



Third level courses (Junior)

First semester (Fall)

No.	Cod	Course Name	Instructor
1	CECE 301	Electronics I	Ass.Prof. Dr. Ashraf Mohamed Ali Hassan
2	CECE 313	Electrical and Electronic	Dr. Ibrahim Ali Mahmoud Abdel
		Measurements	Dayem
3	CECE 202	Instrumentation Lab	Dr. Ibranim Ali Manmoud Abdel Dayem
4	CECE 303	Signals and Systems	Ass.Prof. Dr. Ashraf Mohamed Ali Hassan
5	CECE 204	Computer Organization	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi
6	BASE 402	Feasibility Studies	Dr. Mohamed Mahmoud Badawy
7	MATH 301	Probability & Statistic	Dr. Gamal El-Anani





Course specification				
Course code:	Course name			
CECE 301	Electronic 1			
A	- <u>Affiliation</u>			
Relevant program:	Electrical power engineering			
Department offering the program:	Electrical and communication engineering			
Department offering the course:	Electrical and communication engineering			
Date of program operation:	2008-2009			
Date of approval from the higher	27/1/2008			
ministry of education				
Date of course operation	2022-2023			
B- <u>Ba</u>	<u>sic Information</u>			
Course Name	Electronic 1			
Code	CECE 301			
Course Level	Third level courses (Junior) - First semester (Fall)			
Credit Hours	3Cr. hr			
Lectures	2hr			
lab	3hr			
Total	5hr			
Prerequisite	CECE 203			
Instructor name/Email	Ass.Prof. Dr. Ashraf Mohamed Ali Hassan			
	<u>ashraf.ali@sva.edu.eg</u>			
C- Professional information				

1-Course core

Introduction to conductor, semi-conductor materials; dropping, gap energy, diodes; transistors, Types of Electronic Devices, properties of electronics devices, Operational Amplifiers, Amplifiers using Bipolar Junction Transistors (BJT's) & Field Effect Transistors (FET's). Basics of transformers, machines, and generators

2- Course learning objectives:					
oc 1	Recognize the basic science for semiconductor materials, dropping, gap energy				
oc 2	Recognize the diodes, types of Electronic Devices, properties of electronics devices,				
oc 3	Recognize the Operational Amplifiers, Amplifiers using Bipolar Junction Transistors (BJT's) & Field Effect Transistors (FET's).				
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1- program objectives served by the course:

Upon the completion of the course the student should be able to:





OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies							
OP6	Prepare undergraduate students by applying fundamentals of a design and syntheses of electric	s who can create new ways to meet society's needs engineering sciences to practical problems using ical components, circuits, and systems.						
OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications							
2-	The relation between the cour	rse obje	ctives and the program objectives					
C	ourse objectives		program objectives					
oc 1	Recognize the basic science for semiconductor materials, dropping, gap energy	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies					
oc 2	Recognize the diodes, types of Electronic Devices, properties of electronics devices,	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.					
oc 3	Recognize the Operational Amplifiers, Amplifiers using Bipolar Junction Transistors (BJT's) & Field Effect Transistors (FET's).	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.					

3- Learning outcomes of the course (LOs)

Upon the completion of the course, the student should be able to:

- C(1.1) Recognize the basic concepts of operational amplifier
- C(2.1) Recognize different types of field effect transistors
- C(1.2,2.2) Apply the fundamentals concepts of semiconductor materials
- C(1.3) Apply the basic knowledge of transformer
- C(2.3,3.1) Apply the knowledge of Bipolar junction transistor as a switch and as an amplifier
- C(3.2,5.1) Express the analysis of small and high frequency signal analysis for transistor

4- Program competencies served by the course:

Upon the completion of the Program the student should be able to:





- CR1 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.
- CR2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.
- CR3 Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
- CR5 Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

5- The relation between the course learning outcomes and the program competencies

	Course (LOs)	program competencies					
C(1.1)	Recognize the basic concepts of operational amplifier	CR1	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.				
C(2.1)	Recognize different types of field effect transistors	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.				
C(1.2,2.2)	Apply the fundamentals concepts of semiconductor materials	CR1 CR2	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. Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.				
C(1.3)	Apply the basic knowledge of transformer	CR1	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.				
C(2.3,3.1)	Apply the knowledge of Bipolar junction transistor	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and				





	as a switch and as an amplifier		identify the tools required to optimize this design.
		CR3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools
	Express the analysis of	CR3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
C(3.2,5.1)	small and high frequency signal analysis for transistor	CR5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.
6	- Course content and the relatio	n hotwoon	the course contents and the course I Os

			e contenta i		
Week	Торіс	Lecture	Tutorial	Practical	course LOs
NO.		nr.	nr.	nours	
1	The fundamentals concepts of semiconductor materials	2	0	2	C(1.1)
2	Understanding the basic concepts of operational amplifier	2	0	2	C(2.1)
3	Introduction to transformer	2	0	2	C(1.2,2.2)
4	Bipolar junction transistor as a switch	2	0	2	C(1.3)
5	Bipolar junction transistor as an amplifier	2	0	2	C(2.1)
6	Field effect transistor	2	0	2	C(1.2,2.2)
7	Metal oxide transistor	2	0	2	C(1.3)
8	Midterm		1.0		
9	Small and high frequency signal analysis for transistor	2	0	2	C(2.3,3.1)
10	Analysis Amplifier frequency response	2	0	2	C(3.2,5.1)
11	Introduction to electrical machine	2	0	2	C(1.2,2.2)
12	Design Dc Machinery concept and Dc - Motors	2	0	2	C(3.2,5.1)
13	Revision	2	0	2	C(1.1)
14	Small and high frequency signal analysis for transistor	2	0	2	C(2.3,3.1)
15	Small and high frequency signal analysis for transistor	2	0	2	C(2.3,3.1)
16	Final Exam		2.0		
Total hours		28	-	28	

Course content and the relation between the course contents and the course LOs

7- The Teaching and learning methods and their relation to the Los of the course





				Te	aching	g and L	earning.	Metho	ds				
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / Self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(1.1)	\checkmark												
C(2.1)	\checkmark	\checkmark											
C(1.2,2.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	✓		✓	\checkmark			✓
C(1.3)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	✓		✓	\checkmark	\checkmark	\checkmark	\checkmark
C(2.3,3.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	✓		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
C(3.2,5.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	✓		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark

Notes:

The research concerns the cooperative work, the discussion and the presentations.

The Tutorials concerns the brain storming and the problem solving.

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

8- Student assessment method											
a-	a- Assessment method and its relation to the Los of the course										
	Tools of assessment										
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
C(1.1)						_					
C(2.1)											
C(1.2,2.2)	✓	√	V	V	v	√	√		↓		√
C(1.3)	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
C(2.3,3.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
C(3.2,5.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
					b- Tin	ne sched	ule of as	sessment			
Quiz (1)					V	Week (3)					
Quiz (2)					V	Week (10)					
Discussions					E	Every wee	k for any s	tudent			
Presentations and Movies						v	veekly				
Sheets and Sket	ches					V	veekly				
Researches and reports						V	Week (2,3)				

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the Projects Practical modelling Attendance Mid-term exam final exam		Week (4,8) Week (4,8) weekly Week (8) Week (16)					
	C- Grading system						
quizes Discussions Sheets and Sketches	Quiz (1) Quiz (2) 15%	(5) marks					
Researches and reports the Projects and lab	20% 20% 30% 20%	5 marks	(40) marks				
Attendance Mid-term exam	2070	(10) marks (15) marks	(60) marks				
Total		(60) marks (100) marks					
	10- List of re	ferences:					
a) Course notesb) Required books	 Lecture notes and handouts Adel S. Sedra, Kenneth C. Smith, 'Microelectronic Circuits (The Oxford Series in Electrical and Computer Engineering) 8th Edition. Behazad Rzavi, John Wiley Fundamentals of Microelectronics, 3rd Edition Thomas L. Floyd, 'Electronic Devices, Global Edition 10th Edition. Donald Neamen, 'Microelectronics: Circuit Analysis & Design,' 4th edition, Mcgraw Hill, 2009. 						
d) Periodicals, Web sites, etc	No periodicals are	 periodicals are needed. 					
11_ 6	acilities required	for teaching and I	earning:				
 Appropriate teaching design studios including presentation board, data show Google classroom E- learning 							
1	2- Requirements	for Disable faciliti	es:				
On line teaching Extra axamplas	g hours if it is need	led d research					
Course coordinator:	Ass.Prof. Dr. Ash	af Mohamed Ali H	assan				
program Coordinator	Dr. Ehab Mohame	d Nabil Ismail Abd	lel Rasoul				
Head of the Department	Dr. Ibrahim Ali M	ahmoud Abdel Day	vem 64				





Course specification

Course code:	Course name
CECE 330	Electrical and Electronic Measurements
Α	- Affiliation
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry	y of 27/1/2008
education	
Date of course operation	2022-2023

B- <u>B</u>	<u>asic Information</u>
Course Name	Electrical and Electronic Measurements
Code	CECE 330
Course Level	Third level courses (Junior) - First semester (Fall)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	CECE 203
Instructor name/Email	Dr. Ibrahim Ali Mahmoud Abdel Dayem
	dr.ibrahim@sva.edu.eg

C- Professional information

1-Course core

Definitions, functions and properties of instruments measuring, error analysis of measurement methods, analog and digital electric measurement devices (Oscilloscopes, signal generators, spectrum analyzer), computer systems for testing and measuring.

2-Course learning objectives:

oc 1	Recognize the	functions and p	properties of instrur	nents measuring system.
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- oc 2 Recognize the error analysis of measurement methods.
- oc 3 Recognize the analogue and digital electric measurement devices (Oscilloscopes, signal generators, spectrum analyzer).
- oc 4 Recognize the computer systems for testing and measuring.

1- program objectives served by the course:

Upon the completion of the course the student should be able to:

OP 6 Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.





0]	P 7	Use experimental and dat engineering applications.	a analysis	analysis techniques for electrical power				
O	P 9	Provide students with an av participating effectively in bu current and future modern in	vareness of uilding a rol dustry need	eness of the tools and skills necessary for ding a robust national economy and meeting stry needs.				
	2- The	e relation between the course	objectives	and the program objectives				
	Co	ourse objectives		program objectives				
oc 1	Recogni of instru	ze the functions and propertie iments measuring system.	s OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications				
oc 2	Recogni measure	ze the error analysis o ement methods.	of OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications				
oc 3	Recogni electric (Oscillo spectrur	ize the analogue and digita measurement device scopes, signal generators n analyzer).	ıl OP6 s s,	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.				
			OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications				
oc 4	Recogni of instru	ze the functions and propertie ments measuring system.	s OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications				

3- Learning outcomes of the course (LOs)

Upon the completion of the course, the student should be able to:

- C(2.1,3.1) Recognize the functions and properties of instruments measuring system.
- C(2.2,3.2) identify the system error analysis of measurement methods.
- C(4.1) Recognize with the analogue and digital electric measurement devices (Oscilloscopes, signal generators, spectrum analyzer).
- C(4.2) recognize with the computer systems for testing and measuring.
- C(4.3,5.1) Produce the comparative between systematic errors and gross errors.





