feedback gain. input and output impedance	1
Negative Feedback amplifiers: Voltage-series Configuration, Voltage-shunt Configuration, examples	2
Negative Feedback amplifiers: Current-series Configuration, current-shunt Configuration, examples	3
Power amplifiers: Class A amplifiers	4
Power amplifiers: Class B amplifiers	5
Power amplifiers: Class C and D amplifiers	6
Oscillators: positive feedback basics, Wien bridge	7
Oscillators: Phase Shift oscillator, Colpits, Hartly	8
Midterm Exam	9
Power Supply:Parallel,Series	10
Power Supply:Feedback Full power supply	11
Frequency response of BJT amplifiers: Introduction and frequency response of C.E amplifier	12
Frequency response of BJT amplifiers: frequency response of C.C and C.B amplifiers.	13
Frequency response of MOSFET amplifiers	14
Practical Exams	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.22	√	√			√							
CLO.21	√	√			√							

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional tutorials	√

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Written exam	CLO.22, CLO.21
2	Quizzes	CLO.22, CLO.21
7	Assignments	CLO.22, CLO.21

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Sheets	Bi-weekly
3	Quiz 1 / Quiz 2/ Quiz 3/ Quiz 4	4 &7& 11& 12
4	Mid-term Exam	9
5	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Sheets	40%	40	5%	5
	Attendance			5%	5
	Quiz			10%	10
	Mid-term exam			20%	20
Final Exam		60%	60		60
Total			100		100

8. List of References

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

9. Facilities required for teaching and learning

Lecture

White board

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Negative Feedback amplifiers Configurations, Feedback gain. input and output impedance	1	CLO.22
2	Negative Feedback amplifiers: Voltage-series Configuration, Voltage-shunt Configuration, examples	1	CLO.22
3	Negative Feedback amplifiers: Current-series Configuration, current-shunt Configuration, examples	1	CLO.22
4	Power amplifiers: Class A amplifiers	1	CLO.21
5	Power amplifiers: Class B amplifiers	1	CLO.21
6	Power amplifiers: Class C and D amplifiers	1	CLO.21
7	Oscillators: positive feedback basics, Wien bridge	1	CLO.22
8	Oscillators: Phase Shift oscillator, Colpits, Hartly	1	CLO.22
9	Midterm Exam		
10	Power Supply:Parallel,Series	1	CLO.22
11	Power Supply:Feedback Full power supply	1	CLO.22
12	Frequency response of BJT amplifiers: Introduction and frequency response of C.E amplifier	1	CLO.22
13	Frequency response of BJT amplifiers: frequency response of C.C and C.B amplifiers.	1	CLO.22
14	Frequency response of MOSFET amplifiers	1	CLO.22

11. Matrix of Program LOs with Course Los

Program LOs		Course LOs	
PL12	Design model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	CLO.22	Analyze an electronic system
		CLO.21	Model an electronic system for a specific application.

Title	Name	Signature
Course coordinator	**Dr. Amira Nabil**	Amira Nabil
Program coordinator	**Assoc. Prof. Dr. Osama ELghandour**	
Head of Department	**Assoc. Prof. Dr. Osama ELghandour**	
Date of Approval	**3/09/2022**	

برنامج هندسة الالكترونيات والاتصالات
المعهد العالي للهندسة والتكنولوجيا
بالتجمع الخامس

Course Specification

Course Code: ECE 3261 **Course Title:** Microprocessors and Applications

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	ECE 3261			
Prerequisite	----			
Year/level	Fourth year / Second Semester (2^{nd} Semester)			
Specialization	**Major**			
Prerequired Course	**----**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	2	0	5

2. Course Aims

No.	Aim
1	Understand of design and implementation of optimum microprocessor /microcontroller circuit used for general control (AM3)
2	Use creative, innovative and flexible thinking for find solutions of robotics and machine controls. (AM3)

3. Learning Outcomes (LOs)

CLO.27	Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems and services.
CLO.30	Practice computer programs for the design and diagnostics of digital and analog communication, mobile communication, coding and decoding systems