C(4.4,5.2)	Produce the percentage of errors in electrical measurements.								
4- Program competencies served by the course:									
Upon the completion of the Program the student should be able to:									
CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design								
CR 3	Design and implement: electrical/electronic/digital engin	ments, module leering using tecl	s, sub-systems or systems in hnological and professional tools.						
CR 4	Estimate and measure the perfor circuit under specific input exc application.	mance of an electrication, and eva	ctrical/electronic/digital system and aluate its suitability for a specific						
CR 5	Adopt suitable national and in operate, inspect and maintain e services.	ternational stand electrical/electror	lards and codes to: design, build, nic/digital equipment, systems and						
5- T	he relation between the course lear	ning outcomes a	and the program competencies						
	Course (LOs)	p	rogram competencies						
C(2.1,3.1)	Recognize the functions and properties of instruments measuring system.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design						
		CR 3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.						
C(2.2,3.2)	Recognize the functions and properties of instruments measuring system.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design						
		CR 3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.						
C(4.1)	Recognize with the analogue and digital electric measurement devices (Oscilloscopes, signal generators, spectrum analyzer).	CR 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.						





C	2(4.2)	recognize with the computer systems for testing and measuring.	CR 4		Estimate performance electrical/ele and circuit excitation, suitability application	and mease of ectronic/digi under spec and eva for a	sure the an tal system ific input luate its specific
C	2(4.3,5.1)	Produce the comparative between systematic errors and gross errors.	CR 4		Estimate performance electrical/ele and circuit excitation, suitability application.	and mease of ectronic/digi under spect and eval for a	sure the an tal system ific input luate its specific
			CR 5		Adopt suit international to: design, b and electrical/ele equipment, s	table nation standards build, operate ectronic/digites systems and	onal and and codes te, inspect maintain tal services.
C	2(4.4,5.2)	Produce the comparative between systematic errors and gross errors.	CR 4		Estimate performance electrical/ele and circuit excitation, suitability application.	and meas contronic/digi under spec and eva for a	sure the an tal system ific input luate its specific
			CR 5		Adopt suit international to: design, b and electrical/ele equipment, s	table national standards build, operate cetronic/digi	onal and and codes te, inspect maintain tal services.
	Week	6- Course content and the relation be	<mark>tween t</mark> l	he course	contents and	the course	LOs
	No.	торк			hr.	hours	LOs
	1	Digital measurements Digital voltmeter- ammeter – Digital ohmmeter	-Digital	2	2	0	C(2.1, 3.1)
	2	Measurements of current, voltage, resist frequency, time, amplitude and power	stance,	2	2	0	C(2.1, 3.1)
	3	Accuracy of measurement and error analysis		2	2	0	C(2.1, 3.1)
	4	Quiz (1) + Absolute & secondary Error.		2	2	0	C(2.2 ,3.2)





5 6 7	Basic of statistical analysis. Electromechanical instruments. Permanent magnet moving coil construction.	2 2	2 2	0 0	C(4.1) C(4.1) C(4.1)
8	Midterm		1.0		
9	Galvanometer.	2	2	0	C(4.2)
10	Dc Ammeter.	2	2	0	C(4.2)
11	Multirange Ammeters.	2	2	0	C(4.3, 5.1)
12	Quiz (2) +solve example.	2	2	0	C(4.4 ,5.2)
13	DC Voltmeter Circuit.	2	2	0	C(4.2)
14	Rectifier Voltmeter.	2	2	0	C(4.3, 5.1)
15	Rectifier Ammeter.				C(4.2)
16	Final Exam		2.0		
Total ho	irs	28	28	0	

	7- The	Teaching	and lea	rning r	nethod	s and th	neir rela	tion to	o the Lo	s of th	e cour	se	
		-		Te	eaching	and Le	earning	Metho	ods				
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(2.1,3.1)	✓												
C(2.2,3.2)	√	\checkmark											
C(4.1)	✓	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark			\checkmark
C(4.2)	✓	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	_ ✓
C(4.3,5.1)	✓	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
C(4.4,5.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Notos:													

Notes:

The research concerns the cooperative work, the discussion and the presentations.

The Tutorials concerns the brain storming and the problem solving.

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.







Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
C(2.1,3.1) C(2.2,3.2)											✓
C(4.1)	\checkmark	✓	\checkmark	\checkmark	\checkmark		\checkmark		✓		\checkmark
C(4.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
C(4.3,5.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
C(4.4,5.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark

	b- Time s	chedule of assessm	ent		
Quizzes	uiz (1)	Week (3)			
Q	uiz (2)	(2) Week (10)			
Discussions		Every week for any	y student		
Presentations and Movies		weekly			
Sheets and Sketches		weekly			
Researches and reports		Week (2,3)			
the Projects		Week (4,8)			
Practical modelling		Week (4,8)			
Attendance		weekly			
Mid-term exam		Week (7)			
final exam	• "	Week (14)			
	c- Grading	I system			
quizes	Quiz (1)	(5) marks			
	Quiz (2)	Quiz (2) (5) marks			
Discussions	15%				
Sheets and Sketches	20%	5 1	(10)		
Researches and reports	20%	5 marks	(40) marks		
the Projects	30%				
Practical modelling	20%	(10) meaning			
Attendance		(10) marks			
		(15) marks			
tinal exam			(60) marks		
Iotai	40 List of		(100) marks		
a) Cauraa nataa	IU-LISUOI	relerences:			
a) Course notes	Electure notes a		Maaanaanta 2nd Edition David		
b) Required books	A. Bell	 Electronic Instrumentation and Measurements- 2nd Edition, David A. Bell 			
c) Recommend books	Mentioned at t	ime.			





d) Periodicals, Web sites, e	tc No periodicals are needed.						
	11- Facilities required for teaching and learning:						
 Appropriate teaching design studios including presentation board, data show Google classroom E- learning 							
12- Requirements for Disable facilities:							
• On line teaching	g hours if it is needed						
Extra examples	s and topic-specified research						
Course coordinator:	Dr. Ibrahim Ali Mahmoud Abdel Dayem						
program Coordinator Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul							
Head of the Department Dr. Ibrahim Ali Mahmoud Abdel Dayem							
Date: 2022/2023							





Course specification				
Course code:	Course name			
CECE 313	Measurements & Instrumentation Lab			
	A- Affiliation			
Relevant program:	Electrical power engineering			
Department offering the program:	Electrical and communication			
	engineering			
Department offering the course:	Electrical and communication			
	engineering			
Date of program operation:	2008-2009			
Date of approval from the higher m education	iinistry of 27/1/2008			
Date of course operation	2022-2023			
B·	- <u>Basic Information</u>			
Course Name	Electrical and Electronic & Measurements Lab			
Code	CECE 313			
Course Level	Third level courses (Junior) - First semester (Fall)			
Credit Hours	1Cr. Hr			
Lectures	Ohr			
lab	3hr			
Total	3hr			
Prerequisite	Conc. with CECE 330			
Instructor name/Email	Dr. Ibrahim Ali Mahmoud Abdel Dayem			
	dr.ibrahim@sva.edu.eg			

C- Professional information

1- <u>Course core</u>

Includes error analysis, linear displacement transducers, strain gauge, rotational speed measurement, capacitive and inductive transducers, temperature measurement, measurement of pressure and flow, and ultrasonic measurement systems.

2- Course learning objectives:							
oc 1	Recognize the International System of Units (measurement system).						
oc 2	Recognize the units and demonstrate the ability to convert measurements.						
oc 3	Recognize the length, temperature, time, volume, mass, density, and concentration.						
	3- program objectives served by the course:						

Upon the completion of the course the student should be able to:

OP 7 Teach students to use experimental and data analysis techniques for electrical power engineering applications





OP 9

Provide students with an awareness of the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry needs.

4- The relation between the course objectives and the program objectives

Cours	e objectives	program objectives			
oc 1	Recognize the International System of Units (measurement system).	OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications		
	Recognize the units and demonstrate the ability to convert	OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications		
oc 2	measurements.	OP 9	Provide students with an awareness of the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry needs.		
	Recognize the International System of Units (measurement	OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications		
oc 3	system).	OP 9	Provide students with an awareness of the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry needs.		
	5- Learning outcom	nes of th	ne course (LOs)		
Upon the completion	n of the course, the student sh	nould b	e able to:		
C(4.1)	prepare the potentiometers to n	neasure	AC and DC values of unknown voltage.		
C(4.2)	Use laboratory to measure the energy.	wattme	eter and energy meter to measure power and		
C(4.3)	Use laboratory to measure high	h values	of current and voltage.		
C(2.1,3.1)	Use laboratory to measure vol-	tage and	l Current.		
C(2.2,3.2)	Prepare the bridges for the me	asureme	ent of low, medium and high resistance.		
C(2.3,3.3,4.4,5.1)	Communicate effectively with capacitance measurement.	the brid	dges for the measurement of inductance and		
	6- Program competen	cies ser	ved by the course:		

Upon the completion of the Program the student should be able to:





CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design								
CR 3	Design and implemen electrical/electronic/digit	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.							
CR 4	Estimate and measure the circuit under specific inpapplication	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							
CR 5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.								
7- The rel	ation between the course l	learning	outcomes and the program competencies						
Cou	rse (LOs)		program competencies						
C(4.1)	prepare the potentiometers to measure AC and DC values of unknown voltage.	CR 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						
C(4.2)	Use laboratory to measure the wattmeter and energy meter to measure power and energy.	CR 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						
C(4.3)	Use laboratory to measure high values of current and voltage.	CR 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						
C(2.1,3.1)	Use laboratory to measure voltage and Current. Prepare the bridges for the measurement of low,	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design						





	medium and high resistance.	CR 3	Design and in sub-systems electrical/electro technological an	nplement: or onic/digital nd professio	elements, modules, systems in engineering using onal tools.			
C(2,2,3,2)	Communicate effectively with the bridges for the measurement of inductance and capacitance	CR2	Design, mo electrical/electro component for identify the to design	odel and onic/digital a specifi ols require	analyze an system or c application; and d to optimize this			
C(2.2,3.2)	measurement. prepare the potentiometers to measure AC and DC values of unknown voltage.	CR 3	Design and in sub-systems electrical/electro technological an	nplement: or onic/digital nd professio	elements, modules, systems in engineering using onal tools.			
	-	CR2	Design, mo electrical/electro component for identify the to design	odel and onic/digital a specifi ols require	analyze an system or c application; and d to optimize this			
C(2.3,3.3,4.4,5.1)	Use laboratory to measure the wattmeter $C(2,3,3,3,4,4,5,1)$			Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.				
measure power and energy.		CR 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					
			standards and c inspect electrical/electro and services.	codes to: de and onic/digital	sign, build, operate, maintain equipment, systems			
8- Col	rse content and the relation	between	the course conter	nts and the	course LOs			
Week	Торіс	Le	cture Tutorial	Practical	course LOs			
1	Working and Characteristic	s of	0 0	2	C(4.1)			
2	Various Types of Meters. Measurement of the Resistance	Low	0 0	2	C(4.1)			
3	Sensitive Voltage/Audio Detec	ctor.	0 0	2	C(4.1)			
4	Voltmeter usage.		0 0	2	C(4.2)			
5	Ohmmeter usage.		0 0	2	C(4.3)			





6	A very simple circuit.	0	0	2	C(4.3)
7	Ammeter usage.	0	0	2	C(4.3)
8	Midterm		1.0		
9	DC and AC bridges.	0	0	2	C(2.1,3.1)
10	Ohm's law.	0	0	2	C(2.1,3.1)
11	Nonlinear resistance.	0	0	2	C(2.2,3.2)
12	DC Voltmeter Circuit.	0	0	2	C(2.2,3.2)
13	Multirange Ammeters.	0	0	2	C(2.3,3.3,4.4,5.1)
14	Rectifier Voltmeter.	0	0	2	C(2.1,3.1)
15	Rectifier Ammeter.	0	0	2	C(2.2,3.2)
16	Final Exam		2.0		
Total hours		0	0	28	

9- The	Teachi	ng and	learn	ning m	ethoo	ls and	their r	elation	to the	Los o	of the o	course	
		-		-	Tea	ching	and Le	earning	Metho	ods			
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / self اممتنیم	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(4.1)	\checkmark	\checkmark	\checkmark			\checkmark	✓			\checkmark	\checkmark	\checkmark	
C(4.2)	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
C(4.3)	\checkmark	\checkmark	\checkmark			\checkmark	✓			\checkmark	\checkmark	\checkmark	
C(2.1,3.1)	\checkmark	\checkmark	\checkmark			\checkmark	✓			\checkmark	\checkmark	\checkmark	
C(2.2,3.2)	\checkmark	\checkmark	\checkmark			\checkmark	✓			\checkmark	\checkmark	\checkmark	
C(2,3,3,3,4,4,5,1)	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	

Notes: The research concerns the cooperative work, the discussion, the site visit and the presentations.

The Tutorials concerns the brain storming and the problem solving.

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

10- Student assessment method											
	i	a- A	ssess	ment	metho	d and it	s relatio	on to the	Los of the o	course	
Tools of assessment											
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling

High vall El	High valley institute for engineering and technology Electrical power engineering program					
$\begin{array}{c c} C(4.1) & \checkmark & \checkmark \\ C(4.2) & \checkmark & \checkmark \\ C(4.3) & \checkmark & \checkmark \\ C(2.1,3.1) & \checkmark & \checkmark \\ C(2.2,3.2) & \checkmark & \checkmark \\ C(2.3,3.3,4.4,5.1) & \checkmark & \checkmark \end{array}$	$\begin{array}{cccccccccccccccccccccccccccccccccccc$					
	b- Lime schedule of assessment					
Discussions Presentations and Movies Sheets and Sketches the Projects Attendance Mid-term exam final exam Discussions Sheets and Sketches Researches and reports the Projects Attendance Mid-term exam final exam Total	Quiz (2) Every week for any student weekly weekly weekly Week (8) Week (8) Week (16) c- Grading system 20% 70% 40 marks 0% (10) marks (10) marks (100) marks (100) marks (100) marks					
	10- List of references:					
 a) Course notes b) Required books c) Recommend books d) Periodicals, Web sites, etc 	Lecture notes and handouts David A. Bell , Electronic Instrumentation And Measurements, 4Th Edition. Mentioned at time. No periodicals are needed.					
44 5-	addition required for toophing and learning.					
 11- Facilities required for teaching and learning: Appropriate teaching design studios including presentation board, data show Google classroom 						

• E- learning

12- Requirements for Disable facilities:

- On line teaching hours if it is needed
- Extra examples and topic-specified research





Course coordinator:	Dr. Ibrahim Ali Mahmoud Abdel Dayem
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	2022/2023







Course specification				
Course code:	Course name			
CECE303	Signals and Systems			
	A- Affiliation			
Relevant program:	Electronics and communication engineering			
Department offering the program:	Electrical and communication engineering			
Department offering the course:	Electrical and communication engineering			
Date of program operation:	2008-2009			
Date of approval from the higher	27/1/2008			
ministry of education				
Date of course operation	2022-2023			
B- <u>Ba</u>	sic Information			
Course Name	Signals and Systems			
Code	CECE303			
Course Level	Third level courses (Junior) - First semester (Fall)			
Credit Hours	3Cr. Hr			
Lectures	2hr			
Tutorial	2hr			
Total	4hr			
Prerequisite	CECE 203			
Instructor name/Email	Ass.Prof. Dr. Ashraf Mohamed Ali Hassan			
	<u>ashraf.ali@sva.edu.eg</u>			
C- Professional information				

1- <u>Course core</u>

Basic properties of signals and systems, stability, causality, step and impulse response, linearity, time variance and time invariance properties, superposition integral, Fourier series and Fourier transform for discrete and continuous time signals and sampling theorem. Laplace transformation, Properties of frequency transformations, Hilbert transformation; concept of analytic signals. Transfer function of linear systems

2- Professional information

1- Course learning objectives:

- oc 1 Recognize the analysis of signals that includes.
- oc 2 Recognize the physical meaning of signals Classify the different kinds of signals.

oc 3 Recognize the different applications of signals. Know the Elementary or basic signals [unit-step function, Ramp function, unit impulse function, sampling function, complex exponential, Sinc signal, Gate signal, and signum signal] and understand and analyze the Sampling theory.

oc 4 Recognize the main elements required to convert the signal from analog to digital that includes: [Sampling, Quantization, and coding].





- oc 5 Recognize and discriminate between Convolution, and Correlation of signals.
- oc 6 Recognize the basic operations of signals [Addition, multiplication, Shifting, reflection, amplitude scaling, and time scaling].
- oc7 Recognize and analyze the different signal transformation techniques, their applications and proprieties: Fourier series, Fourier transform [FT] Inverse Fourier transform [IFT] and Discrete Fourier transform [DFT].

2- program objectives served by the course:

Upon the completion of the course the student should be able to:

- **OP 5** Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
- **OP6** Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
- OP9 Provide students with an awareness of the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry needs
- OP 12 Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
 - **3-** The relation between the course objectives and the program objectives

	Course objectives		program objectives
oc 1	Recognize the analysis of signals that includes.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 2	Recognize the physical meaning of signals Classify the different kinds of signals.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 3	Recognize the different applications of signals. Know the Elementary or basic signals [unit- step function, Ramp function, unit impulse function, sampling function, complex exponential, Sinc signal, Gate signal, and signum signal] and understand and analyze the Sampling theory.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.





	Recognize the main elements required to convert the signal	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 4	c 4 from analog to digital that includes: [Sampling, Quantization, and coding]. Recognize and discriminate between Convolution, and Correlation of signals.	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
	Recognize the basic operations	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 5	oc 5 multiplication, Shifting, reflection, amplitude scaling, and time scaling].	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and
ос б	Recognize the analysis of signals that includes. Recognize the physical meaning of signals Classify the different	OP 9	Provide students with an awareness of the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry needs
	kinds of signals.	OP 12	electrical power systems, including designing and realizing such
oc 7	Recognize the different applications of signals. Know the Elementary or basic signals [unit- step function, Ramp function, unit impulse function, sampling function, complex exponential,	OP 9	systems. Provide students with an awareness of the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry needs





Sinc signal, Gate signal, and signum signal] and understand and analyze the Sampling theory.

OP 12

Prepare engineers who can work on electrical power systems, including designing and realizing such systems.

4- Learning outcomes of the course (LOs)

Upon the completion of the course, the student should be able to:

- C(1.1) Identify the different types of signals.
- C(1.2) Recognize the basic principles of the properties of the signal.
- C(2.1) evaluate the mathematical method to derive frequency domain of the continuous signal.
- C(2.2) Apply knowledge to recognize the effect of continuous input signal on the system.
- C(1.3) Express effectively with the frequency components of the discrete signal

5- Program competencies served by the course:

Upon the completion of the Program the student should be able to:

Select, model and analyze electrical power systems applicable to the specific discipline

- CR1 by applying the concepts of: generation, transmission and distribution of electrical power systems.
- CR 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.

6- The relation between the course learning outcomes and the program competencies

	Course (LOs)		program competencies
C(1.1)	Identify the different types of signals.	CR1	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.
C(1.2)	Recognize the basic principles of the properties of the signal.	CR1	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.
C(2.1)	evaluate the mathematical method to derive frequency domain of the continuous signal.	CR 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.





C(2.2)	Apply knowledge to recognize the effect of continuous input signal on the system.	CR 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.
C(1.3)	Express effectively with the frequency components of the discrete signal	CR1	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.

7- Course content and the relation between the course contents and the course LOs

Week No.	Торіс	Lecture br	Tutorial hr	Practical hours	course LOs
1	Signal Definition	2	2	0	C(1.1)
2	Signal Types	2	2	0	C(1.1)
3	System Classification	2	2	0	C(1.1)
4	Convolution	2	2	0	C(1.2)
5	Convolution	2	2	0	C(1.2)
6	Fourier series	2	2	0	C(2.1)
7	Fourier transform	2	2	0	C(2.1)
8	Midterm		1.0		
9	Fourier transform	2	2	0	C(2.1)
10	Discrete Fourier Transform	2	2	0	C(2.2)
11	Discrete Fourier Transform	2	2	0	C(2.2)
12	Laplace Transform	2	2	0	C(2.2)
13	Laplace Transform Cont.	2	2	0	(1.3)
14	Sampling Process	2	2	0	(1.3)
15	Sampling Process	2	2	0	(1.3)
16	Final Exam		2.0		
Total h	iours	28	28	0	





	8- The Teaching and learning methods and their relation to the Los of the course												
		Teaching and Learning Methods											
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering/ self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(1.1)	\checkmark												
C(1.2)	✓	\checkmark											
C(2.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark			\checkmark
C(2.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	✓
C(1.3)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Notes:									-				

The research concerns the cooperative work, the discussion and the presentations.

The Tutorials concerns the brain storming and the problem solving.