4. Course Contents

Topics	Week
The Structure of Microprocessor and microcomputer.	1
Arduino boards types as examples of microcontroller.	2
Arduino programing pins assignments and functions.	3
Analog input and digital input/outputs pins.	4
Pull-down input and pull-up outputs concept and applications.	5
Arduino microcontroller instruction sets.	6
Arduino microcontroller instruction sets. ...continue.	7
Arduino - Data Types.	8
Midterm Exam	9
Arduino - Variable Scope.	10
Pulse width modulation pins control.	11
Different types of Loops.	12
If/ switch control code.	13
Servo motor control, Rs232 Communication.	14
Microcontroller communications protocols USAC, SPI.	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.27	√	√		√								
CLO.30	√	√		√								√

6. Teaching and Learning methods of Disabled Students

No.	Teaching Method	Reason
1	Additional Tutorials	√

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Written exam	CLO.27, CLO.30
2	Quizzes and reports	CLO.27, CLO.30
3	Project applied on a practical field problem	CLO.27, CLO.30

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports / Sheets	Bi-weekly
3	Quiz 1 / Quiz 2	4 & 10
4	Mid-term Exam	9
5	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	%10	40	%10	10
	Attendance	%10		%10	10
	Quiz 1 / Quiz 2	%10		%10	10
	Mid-term exam	%10		%10	10
Final Exam		%60	60		60
Total		%100	100		100

8. List of References

[1] Dhanapal, “Microprocessor & Its Applications”, 2010.
[2] Muhammad El.Saba, “Introduction To Microcontrollers & Embedded Systems” 2017.
[3] Giuliano Donzellini, “Introduction to Microprocessor-Based Systems Design”, 2022

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Data show

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	The Structure of Microprocessor and microcomputer.	1	CLO.27
2	Arduino boards types as examples of microcontroller.	1	CLO.27
3	Arduino programing pins assignments and functions.	1	CLO.27
4	Analog input and digital input/outputs pins.	1	CLO.27
5	Pull-down input and pull-up outputs concept and applications.	1	CLO.27
6	Arduino microcontroller instruction sets.	1	CLO.27
7	Arduino microcontroller instruction sets. ...continue.	1	CLO.27
8	Arduino - Data Types.	1	CLO.27
9	Arduino - Variable Scope.	1	CLO.27
10	Pulse width modulation pins control.	1	CLO27, CLO.30
11	Different types of Loops.	1	CLO.27
12	If/ switch control code.	1	CLO.27
13	Servo motor control, Rs232 Communication	1	CLO27, CLO.30
14	Microcontroller communications protocols USAC, SPI.	1	CLO27

11. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PLO.15	Understand of design and implementation of optimum microprocessor /microcontroller circuit used for general control	CLO.27	Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/ electronic/ digital equipment, systems and services.
PLO.17	Use creative, innovative and flexible thinking for find solutions of robotics and machine controls	CLO.30	Practice computer programs for the design and diagnostics of digital and analog communication, mobile communication, coding and decoding systems

Title	Name	Signature
Course coordinator	**Dr. Osama Elmowafy**	
Program coordinator	**Associate Prof. Dr. Osama El-Ghandour**	
Head of Department	**Associate Prof. Dr. Osama El-Ghandour**	
Date of Approval	**3/9/2022**	

Course Specification

Course Code: ECE3262 **Course Title: Digital signal processing**

1. Basic information

Program Title	Electronics and Communication Engineering Depart.			
Department offering the program	Electronics and Communication Engineering Depart.			
Department offering the course	Electronics and Communication Engineering Depart.			
Course Code	ECE 3262			
Prerequisites	----			
Year/level	Fourth year / Second Semester (2^{st} Semester)			
Specialization				
Teaching Hours	Lectures	Tutorial	Practical	Total
	3	1		4

2. Course Aims

No.	Aim
1	Understand Digital Filter Design, Adaptive Digital Filters, Speech Encoders, Image Processing (AM3).

3. Learning Outcomes (LOs)

CLO.20	Design, an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.
CLO.21	Model an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.