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

9- Student assessment method									
Tools of assessment									
modelling									
✓									
√ √									
 ✓ 									
Week (3) Week (10)									
weekly									





Mid-term exam final exam		Week(8) Week(16)					
	c- Grading	l system					
quizes	Quiz(1) Quiz(2)	(5) marks (5) marks					
Discussions Sheets and Sketches	15% 20%						
Researches and reports the Projects	20% 30%	(40) marks					
Practical modelling	20%	(10) more					
Allendarice Mid-term exam		(10) marks (15) marks					
final exam Total		(10) Шанкэ	(60) marks (100) marks				
	10- List of	references:					
a) Course notes	Lecture notes	and handouts					
b) Required books	1. Allan	V. Oppenheim, Sigi	nals and Systems 2nd				
, I	Edition						
	2. John G. Porkies, Digital Signal Processing:						
	Principles, Algorithms and Applications, 5th Edition						
	3. Schau	m's, ' Signals and S	ystems, 4th Edition'.				
c) Recommend books	Mentioned at	time.					
d) Periodicals, Web sites,	No periodical	ls are needed.					
elc							
11 ₋ Fa	cilities require	d for teaching and	learning:				
i i - racinites required for teaching and tearning.							

- Appropriate teaching design studios including presentation board, data show
- Google classroom
- E- learning

12- Requirements for Disable facilities:

- On line teaching hours if it is needed
- Extra examples and topic-specified research

Ass.Prof. Dr. Ashraf Mohamed Ali Hassan
Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Dr. Ibrahim Ali Mahmoud Abdel Dayem
2022/2023







Course specification							
Course name							
Computer Organization							
A- Affiliation							
Control and computer system engineering							
Electrical and communication engineering							
Electrical and communication engineering							
2008-2009							
27/1/2008							
2022-2023							
B- Basic Information							
Computer Organization							
CECE 204							
Third level courses (Junior) - First semester (Fall)							
3Cr. hr							
2hr							
3hr							
5hr							
CECE 102							
Dr. Mohamed Mahmoud Ahmed Mohamed El-							
Ghoboushi Mohammed.ghaboushy@sva.edu.eg							

C- Professional information

1- Course core

Description of a hypothetical computer system, the CPU main memory, I/O subsystem, and all related components. In-depth discussion of the architecture of the Intel 80x86 based microprocessors and of available assemblers, linkers, library managers and debugging tools. Macro assembler programming techniques involve building, incorporating and maintaining libraries, and using assembler pseudo-ops and directives. Debugging and testing techniques. Interfacing a high-level language with an assembly language. Chip level programming of microprocessor type systems. Topics covered include I/O ports, I/O devices and controllers, DMA channels, priority interrupts

2- Course learning objectives:

- oc 1 explain the computer Evolution and Performance.
- oc 2 explain the computer interconnection structures.
- oc 3 Recognize the study for the Organization and Architecture
- oc 4 Recognize the study for Computer arithmetic and Instruction sets memories.
- oc 5 Recognize for the CPU structure and function.
- oc6 Recognize the study for the Cache memory, Interrupt and Short and long I/O Wait Interrupt

3- program objectives served by the course:





Upon the completion of the course the student should be able to:

- OP 6 Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
- OP 7 Teach students to use experimental and data analysis techniques for electrical power engineering applications
- OP 12 Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
 - 4- The relation between the course objectives and the program objectives

	Course objectives	program objectives				
oc 1	explain the computer Evolution and Performance. explain the computer interconnection structures.	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.			
		OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications			
oc 2	Recognize the study for the Organization and Architecture Recognize the study for Computer arithmetic and Instruction sets memories.	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.			
		OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications			
oc 3	Recognize for the CPU structure and function.	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of			





			electrical components, circuits, and systems.
		OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications
oc 4	explain the computer Evolution and Performance. explain the computer	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems
	interconnection structures.	OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications
Oc5	Recognize the study for the Organization and Architecture	OP 12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
осб	Recognize the study for Computer arithmetic and Instruction sets memories.	OP 12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.

5- Learning outcomes of the course (LOs)

Upon the completion of the course, the student should be able to:

- CR(2.1) Recognize the Organization and Architecture and Computer Evolution and Performance.
- **CR(2.2)** Recognize the Computer interconnection structures Internal memory.
- CR(2.3) Recognize the External memory and Input / output and Computer arithmetic and Instruction sets.
- **CR(2.4)** Prepare the CPU structure and function.
- CR(2.5) Conduct and develop with Cache memory and Interrupt.





CR(3.1) Communicate Effectively with Short and long I/O Wait Interrupt.

6- Program competencies served by the course:

Upon the completion of the Program the student should be able to:

- CR2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
- **CR3** Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.

7- The relation between the course learning outcomes and the program competencies

	Course (LOs)		program competencies
CR(2.1)	Recognize the Organization and Architecture and Computer Evolution and Performance.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.2)	Recognize the Computer interconnection structures Internal memory.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.3)	Recognize the External memory and Input / output and Computer arithmetic and Instruction sets.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.4)	Prepare the CPU structure and function.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.5)	Conduct and develop with Cache memory and Interrupt.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(3.1)	Communicate Effectively with Short and long I/O Wait Interrupt.	CR3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
	8- Course content and the re	elation b	between the course contents and the course LOs
Week No.	Торіс		Lecture hr. Tutorial hr. Practical course LOs hours
1	Organization and Architecture		2 0 2 $CR(2.1)$

		2	0		
2	Computer evolution and performance	2	0	2	CR(2.1)
3	Internal memory	2	0	2	CR(2.2)
4	External memory	2	0	2	CR(2.3)
5	Input/output	2	0	2	CR(2.3)
6	Computer arithmetic and instruction sets	2	0	2	CR(2.3)
7	CPU structure and function	2	0	2	CR(2.4)
8	Mid-term Exam		2.0		
9	Cache memory	2	0	2	CR(2.5)





10	Interrupt	2	0	2	CR(2.5)
11	Interrupt types	2	0	2	CR(2.5)
12	Input/output programs	2	0	2	CR(3.1)
13	Short and long I/O wait interrupts	2	0	2	CR(3.1)
14	Input/output programs - Interrupt types	2	0	2	CR(3.1)
15	Short and long I/O wait interrupts	2	0	2	CR(3.1)
16	Final Exam		2.0		
Total h	ours	28	0	28	

9- The Teaching and learning methods and their relation to the Los of the course Teaching and Learning Methods



The research concerns the cooperative work, the discussion, the site visit and the presentations.

The Tutorials concerns the brain storming and the problem solving.

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

10- Student assessment method											
a- Assessment method and its relation to the Los of the course											
Tools of assessment											
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling

Hi	Ministry of hig gh valley institute for en Electrical power en	gher education ngineering and techn ngineering program	ology
CR(2.1) CR(2.2) CR(2.3) ✓ CR(2.4) ✓ CR(2.5) ✓ CR(3.1) ✓		$\begin{array}{c} \checkmark \\ \checkmark $	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓
b- Time Schedule of asse	Quiz (1)	Week (3)	
Quizzes Discussions Presentations and Movies Sheets and Sketches Researches and reports the Projects Practical modelling Attendance Mid-term exam final exam	Quiz (2)	Week (10) Every week for any stud weekly Week (2,3) Week (4,8) Week (4,8) weekly Week (7) Week (14)	ent
	c- Grading s	ystem	
quizes Discussions Sheets and Sketches	Quiz(1) Quiz(2) 15% 20%	(5) marks (5) marks	
Researches and reports the Projects Practical modelling Attenda Mid-term	20% 30% 20% ance	5 marks (10) marks (15) marks	(40) marks
final ex Tota	kam al	(10) mano (1	60) marks 100) marks
	10- List of re	ferences:	
a) Course notesb) Required books	Lecture notes an W. Stalling, "Con McGraw-Hill.	Lecture notes and handouts W. Stalling, "Computer Organization and Architecture", 15 ed., McGraw-Hill.	
c) Recommend books	D. Patterson and interface", McGu	D. Patterson and J. Hennessy, "Computer Organization & Design interface", McGraw-Hill, 4th	
a) Periodicais, web sites	ino periodicals a	re needed.	
11- Facilities required for teaching and learning:			
 Appropriate tea Google classroom 	ching design studios includin	g presentation board, da	ta show

Boogle class
 E- learning

12- Requirements for Disable facilities:

- •
- On line teaching hours if it is needed Extra examples and topic-specified research •





Course coordinator:	Dr. Mohamed Mahmoud Ahmed Mohamed El- Ghoboushi	Park
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul	1-1
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem	5Þ
Date:	2022/2023	





Course specification				
Course code:	Course name			
BASE 402	Feasibility Studies			
A- Affiliation				
Relevant program:	Electrical power engineering			
Department offering the program:	Electrical and communication engineering			
Department offering the course:	Electrical and communication engineering			
Date of program operation:	2008-2009			
Date of approval from the higher	7/1/2008			
ministry of education				
Date of course operation 2022-2023				
B- Basic Information				
Course Name	Feasibility Studies			
Code	BASE 402			
Course Level	Third level courses (Junior) - First semester (Fall)			
Credit Hours	3Cr. hr			
Lectures	2hr			
Tutorial	2hr			
Total	4hr			
Prerequisite	-			
Instructor name/Email	Dr. Mohamed Mahmoud Badawy			
	Mohammed.ghaboushy@sva.edu.eg			

C- Professional information

1- Course core

This course introduces students to the meaning, importance, and effects of feasibility study. It also deals with the analysis of decision problems under uncertainty, partial information, risk and competition. Considers the analytic hierarchy process outranking procedures and multi-attribute utility theory.

2- Course learning objectives:		
oc 1	Recognize the importance of feasibility studies for projects.	
oc 2	Recognize the definition of feasibility study and historical development of interest.	
oc 3	Recognize with feasibility studies and their components.	
oc 4	identify the most important financing aspects in the feasibility study: sources of financing, how to calculate their cost, and criteria for choosing the best sources.	
oc 5	Recognize on making feasibility study evaluation for projects	
oc 6	Recognize Feasibility study evaluation methods.	




	3- program objectiv	es served	l by the course:				
Upon the completion of the course the student should be able to:							
OP 5	Prepare students for engineering mathematical and computational results.	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.					
OP 6	Prepare undergraduate students w applying fundamentals of enginee syntheses of electrical component	vho can cre ring scienc s, circuits,	eate new ways to meet society's needs by ces to practical problems using design and and systems.				
OP 12	Prepare engineers who can work or realizing such systems.	on electrica	l power systems, including designing and				
4- T	'he relation between the course	objective	es and the program objectives				
C	Course objectives		program objectives				
oc 1	Recognize the importance of feasibility studies for projects.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.				
oc 2	Recognize the definition of feasibility study and historical development of interest.	OP 6	can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.				
oc 3	Recognize with feasibility studies and their components.	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.				
oc 4	identify the most important financing aspects in the feasibility study: sources of financing, how to calculate their cost, and criteria for choosing the best sources.	OP 12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.				
oc 5	Recognize on making feasibility study evaluation for projects	OP 12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.				
	5- Learning outcor	nes of the o	course (LOs)				

Upon the completion of the course, the student should be able to:

C(1.1) Identify the nature of the project, its components and forms.





C(2.1)	Recognize the preliminary feasibility studies and their components.
C(1.2,5.1)	Recognize the effects of environmental feasibility studies.
C(2.2)	Use tools to produce the effect of social feasibility study on mega projects.
C(1.3,3.1)	Utilize feasibility study evaluation methods to making feasibility reports
C(2.3,5.2,9.1)	prepare cash flow diagrams for projects and studying its effects on the feasibility of projects.

6- Program competencies served by the course:

Upon the completion of the Program the student should be able to:

C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
C2	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.
C3	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
C5	Practice research techniques and methods of investigation as an inherent part of learning.
C9	Use creative, innovative and flexible thinking and acquire entrepreneurial and leadership skills to anticipate and respond to new situations

Course	e (LOs)		program competencies				
C(1.1)	Identify the nature of the project, its components and forms.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.				
C(2.1)	Recognize the preliminary feasibility studies and their components.	C2	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.				
C(1.2,5.1)	Use tools to produce the effect of social	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.				

7- The relation between the course learning outcomes and the program competencies





	feasibility study on mega projects. Utilize feasibility study evaluation methods to making feasibility	C5	Practice resea investigation a	arch techniqu as an inheren	ues and methods of t part of learning.
C(2.2)	reports prepare cash flow diagrams for projects and studying its effects on the feasibility of projects.	C2	Develop experimentation interpret data, use statistic engineering ju	and con- on and/or sin assess and e cal analyse idgment to dr	duct appropriate nulation, analyze and valuate findings, and es and objective raw conclusions.
	Use tools to produce the effect of social feasibility	C1	Identify, for engineering p fundamentals, Apply engineer	mulate, an roblems by a basic science	d solve complex applying engineering e and mathematics.
C(1.3,3.1)	study on mega projects. Identify the nature of the project, its components and forms.	C3	cost-effective needs with co social, econor other aspects a within the prin design and dev Develop	solutions to onsideration mic, enviror as appropriate neiples and co velopment and con	that meet specified for global, cultural, imental, ethical and to the discipline and ontexts of sustainable duct appropriate
	Recognize the	C2	interpret data,	assess and e	valuate findings, and
C(2.3,5.2,9.1)	feasibility studies and their components.	C5 C9	engineering ju Practice resea investigation a Use creative, and acquire en to anticipate a	adgment to dr arch techniqu as an inheren innovative a atrepreneurial nd respond to	and leadership skills
O- Week	Topic	Lecture h	r. Tutorial	Practical	course LOs
No.	юріс	Lecture II	hr.	hours	





1	The importance of feasibility studies for projects.	2	2	0	C(1.1)
2	Definition of feasibility study and historical development of interest.	2	2	0	C(2.1,1.2,5.1)
3	The nature of the project, its components and forms.	2	2	0	C(2.1,1.2,5.1)
4	studies and their components.	2	2	0	C(1.1,2.3,5.2,9.1)
5	Environmental feasibility studies + Quiz (1)	2	2	0	C(1.1, 2.1, 1.2, 5.1)
6	Environmental feasibility studies.	2	2	0	C(2.1)
7	Making cash flow diagram for construction projects				C(2.3,5.2,9.1)
8	Midterm		1.0		
9	A social feasibility study design criterion.	2	2	0	C(2.1)
10	The most important financing aspects in the feasibility study: sources				
	of financing, how to calculate their cost, and criteria for choosing the	2	2	0	C(2.1)
11	best sources. The most important financing aspects in the				C(2.2, 1.3, 3.1)
	feasibility study: preparing financial statements, financial obligations on the project, and financial	2	2	0	
12	incentives for projects Technical and engineering feasibility of the project	2	2	0	C(2.2, 1.3, 3.1)
13	Feasibility study evaluation methods. +	2	2	0	C(1.2,5.1,2.2,1.3,3.1, 2.3,5.2,9.1)
14	Feasibility study evaluation methods.	2	2	0	C(2.1)
15	Revision				C(1.1, 2.1,1.2,5.1,2.2,1.3,3. 1, 2.3,5.2.9.1)
16	Final Exam		2.0		
Total hours		20	2.0	Δ	
Total nours		∠ð	28	0	

1- The Teaching and Learning Methods and their relation to the Los of the course







Notes:

- The research concerns the cooperative work, the discussion, and the presentations.
- The Tutorials concerns the brain storming and the problem solving.

• Online lectures used as hybrid learning, but in case of totally online learning all the used teaching and learning methods will be on line.

2-	Student assessment method
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a- Assessment method and its relation to the Los of the course											
					b-	Tools o	of assess	ment			
Course LOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentatio n	modeling
C(1.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark				\checkmark		
C(2.1)		\checkmark		\checkmark	\checkmark			\checkmark	\checkmark		
C(1.2,5.1)				\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
C(2.2)				\checkmark	\checkmark				\checkmark		
C(1.3,3.1)				\checkmark	\checkmark				\checkmark		
C(2.3,5.2,9.1)		\checkmark	\checkmark		\checkmark						
			C-	Time	schedule	e of asses	sment				
Qui	zzes					Weel	< (5,13)				
Discu	ssions	5				we	eekly				
Sheets and	d sket	ches				Week (7-	-10-13- 1	.5)			
Researches and reports			Week (14)								
Attendance			weekly								
Mid- term exam					We	ek (8)					
final sub	omissi	ion				Wee	ek (16)				
				d-	Gradin	g system					
Quizzes				Quiz (1)		(10) m	narks		(30) ma	irks

High w	Ministry of higher valley institute for engine Electrical power engine	education eering and technology eering program				
Sheets and Sketches	Quiz (2) (50) %	(10) marks				
Reports	(10) %					
Discussion	(40) 0/	(°) marks				
Discussion	(40) %	(40) %				
Attendanc	e	(5) marks				
Mid	- term exam		20 marks			
fi	nal exam		50 marks			
	total		100 marks			
a) Course notes The imp	10- List of refere	nces:	al actimation report			
 a) Course notes The Imp Time ad b) Required Project e books Financia c) Recommend Feasibilition books d) Periodicals, https://web sites, etc NG_A_F 	 a) Course notes b) Required books c) Recommend books d) Periodicals, Web sites, etc b) Periodicals, The importance of feasibility studies for projects, The conceptual estimation report, Time adjustment, location adjustment, size adjustment and forecast cost estimation. Project evaluation and feasibility analysis by Kevin baker. Financial feasibility studies for property development theory and practice TIMHAVARD. Feasibility study, project management, professional pm wiring note book https://www.researchgate.net/publication/341134813_A_PRACTICAL_GUIDE_TO_WRITING 					
11-	Facilities required for	teaching and learning	:			
 Appropriate teaching Google classroom E- learning 	design studios including pre	sentation board, data show				
	12- Requirements for I	Disable facilities:				
On line teachinExtra assignment	ng hours if it is needed ents					
Course coordinator:	Dr. Mohamed Mahmoud Ba	adawy	Por 223			
program Coordinator	Dr. Ehab Mohamed Nabil Is	smail Abdel Rasoul	1			
Head of the Department Dr. Ibrahim Ali Mahmoud Abdel Dayem Date: 2022/2023						





Course specification				
Course code:	Course name			
MATH301	Probability & Statistics			
A	A- Affiliation			
Relevant program:	Electrical power engineering			
Department offering the program:	Electrical and communication engineering			
Department offering the course:	Electrical and communication engineering			
Date of program operation:	2008-2009			
Date of approval from the higher	27/1/2008			
ministry of education				
Date of course operation	2022-2023			
B- B:	asic Information			
Course Name	Probability & Statistics			
Code	MATH301			
Course Level	Third level courses (Junior) - First semester (Fall)			
Credit Hours	3Cr. hr			
Lectures	2hr			
Tutorial	2hr			
Total	4hr			
Prerequisite	MATH 102			
Instructor name/Email	Dr. Gamal El-Anani			
	gamalanany@sva.edu.eg			

C- Professional information

1- Course core

The course introduces students to some important statistical concepts and techniques that are of common application in engineering. Covers graphical and numerical summaries of data, plotting data, probabilities of random events, random variables, properties of density and distribution functions, measures of location and dispersion, expected values, independence of random variables, scaling and adding random variables, the binomial Poisson and normal distributions, the central limit theorem, hypothesis testing, confidence intervals, t test, paired t test, standard errors, least squares, residuals, correlation, examples of regression, quality control, clustering of rare events.

2- Cc	2- Course learning objectives:				
oc 1	Recognize some important statistical				
oc 2	Recognize graphical and numerical summaries of data.				
oc 3	used to apply knowledge of mathematics to distribution functions, measures				
oc 4	Recognize the concepts of expected values				
oc 5	Describe and analyze data, to Deal with design situations within solving design problems based on the analytical process for the central limit theorem, hypothesis testing				





oc 6	Explain the methodologies of solving engineering problems with correlation, examples of regression, quality control,
oc 7	apply knowledge of Theory of equations, and clustering of rare events. to solve engineering problems.

3- program objectives served by the course:

Upon the completion of the course the student should be able to:

- OP1 The course introduces students to some important statistical concepts and techniques that are of common application in engineering.
- OP 2 Covers graphical and numerical summaries of data, plotting data, probabilities of random events
- OP 3 Random variables, properties of density and distribution functions, measures of location and dispersion
- OP4 Expected values, independence of random variables, scaling and adding random variables, the binomial Poisson and normal distributions
- OP 5 The central limit theorem, hypothesis testing, confidence intervals, t test, paired t test, standard errors, least squares, residuals
- **OP 6** Correlation, examples of regression, quality control,
- OP 7 Clustering of rare events.

4- The relation between the course objectives and the program objectives

	Course objectives	program objectives				
oc 1	Recognize some important statistical	OP 1	The course introduces students to some important statistical concepts and techniques that are of common application in engineering.			
oc 2	Recognize graphical and numerical summaries of data.	OP 2	Covers graphical and numerical summaries of data, plotting data, probabilities of random events			
oc 3	used to apply knowledge of mathematics to distribution functions, measures	OP 3	Random variables, properties of density and distribution functions, measures of location and dispersion			
oc 4	Recognize the concepts of expected values	OP 4	Expected values, independence of random variables, scaling and adding random variables, the binomial Poisson and normal distributions			
oc 5	Describe and analyze data, to Deal with design situations within solving design problems based on the	OP 5	The central limit theorem, hypothesis testing, confidence intervals, t test, paired t test, standard errors, least squares, residuals			





	analytical process for the central limit theorem, hypothesis testing		
oc 6	Explain the methodologies of solving engineering problems with correlation, examples of regression, quality control	OP 6	Correlation, examples of regression, quality control,
oc 7	apply knowledge of Theory of equations, and clustering of rare events. to solve engineering problems.	OP 7	Clustering of rare events.