4. Course Contents

Topics	Week
Digital Filter Design	1
Microfilter Response	2
Infinite Impulse Response	3
Adaptive Digital Filters: Basic Concepts Algorithms	4
Adaptive Digital Filters: Applications	5
Adaptive Digital Filters: Applications	6
Speech Encoders: Speech Signal Analysis	7
Speech Encoders: Waveform Encoders	8
Midterm exam	9
Speech Encoders: Audio Encoders	10
Hybrid Encoders Image Processing: Image encoding	11
Hybrid Encoders Image Processing: Image decoding	12
Hybrid Encoders Image Processing: Image Enhancement	13
Hybrid Encoders Image Processing: Image Compression	14
Advanced Image Compression	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.20	√	√		√		√						
CLO.21	√	√		√		√						

6. Teaching and Learning methods of Disabled Students

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

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Written exam	CLO.20
2	Quizzes and reports	CLO.20, CLO.21
3	Oral exams	
4	Practical	
5	Project applied on a practical field problem	CLO.21
6	Presentation	
7	Assignments	CLO.20, CLO.21
8	Researches	CLO.20, CLO.21

9	Self-Learning	
10	Simulations	

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports / Sheets	Weekly
3	Quiz 1 / Quiz 2	
4	Mid-term Exam	9
5	Oral/ Practical Exam	
6	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	Weights%	Weights	Weights%	Weights
Teacher Opinion	Reports / sheets / Activities	40%	40	10%	10
	Attendance			10%	10
	Quizes			10%	10
	Mid-term exam			10%	10
Final Exam		60%	60		
Total		100	100		

8. Facilities required for teaching and learning

Lecture
White board
Data show

9. List of References

[1] Proakis, John G. *Digital signal processing: principles, algorithms, and applications, 5/E*. Pearson Education India, 2021.

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Digital Filter Design	1	CLO.20
2	Microfilter Response	1	CLO.20
3	Infinite Impulse Response	1	CLO.20, CLO.21
4	Adaptive Digital Filters: Basic Concepts Algorithms	1	CLO.20
5	Adaptive Digital Filters: Applications	1	CLO.20, CLO.21
6	Adaptive Digital Filters: Applications	1	CLO.20
8	Speech Encoders: Speech Signal Analysis	1	CLO.20, CLO.21
9	Speech Encoders: Waveform Encoders	1	CLO.20
10	Speech Encoders: Audio Encoders	1	CLO.20
11	Hybrid Encoders Image Processing: Image Coding	1	CLO.20
12	Hybrid Encoders Image Processing: Image Enhancement	1	CLO.20
13	Hybrid Encoders Image Processing: Image Compression	1	CLO.20
14	Image convolution filters	1	CLO.20

11. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PL.12	Design model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	CLO.20	Design, an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.
		CLO.21	Model an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.

Title	Name	Signature
Course coordinator		
Program coordinator	**Assoc. Prof. Dr. Osama ELghandour**	
Head of Department	**Assoc. Prof. Dr. Osama ELghandour**	
Date of Approval	**3/09/2022**	

Course Specification

Course Code: ECE 3263 Course Title: Specialized Elective course (1)

Electromagnetic Waves applications

1. Basic information

Program Title	Electronic and Communication Engineering			
Department offering the program	Electronic and Communication Engineering Depart.			
Department offering the course	Electronic and Communication Engineering Depart.			
Course Code	**ECE 3263**			
Prerequisite	--			
Year/level	Third year / second Semester (2^{nd} Semester)			
Specialization	**Major**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2	0	4

2. Course Aims

No.	Aim
1	Identify, analyze, and solve practical problems, making use of appropriate engineering tools, programs and techniques. (AM3)
2	Identify the latest components and electronic devices, and become familiar with the technology of implementing electronic systems using these electronic components. (AM5)

3. Learning Outcomes (LOs)

CLO.25	Estimate the performance of an electrical/electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.
CLO.26	Measure the performance of an electrical/electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.
CLO.31	Use the appropriate tools and equipment to measure system performance