5- Learning outcomes of the course (LOs)

Upon the completion of the course, the student should be able to:

- Explain concepts and theories of mathematics and sciences, appropriate to Probability & C(1.1) Statistics Demonstrate methodologies of solving engineering problems, data collection and C(1.2) interpretation C(1.3) Select appropriate solutions for engineering problems based on analytical thinking Apply knowledge of mathematics to solve engineering problems. C(2.1) Apply knowledge of linear algebraic equations, iterative methods, and infinite series to solve C(1.4) engineering problems and prepare and present technical reports about application of matrices to solve engineering problems. Solve the tutorial classroom with the demonstrator and effectively manages tasks, time, and C(2.2) resources, when solving mathematics problems, and in exams.
- Apply knowledge of mathematics to solve differential problems C(1.5, 2.3)

6- Program competencies served by the course:

Upon the completion of the Program the student should be able to:

- Identify, formulate, and solve complex engineering problems by applying engineering C1 fundamentals, basic science, and mathematics
- Develop and conduct appropriate experimentation and/or simulation, analyze and C2 interpret data, assess, and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions

7- The relation between the course learning outcomes and the program competencies

Course (LOs)			program competencies				
C(1.1)	Explainconceptsandtheories of mathematicsandsciences,appropriatetoProbability & Statistics	C1	Identify, form engineering engineering science, and	nulate, and solve problems by fundamentals, mathematics	complex applying basic		





C(1.2)	Demonstrate methodologies of solving engineering problems, data collection and interpretation	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics			
C(1.3)	Select appropriate solutions for engineering problems based on analytical thinking	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics			
C(2.1)	Apply knowledge of mathematics to solve engineering problems.	C2	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			
C(1.4)	Apply knowledge of linear algebraic equations, iterative methods, and infinite series to solve engineering problems and prepare and present technical reports about application of matrices to solve engineering problems.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics			
C(2.2)	Solve the tutorial classroom with the demonstrator and effectively manages tasks, time, and resources, when solving mathematics problems, and in exams.	C2	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			
	Apply knowledge of mathematics to solve differential problems	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science, and mathematics			
C(1.5, 2.3)		C2	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			
8- Course content and the relation between the course contents and the course LOs						





Week No.	Торіс	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	The course introduces students to some important statistical concepts.	2	2	0	C(1.1,1.2)
2	Techniques that are of common application in engineering.	2	2	0	C(1.1,1.3)
3	Covers graphical and numerical summaries of data.	2	2	0	C(2.1, 1.4)
4	Plotting data, probabilities of random events.	2	2	C(2.1)	C(1.2, 2.1)
5	Random variables, properties of density and distribution functions	2	2	0	C(1.2, 2.1)
6	Measures of location and dispersion	2	2	0	C(1.2, 2.1)
7	Expected values, independence of random variables				C(2.1)
8	Midterm	1.0			
9	Scaling and adding random variables, the binomial Poisson, and normal distributions	2	2	0	C(1.2, 2.1)
10	The central limit theorem, hypothesis testing, confidence intervals	2	2	0	C(1.2, 2.1)
11	Test, paired t test, standard errors,	2	2	0	C(1.2, 1.4)
12	Least squares, residuals	2	2	0	C(1.2, 2.1
13	Correlation, examples of regression, quality control,	2	2	0	C(1.2, 2.1)
14	Clustering of rare events.	2	2	0	C(1.2, 2.1)
15	Revision				C(1.2, 2.1,1.4)
16	Final Exam	2.0			
Total h	Durs	28	28	0	

9- The Teaching and learning methods and their relation to the Los of the course Teaching and Learning Methods

Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / Self learning Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(1.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
C(1.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
C(1.3)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
C(2.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
C(1.4)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	
C(2.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	



C(1.5, 2.3) ✓	\checkmark	✓ ✓	√	~	\checkmark	\checkmark	
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Notes:

The research concerns the cooperative work, the discussion and the presentations. The Tutorials concerns the brain storming and the problem solving.

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

	10- Student assessment method										
	a- Assessment method and its relation to the Los of the course										
	Tools of assessment										
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
C(1.1)	\checkmark	\checkmark	\checkmark	\checkmark				\checkmark	\checkmark	\checkmark	
C(1.2)	\checkmark	\checkmark	\checkmark	\checkmark				\checkmark	\checkmark	\checkmark	
C(1.3)	✓	\checkmark	√	\checkmark				√	\checkmark	\checkmark	
C(2.1)	√	√	√	√				√	v	√	
C(1.4)	√	v	√	√				√	v	√	
C(2.2)	✓	✓	V	✓				~	V	✓	
C(1.5, 2.3)	\checkmark	\checkmark	\checkmark	\checkmark				✓	\checkmark	✓	
				k	o- Time	schedul	e of ass	essment			
Quizzes			C	$\operatorname{Quiz}(1)$		Wee	ek (3)				
Discussions			(luiz (2)		VVe	EK (10)	for any st	Ident		
Presentation	s and I	Movies				wee	eklv	ior any su	Juent		
Sheets and Sheets	Sketche	es				wee	ekly				
Researches	and re	ports				Wee	ek (2,3)				
Attendance						weekly					
Mid-term exa	n exam Weel			Week (7)							
nnai exam				C-	Gradin	9977 Neten	ЭК (14) n				
	····!	_		Qui	z(1)	5 0 5 0 10 11	(5) mai	rks			
	quizes	5		Qui	z (2)		(5) mai	rks			
D	iscussi	ons		2	5%			_	(50) marks	
Sheets	s and S	Sketches		5	0%		10 mar	ks	(
Researches and reports 25% Attendance			5%		(10) ma	rks					





Mid-term ex final exan Total	am (20) marks n (50) marks (100) marks
	10- List of references:
a) Course notes	Lecture notes and handouts
b) Required books	Mendenhall, W., Introduction to Probability and Statistics, Boston: Duxbury Press, 10thEd., 1999.
c) Recommend books	 Barry C. Arnold, N. Balakrishnan, H.N. Nag raja, A First Course in Order Statistic, John Wiley& Sons. Kevin R.M Murphy, Brett Myers, Statistical Power Analysis, A Simple and General Model for Traditional and Modern Hypothesis Tests, Lawrence Erlbaum Associates,5th Ed. Rosencrantz, W., Introduction to Probability and Statistics for Scientists and Engineers. Ross S., A First Course in Probability Englewood Cliffs, NJ: Prentice Hall, 7th Ed. Rozanov, Y.A., Probability Theory: A Concise Course, New York: Dover. Terrell, G., Mathematical Statistics: A Unified Introduction,2nd edition.
d) Periodicals, Web sites, etc	Web Sites related to Mathematics and Mathematical engineering as: <u>www.math.hmc.edu,</u> <u>www.tutorial.math.lamar.edu,</u> <u>www.web.mit.edu</u>
1'	1- Facilities required for teaching and learning:

- Appropriate teaching design studios including presentation board, data show
- Google classroom
- E- learning

12- Requirements for Disable facilities:

- On line teaching hours if it is needed
- Extra examples and topic-specified research

Course coordinator:	Dr. Gamal El Anani
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	2022/2023







Third level courses (Junior) - Second semester (Spring)

No.	Cod	Course Name	Instructor
1	CECE 305	Automatic Control	Dr. Ehab Mohamed Nabil Ismail
1	CLCL 505	Automatic Control	Abdel Rasoul
2	CECE 315	Control Lab	Dr. Ehab Mohamed Nabil Ismail
2	CLCL 515		Abdel Rasoul
3	CECE 302	Electronics II	Dr. Ibrahim Ali Mahmoud Abdel
5 CLCL 502			Dayem
Δ	CECE 312	Flectronics I ab	Dr. Ibrahim Ali Mahmoud Abdel
-	CLCL J12	Electromes Euo	Dayem
5	CECE 306	Electromagnetic Theory	Prof. Dr. Hussein Hamed Al-Ghaz
6	CECE 325	Fundamentals of Communication I	Ass. Prof. Dr. Ashraf Mohamed Ali
U	0101323		Hassan
7	CECE 326	Communication Lab	Ass. Prof. Dr. Ashraf Mohamed Alı
0			Hassan
8	MATH 302	Linear Algebra and Matrices	Dr. Gamal El-Anani





Course specification				
Course code:	Course name			
CECE 305	Automatic Control			
A- A	Affiliation			
Relevant program:	Electrical power engineering			
Department offering the program:	Electrical and communication engineering			
Department offering the course:	Electrical and communication engineering			
Date of program operation:	2008-2009			
Date of approval from the higher ministry	27/1/2008			
of education				
Date of course operation	2022-2023			
B- <u>Basic</u>	<u>Information</u>			
Course Name	Automatic Control			
Code	CECE 305			
Course Level	Third level courses (Junior) - Second semester (Spring)			
Credit Hours	3Cr. Hr			
Lectures	2hr			
Tutorial	2hr			
Total	4hr			
Prerequisite	CECE 203			
Instructor name/Email	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul			
	ihab.nabil@sva.edu.eg			

C- Professional information

1- <u>Course core</u>

Principles of closed-loop feedback control systems, block diagrams, signal graphs, state variable to solution of free and forced response of linear systems, general feedback theory, transfer functions of components, Eigenvalue problems, criteria for designs, systems study in the domains, Nyquist criterion, Routh criterion, root locus theory and compensation methods. Design of Feedback Control Systems.

2- Course learning objectives:

- oc 1 Recognize the State-space modelling and analysis.
- oc 2 Recognize the Automatic controllability, and observability
- oc 3 Recognize the state feedback design and pole placement
- oc 4 Recognize the ways of implementation control system techniques.

3- program objectives served by the course:

Upon the completion of the course the student should be able to:

OP 5 Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.





OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.						
OP 7	Teach students to use experim power engineering application	Teach students to use experimental and data analysis techniques for electrical power engineering applications					
OP 12	Prepare engineers who can designing and realizing such s	work on ystems.	electrical power systems, including				
4- The relation between the course objectives and the program objectives							
	Course objectives		program objectives				
oc 1	Recognize the State-space modelling and analysis.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies				
oc 2	Recognize the Automatic controllability, and observability	OP 5	Prepare students for engineerin analyses and problem-solving usin appropriate mathematical an computational methodologies				
oc 3	Recognize the state feedback design and pole placement	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.				
		OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications				
oc 4	Recognize the State-space modelling and analysis.	OP 12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.				
5- Learning outcomes of the course (LOs)							
Upon the cor	npletion of the course, the student	should be	able to:				
CR(1.1)	Recognize the the control sys	tem and its	s components.				
CR(1.2)	Recognize the Automatic Stat	te-space mo	odelling and analysis				
CR(1.3)	Recognize the open loop, clos placement	ed control system, state feedback design and pole					

CR(1.4,2.1) Recognize the Design and operation of understanding the ways of implementation control system techniques.





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CR(15, 22)	Use tools the Convert the controlled closed loop in simplest form.	CR1	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.	
01(10,22)		CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design.	