4. Course Contents

Topics	Week
Equivalent circuits for wave guides	1
input circuits, description of circuits	2
dispersion coefficients	3
excitation of guides, linking guides by gaps	4
passive devices, attenuated ends	5
angle shifters, directed linkage	6
hybrid connections, resonance circuit theory	7
Fabry Pro and optical resonance	8
Mid Term Exam	9
micrometric and optical measurements	10
optical power detection	11
microwave detection and measurement	12
wavelength measurement, fiber coefficient measurement	13
Revision, Research Discussion	14
Practical exam	15

5. Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO.25	√	√				√	√					
CLO.26	√	√										
CLO.31			√				√					√

6. Teaching and Learning methods of Disabled Students

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

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	Los
1	Attendance	-------
2	Reports / Sheets	CLO.25, CLO.26, CLO.31
3	Quiz 1 / Quiz 2	CLO.25, CLO.26
4	Mid-term Exam	CLO.25, CLO.26
5	Oral/ Practical Exam	
6	Final Exam	CLO.25, CLO.26

7.2 Assessment Schedule		
No.	**Assessment Method**	**Weeks**
1	Attendance	Weekly
2	Reports / Sheets	Bi-weekly
3	Quiz 1 / Quiz 2	5&11
4	Mid-term Exam	9
5	Oral/ Practical Exam	15
6	Final Exam	16

7.3 Weighting of Assessments

	Assessment Method	**Weights%**	**Weights**	**Weights%**	**Weights**
Teacher Opinion	Attendance	30%	30	5%	5
	Quizes			5%	5
	Mid-term exam			20%	20
Practical / Oral	Final oral / practical exam	10%	10	10%	10
Final Exam		60%	60	60%	60
Total				100%	100

8. List of References

[1] Someda, Carlo G. *Electromagnetic waves*. Crc Press, 2017.

9. Facilities required for teaching and learning

Lecture/Classroom
White board
Data show
Laboratory Usage

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Introduction to signals	2	CLO.25, CLO.26,
2	input circuits, description of circuits	2,1	CLO.25, CLO.26,
3	dispersion coefficients	2	CLO.25, CLO.26,
4	excitation of guides, linking guides by gaps	2,1	CLO.25, CLO.26,
5	passive devices, attenuated ends	2	CLO.25, CLO.26,
6	angle shifters, directed linkage	1	CLO.25, CLO.26,
7	hybrid connections, resonance circuit theory	1	CLO.25, CLO.26,
8	Fabry Pro and optical resonance	1	CLO.25, CLO.26,
9	Mid Term Exam		
10	micrometric and optical measurements	1	CLO.25, CLO.26,
11	optical power detection	1	CLO.25, CLO.26,
12	microwave detection and measurement	1	CLO.25, CLO.26,
13	wavelength measurement, fiber coefficient measurement	1	CLO.25, CLO.26,
14	Revision, Research Discussion		CLO.25, CLO.26, CLO.31
15	Practical exam		
16	Final exam		

11. Matrix of Program LOs with Course Los

Program LOs		Course Los	
PL14	Estimate and measure the performance of an electrical/electronic/ and circuit under specific input excitation, and evaluate its suitability for a specific application.	CLO.25	Estimate the performance of an electrical/electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.
		CLO.26	Measure the performance of an electrical/electronic/digital system and circuit under specific input excitation and evaluate its suitability for a specific application.
PL18	Use the appropriate tools and equipment to measure system performance and analyze the results correctly	CLO.31	Use the appropriate tools and equipment to measure system performance

Title	Name	Signature
Course coordinator		
Program coordinator	**Assoc. Prof. Dr. Osama ELghandour**	
Head of Department	**Assoc. Prof. Dr. Osama.ElGhandour**	
Date of Approval	**3/09/2022**	

Course Specification

Course Code: HUM 3204 **Course Title:** Feasibility study and project management

1. Basic information

Program Title	Electronic and communication Engineering Department			
Department offering the program	Electronic and communication Engineering Department			
Department offering the course	Engineering Mathematics and Physics department			
Course Code	HUM xxo4			
Prerequisites	None			
Year/level	Third year / first Semester (4^{th} level)			
Specialization	**Minor**			
Teaching Hours	Lectures	Tutorial	Practical	Total
	2	2	0	4