	8- Course content and the relation between	the cours	e contents a	and the cour	se LOs
Week No.	Торіс	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduction: component of control system	2	2	0	CR(1.1)
2	State-space modelling and analysis	2	2	0	CR(1.1)
3	Focuses on Automatic Controllability + Solved examples+ Ouiz (1).	2	2	0	CR(1.1)
4	Quiz (1) +Automatic Observability.	2	2	0	CR(1.2)
5	Focuses on state feedback design + solved examples.	2	2	0	CR(1.3)
6	Focuses on Pole placement.	2	2	0	CR(1.3)
7	Dynamic observers.				CR(1.3)
8	Midterm		1.0		
9	Focuses on Static characteristic for controlled system	2	2	0	CR(1.2)
10	The principle of open loop control system	2	2	0	CR(1.3)
11	Focuses on Output feedback design.	2	2	0	CR(1.5, 2.2)
12	Quiz (2)	2	2	0	CR(1.4,2.1)
13	Focuses on Stability Analysis	2	2	0	CR(1.5, 2.2)
14	Focuses on Special Topics.	2	2	0	CR(1.5, 2.2)
15	Focuses on solved examples in controlled system .				CR(1.3)
16	Final Exam		2.0		
Total l	nours	28	28	0	

9- The Teaching and learning methods and their relation to the Los of the course





Course learning Outcome s (LOs)	Online / face to face lectures	Tutorials: sheets/ sketches	Projects	Problem solving	Brain storming	Practical: lab	Discovering / Self build learning Site visit output	Reports/ researches	Cooperative work	presentation	Discussion	modelling
CR(1.1) CR(1.2)	✓ ✓	✓										
CR(1.3)	\checkmark	\checkmark	\checkmark	✓	✓		✓	✓	✓			\checkmark
CR(1.4, 2.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	✓	\checkmark	✓	\checkmark	\checkmark
CR(1.5, 2.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	~	✓	✓	√	✓
Notes:												

Notes:

The research concerns the cooperative work, the discussion, the site visit and the presentations. The Tutorials concerns the brain storming and the problem solving.

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be online.

	10- Student assessment method										
	a- Assessment method and its relation to the Los of the course										
					То	ols of as	sessm	ent			
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
CR(1.1)										_	
CR(1.2)							_		_		
CR(1.3)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark		\checkmark
CR(1.4,2 .1)	\checkmark	\checkmark	\checkmark	\checkmark	✓		~	\checkmark	\checkmark	\checkmark	\checkmark
CR(1.5, 2.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		~	\checkmark	\checkmark	\checkmark	\checkmark
,					b- Time	schedule	e of as	sessment			
Quizzes			C C	Quiz(1) Quiz(2))	Wee Wee	ek (3) ek (10)				
Discussions Presentation Sheets and S Researches	s and N Sketche and rep	Aovies es ports				Eve Wee Wee Wee	ry weel ekly ekly ekly ek (2,3	k for any stud	dent		





the Projects Practical modelling Attendance Mid-term exam final exam		Week (4,8) Week (4,8) Weekly Week (8) Week (16)			
	c- Grading sy	vstem			
quizes Discussions Sheets and Sketches	Quiz(1) Quiz(2) 15% 20%	(5) marks (5) marks			
Researches and reports the Projects Practical modelling	20% 30% 20%	5 marks	(40) marks		
Attendance Mid-term exam final exam Total		(10) marks (15) marks ((60) marks 100) marks		
	10- List of ref	erences:	<i>'</i>		
 a) Course notes b) Required books c) Recommend books d) Periodicals, Web sites, ata 	 Lecture notes and handouts Nise, N.S. ", John Wiley & Sons Ltd, "Control systems engineering., UK, 2020. Katsuhiko Ogata, "Modern Control Engineering", Prentice Hall, 5th Edition, 2009. F. Golnaraghi and B. C. Kuo, "Automatic control Systems", 10th ed., John Wiley & Sons, Inc. 2017. Andrea Bacciotti, "Stability and Control of Linear Systems", Volume 185, Springer, 2019 R. C. Dorf and R. H. Bishop, "Modern Control Systems", Addison-Wesley, 11th Edition, 2014. No periodicals are needed. 				
etc					
11- Fa	cilities required	for teaching and le	earning:		

- Appropriate teaching design studios including presentation board, data show
- Google classroom
- E- learning

12- Requirements for Disable facilities:

- On line teaching hours if it is needed
- Extra examples and topic-specified research

Course coordinator:	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul



program Coordinator

Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul





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Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	2022/2023





Course specification				
Course code:	Course name			
CECE315 Automatic Control Lab				
1	A- Affiliation			
Relevant program:	Electrical power engineering			
Department offering the program:	Electrical and communication engineering			
Department offering the course:	Electrical and communication engineering			
Date of program operation:	2008-2009			
Date of approval from the higher	27/1/2008			
ministry of education				
Date of course operation2022-2023				
B- Basic Information				
Course Name	Control Lab			
Code	CECE315			
Course Level	Third level courses (Junior) - Second semester (Spring)			
Credit Hours	1Cr. Hr			
Lectures	Ohr			
lab	3hr			
Total	3hr			
Prerequisite	Con CECE 302			
Instructor name/Email	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul			
	ihab.nabil@sva.edu.eg			
C- Professional information				

1- Course core

Several experiments are conducted in the Control Lab to illustrate material covered in the course

2- Cou	rse learning objectives:				
oc 1	Recognize the control system and its components.				
oc 2	Recognize the control Automatic temperature control using a two-position controller with and without hysteresis				
oc 3	Recognize the principle of open loop and closed control system				
oc 4	Recognize the control with design and operation of p-action controller, and Static characteristic for controlled system.				
3- program objectives served by the course:					
Upon the co	mpletion of the course the student should be able to:				

OP 5 Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.





OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.							
OP 7	Teach students to use experimer engineering applications	Teach students to use experimental and data analysis techniques for electrical power engineering applications						
OP 12	Prepare engineers who can work realizing such systems.	on electri	cal power systems, including designing and					
	4- The relation between the cou	irse objec	tives and the program objectives					
	Course objectives		program objectives					
oc 1	Recognize the control system and its components.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.					
oc 2	Recognize the control Automatic temperature control using a two-position controller with and without hysteresis	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits and systems					
oc 3	Recognize the principle of open loop and closed control system	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.					
		OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications					
oc 4	Recognize the control system and its components.	OP 12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.					
	5- Learning ou	utcomes of	the course (LOs)					
Upon the	completion of the course, the stude	ent should	be able to:					
CR(2.1)	Prepare the control system and its compo	onents.						
CR(2.2)	Apply acknowledge with Automatic temperature control using a two-position controller with and without hysteresis.							
CR(2.3)	Prepare the open loop and closed control	l system						
CR(2.4)	Prepare, Design, and operation of p-action controller, and Static characteristic for controlled system.							

CR(2.5) Communicate effectively with controlled closed loop in simplest form.

6- Program competencies served by the course:

Upon the completion of the Program the student should be able to:





CR2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design

7- The relation between the course learning outcomes and the program competencies

Cou	urse (LOs)	program competencies						
CR(2.1)	Prepare the control system and its components.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design					
CR(2.2)	Apply acknowledge with Automatic temperature control using a two-position controller with and without hysteresis.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design					
CR(2.3)	Prepare the open loop and closed control system	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design					
CR(2.4)	Prepare, Design, and operation of p-action controller, and Static characteristic for controlled system	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design					
CR(2.5)	Communicate effectively with controlled closed loop in simplest form.	CR2	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 ² obtaine content and the relation between the course contents and the course Los							
Week No.	Торіс	Lecture hr.	Tutorial hr.	Practical hours	course LOs			
1	Introduction: component of control system	0	0	2	CR(2.1)			
2	Parameter for temperature-controlled system	0	0	2	CR(2.1)			
3	Focuses on Automatic temperature control of sauna + Solved examples.	0	0	2	CR(2.1)			
4	Automatic temperature control using a two-position controller with hysteresis.	0	0	2	CR(2.2)			
5	Focuses on Calibration of temperature sensor + solved examples.	0	0	2	CR(2.3)			
6	Focuses on Two position (2-state) controller without hysteresis.	0	0	2	CR(2.3)			
7	Disturbance response for a two-position controller.	0	0	2	CR(2.3)			
8	Midterm		1.0					

8- Course content and the relation between the course contents and the course LOs





9	Focuses on Static characteristic for controlled system	0	0	2	CR(2.2)
10	The principle of open loop control system	0	0	2	CR(2.3)
11	Focuses on Design and operation of p-action controller.	0	0	2	CR(2.5)
12	Focuses on Design and operation of p-action controller.	0	0	2	CR(2.4)
13	Focuses on project objective	0	0	2	CR(2.5)
14	Focuses on Special Topics.	0	0	2	CR(2.5)
15	Focuses on solved examples in controlled system.	0	0	2	CR(2.3)
16	Final Exam		2.0		
Total ho	urs	0	0	28	

	9- T	he Teaching	g and lea	rning m	ethod	s and th	neir rela	ation to	the Lo	s of th	e cour	se	
				Tead	ching a	ind Lea	rning N	lethod	S				
Course learning Outcome s (LOs)	On line / face to face lectures	Tutorials: sheets	projects	Problem solving	Brain storming	Practical: lab	Discovering / self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
CR(2.1)	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
CR(2.2)	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
CR(2.3)	\checkmark	\checkmark	✓			✓	✓			\checkmark	\checkmark	\checkmark	
CR(2.4)	\checkmark	\checkmark	\checkmark			\checkmark	✓			✓	\checkmark	\checkmark	
CR(2.5)	\checkmark	\checkmark	✓			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	

Notes:

The research concerns the cooperative work, the discussion and the presentations.

The Tutorials concerns on sheets

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.





10- Student assessment method											
	a- Assessment method and its relation to the Los of the course Tools of assessment										
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
CR(2.1)		✓	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	
CR(2.2)		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	
CR(2.3)		✓	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	
CR(2.4)		~	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	
CR(2.5)		~	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	
					b- Time	e schedu	le of as	sessment			
Quizzes			(Quiz (1 Duiz (2	l) 2)						
Discussions Presentation Sheets and the Projects Attendance Mid-term en final exam	s ns and Sketch xam	Movies les		(_ ,	Ex we we we W W	very wee eekly eekly eekly eekly feek (7 feek (14	ek for any) i)	student		
				c	- Gradi	ing syste	em				
Di Sheets the	scussi and S e Proje	ons ketches ects			20% 70% 10%		40 ma	urks	(6	0) marks	
		Attend	lance				(10) m	arks			
		final e	n exam	1			(10) marks (40) marks				
Total					(100) marks						

10- List of references:

a) Course notes

Lecture notes and handouts





b) Required books	 Nise, N.S., John Wiley & Sons Ltd., 'Control Systems Engineering, 8th Edition'. Katsuhiko Ogata, "Modern Control Engineering", Prentice Hall, 5th Edition, 2009. F. Golnaraghi and B. C. Kuo, "Automatic control Systems", 10th ed., John Wiley & Sons, Inc. 2017. Andrea Bacciotti, "Stability and Control of Linear Systems",
c) Recommend books	Volume 185, Springer, 2019 R. C. Dorf and R. H. Bishop, "Modern Control Systems", Addison-Wesley, 11th Edition, 2014.
d) Periodicals, Web sites, etc	No periodicals are needed.