2. Course Aims

No.	Aim
1	Identify the techniques, skills, and appropriate engineering tools, necessary for engineering practice and project management for feasibility study for engineering program.(AM6)

3. Learning Outcomes (LOs)

CLO4	Develop appropriate to analyze different types for planning projects and identify the productivity and types of costs.
CLO14	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to analyze the types of tenders and contracts to explain quality control and safety

4-Course contents

Topics	Week
Introduction to project management	1
Review of statistics	2
Probabilistic time estimate	3
Time crashing	4
Production cost	5
revision	6
Material requirement planning	7
Supply and demand theory	8
Cost concepts and design economics	10
Fore casting	11
Bonds	12
Financial decision making	13
Production management	14
revision	15

5-Teaching and Learning methods

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	Interactive lectures	Tutorials	Practical	Projects	Assignment	Research\reports	Self-Learning	Brain Storming	Modeling and simulations	Site Visits	Presentation	Discussion
CLO4	√	√			√			√				
CLO14	√	√			√			√				

6. Teaching and Learning methods of Disabled Students

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

7. Students' Assessment

7.1 Students' Assessment Method

No.	Assessment Method	LOs
1	Attendance	-------
2	Reports / Sheets	-------
3	Quizzes	-------
4	Mid-term Exam	Clo4
5	Final Exam	CLO4,CLO14

7.2 Assessment Schedule

No.	Assessment Method	Weeks
1	Attendance	Weekly
2	Reports / Sheets	----
3	Quizzes	-
4	Mid-term Exam	9
5	Final Exam	16

7.3 Weighting of Assessments			
	Assessment Method	**Weights%**	**Weights**
Teacher Opinion	Reports / sheets / Activities		
	Attendance	10%	10
	Quiz 1 / Quiz 2	0%	0
	Mid-term exam	30%	30
Final Exam		60%	60
Total		100%	100

8. List of References

1. Krishnamurthy & Ravindra, (2017), Construction And Project Management, Second edition (PB 2017).
[2] Gould, Frederick E., and Nancy Nancy Eleanor Joyce, (2003), Construction Project Management, publisher: Pearson Prentice Hall, Third edition.https://lccn.loc.gov/2008007792/
[3] NUNNALLY and Stephens, (2007). Construction Methods and Management, publisher: Prentice Hall, eighth edition. https://lccn.loc.gov/00039179/
[4] Keith Potts and Ankrah Nii (2014). Construction cost management: learning from case studies. Routledge, 2014

9. Facilities required for teaching and learning

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

10. Matrix of Course Content with Course LO's

No.	Topics	Aim	LO's
1	Introduction to project management	1	CLO4,
2	Review of statistics	1	CLO4,CLO14
3	Probabilistic time estimate	1	CLO4,CLO14
4	Time crashing	1	CLO4,CLO14
5	Production cost	1	CLO4,CLO14
6	revision	1	CLO4,CLO14
7	Material requirement planning	1	CLO4,CLO14
8	Supply and demand theory	1	CLO4,CLO14
10	Cost concepts and design economics	1	CLO4,CLO14
11	Fore casting	1	CLO4,CLO14
12	Bonds	1	CLO4,CLO14
13	Financial decision making.	1	CLO4,CLO14
14	Production management	1	CLO4,CLO14
15	revision	1	CLO4,CLO14

11. Matrix of Program LOs with Course LOs

Program LOs		Course LOs	
PL2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	CLO4	Develop appropriate to analyze different types for planning projects and identify the productivity and types of costs.

PL9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations.	CLO14	Use creative, innovative, and flexible thinking and acquire entrepreneurial and leadership skills to analyze the types of tenders and contracts to explain quality control and safety

Title	Name	Signature
Course coordinator	Ass.Prof.Dr.Rehab Ali	
Program coordinator	Ass.Prof.Dr Osama Elghandour	
Head of Department	Ass.Prof.Dr Osama Elghandour	
Date of Approval	**3/9/2022**	

برنامج هندسة الالكترونيات والاتصالات
المعهد العالي للهندسة والتكنولوجيا
بالتجمع الخامس