11- Facilities required for teaching and learning:

- Appropriate teaching design studios including presentation board, data show
- Google classroom
- E- learning

12- Requirements for Disable facilities:

- On line teaching hours if it is needed
- Extra examples and topic-specified research

Course coordinator:	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	2022/2023





Course specification				
Course code:	Course name			
CECE 302	Electronics II			
A- <i>A</i>	Affiliation			
Relevant program:	Electrical power engineering			
Department offering the program:	Electrical and communication engineering			
Department offering the course:	Electrical and communication engineering			
Date of program operation:	2008-2009			
Date of approval from the higher ministry	27/1/2008			
of education				
Date of course operation	2022-2023			
B- <u>Basic</u>	<u>Information</u>			
Course Name	Electronics II			
Code	CECE 302			
Course Level	Third level courses (Junior) - Second semester			
	(Spring)			
Credit Hours	3Cr. hr			
Lectures	2hr			
lab	3hr			
Total	5hr			
Prerequisite	CECE 301			
Instructor name/Email	Dr. Ibrahim Ali Mahmoud Abdel Dayem			
	dr.ibrahim@sva.edu.eg			

C- Professional information

<u>1-Course core</u>

Differential amplifiers, operational amplifiers, MOSFET amplifiers; multi-stage amplifiers, output stages and power amplifiers; analog filters concepts and types, filter design, Frequency Response, Feedback, oscillator concept and types, mixers concept, types, and circuits, modulator circuits. Signal Generators and Waveform Shaping Circuits

2-Course learning objectives:

- oc 2 Recognize the present techniques of wave shaping and generation.
- oc 3 Recognize the operation and application of differential amplifier.
- oc 4 Recognize some special purpose Analog IC like 555-timer and PLL.
- oc 5 Recognize the voltage and current relationships in transmission lines and operation characteristics.





006	Recognize the fundamental skills to understand the basic of semiconductor and components like diode, Transistor ,MOSFET and operational								
	3- program objective	es served	by the course:						
Upon the cor	npletion of the course the student sh	ould be a	able to:						
OP 5	Prepare students for engineering a mathematical and computational in	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.							
OP 6	Prepare undergraduate students w by applying fundamentals of eng design and syntheses of electrical	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.							
OP 7	Teach students to use experimen power engineering applications	tal and d	ata analysis techniques for electrical						
OP9	Provide students with an award participating	Provide students with an awareness of the tools and skills necessary for participating							
4-	The relation between the course	objective	es and the program objectives						
	Course objectives		program objectives						
oc 1	Recognize the principles of the feedback.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational mathematical						
oc 2	Recognize the present techniques of wave shaping and generation.	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical						
oc 3	Recognize the operation and application of differential amplifier.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.						
oc 4	Recognize some special purpose Analog IC – like 555-timer and PLL.	OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications						
oc 5	Recognize the voltage and current relationships in transmission lines and operation characteristics.	OP9	Provide students with an awareness of the tools and skills necessary for participating						





	Recognize the fundamental skills to understand the basic of semiconductor and components like diode, Transistor, MOSFET	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
006	and operational	OP9	Provide students with an awareness of the tools and skills necessary for participating

5- Learning outcomes of the course (LOs)

Upon the completion of the course, the student should be able to:

CR(1.1)	Describe the current engineering technologies as related to the electronics.
CD(1.2)	

CR(1.2,	apply appropriate scientific principles mathematical and computer-based methods
0 1)	
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2.1)	for analysing generation electronic engineering system

- CR(2.2, 3.1) Develop the creative thinking for resolving and innovative solutions for the practical industrial problems
- CR(3.2,5.1) Apply knowledge to Assess and evaluate the characteristics and performance of analogue electronic circuits
 - CR(3.3, 5.2) Communicate effectively with the mathematics of analogue electronics design integrally to solve engineering problems

6- Program competencies served by the course:

Upon the completion of the Program the student should be able to:

- CR1 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.
- **CR 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
- CR 3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.
- CR 5 Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems, and services.





7- The rela	ation between the course lear	ning out	comes and the program competencies
Со	urse (LOs)		program competencies
CR(1.1)	Describe the current engineering technologies as related to the electronics.	CR1	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.
CR(1.2, 2.1)	apply appropriate scientific principles mathematical and computer-based methods for analysing generation electronic	CR1	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.
	engineering system Develop the creative thinking for resolving and innovative solutions for the practical industrial problems	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.2, 3.1)	Apply knowledge to Assess and evaluate the characteristics and	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
	performance of analogue electronic circuits	CR 3	Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.
CR(3.2,5.1)	Describe the current engineering technologies as related to the electronics. apply appropriate	CR 3	Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.
	scientific principles mathematical and computer-based methods for analysing generation electronic engineering system	CR 5	Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems, and services.





CR	(3.3, 5.2)	Develop the creative thinking for resolving and innovative solutions for the practical industrial problems	CR 3 CR 5	Desi modu elect using tools Adop inter desig main equin	gn and im ules, sub-s rical/elect g technolo ot suitable national s gn, build, tain elect	plement ele systems, or tronic/digita ogical and p e national an tandards an operate, ins rical/electro stems, and s	ements, systems in al engineering rofessional nd d codes to pect, and onic/digital services.
	8-	Cou	rse content and the relation bet	tween th	e cours	e contents	and the cour	se LOs
Week No.			Торіс	I	ecture. hr.	Tutorial hr.	Practical hours	course LOs
1	Signal st	age ai	nplifiers.		2	0	2	CR(1.1)

1	Signal stage amplifiers.	2	0	2	CR(1.1)
2		2	0	2	
2	Frequency response of one stage amplifiers	2	0	2	CR(1.1)
3	Bypass capacitors.	2	0	2	CR(1.1)
4	Emitter and source follower.	2	0	2	CR(1.2, 2 1)
5	Input and output amplifiers& quiz	2	0	2	CR(2.2, 3.1)
6	Multistage amplifiers	2	0	2	CR(2.2, 3.1)
7	Coupling between stage.	2	0	2	CR(3.2,5.1)
8	Midterm		1.0		
9	Operational amplifiers	2	0	2	CR(3.3, 5.2)
10	Properties of OP-AMPS	2	0	2	CR(3.3, 5.2)
11	Simple analog computers & quiz	2	0	2	CR(3.3, 5.2)
12	Comparator Schmitt trigger.	2	0	2	CR(3.3, 5.2)
13	Sample and hold	2	0	2	CR(3.3, 5.2)
14	Properties of OP-AMPS	2	0	2	CR(3.3, 5.2)
15	Properties of OP-AMPS	2	0	2	CR(3.3, 5.2)
16	Final Exam		2.0		
Total	hours	28	0	28	





	9- Th	<mark>e Teaching</mark> a	and lear	rning m Tear	ethods	and th	eir relatio	on to	the Lo	<mark>s of th</mark>	e cour	se	
Course learning Outcome s (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering/ self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
CR(1.1) CR(1.2, 2.1)	✓ ✓	✓											
CR(2.2, 3.1)	\checkmark	✓	✓	✓	✓	✓	~	ľ	✓	✓			✓
CR(3.2, 5.1)	✓	✓	\checkmark	\checkmark	✓	✓	✓		✓	✓	~	✓	✓
CR(3.3, 5.2)	✓	✓	\checkmark	\checkmark	✓	\checkmark	~		✓	√	✓	√	✓

Notes:

The research concerns the cooperative work, the discussion and the presentations.

The Tutorials concerns the brain storming and the problem solving.

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

			10- Stu	dent asse	ssment	metho	d			
	a- Ass	sessmer	nt method a	nd its relation	on to the	Los of th	e course			
				Т	ools of as	ssessme	nt			
Course ILOs	quizzes	Mid -term exam	Final exam sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
CR(1.1)										
CR(1.2,										
2.1)										

HUSTINGE SA P	401W FE		High vall El	Min ey inst ectrica	istry c itute f l pow	of highe for engin er engin	r educat heering eering j	ion and tec progran	hnology n	X	
CR(2.2, 3.1)	√	\checkmark	\checkmark	✓	√	✓	✓		✓		✓
CR(3.2,5 .1)	✓	✓	\checkmark	✓	✓	✓	✓	✓	✓	✓	✓
CR(3.3, 5.2)	\checkmark	\checkmark	\checkmark	✓	√	√	√	\checkmark	\checkmark	\checkmark	\checkmark
				b	- Tim	ne sched	ule of as	sessmer	nt		
Quizzes			Qu	iz (1)		W	eek (3)				
QuizzesQuiz (2)Week (10)DiscussionsEvery week for any studentPresentations and MoviesWeeklySheets and SketchesWeeklyResearches and reportsWeek (2,3)the ProjectsWeek (4,8)Practical modellingWeeklyAttendanceWeeklyMid-term examWeek (6)final examWeek (16)											
	quizo	-		Quiz	z(1)		(5) ma	arks			
I _Shee	quize Discussi ts and S	ons Sketches		Quiz 15 20	z (2) 5% 0%		(5) ma	arks			
Resea the f Prae	rches a Projects ctical mo	nd reports and lab odelling	5	20 30 20)%)%)%		5 mar	ks		(40) mark	S
		Atte Mid t	endance				(10) ma	arks arke			
		fina	al exam Total		10 1 :-4	of	(13) 116		(60) marks (100) marks	6	
a) Co	urse no	otes		Lectu	re note	s and har	douts				
b) Re	quired	books			Ade inte D.P	elS.Sedra ernational P. Patnaik	Kenneth sixth edi a, "Analo	nC.Smith tion og electro	microelectr	onic circu amp", 5 th	uits ed,
c) Re d) Pe	comme riodical	nd book s, Web s	s sites, etc	Menti No pe	oned a riodica	it time. als are ne	eded.				
			1	1- Faci	lities re	quired for	r teaching	and lear	ning:		
•	App	oropriate	teaching de	sign stu	dios in	cluding p	resentatio	on board,	, data show		

- Google classroom
- E- learning ٠

12- Requirements for Disable facilities: On line teaching hours if it is needed

- ٠
- Extra examples and topic-specified research ٠





• Course coordinator: program Coordinator Head of the Department Date:

Dr. Ibrahim Ali Mahmoud Abdel Dayem Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul Dr. Ibrahim Ali Mahmoud Abdel Dayem 2022/2023







Course specification

Course code:	Course name
CECE 312	Electronics Lab
A- Affiliation	
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry of	27/1/2008
education	
Date of course operation	2022-2023

	B- <u>Basic Information</u>
Title	Electronics Lab
Code	CECE 312
Course Level	Third level courses (Junior) - Second semester (Spring)
Credit Hours	1Cr. hr
Lectures	Ohr
Lab	3hr
Total	3hr
Prerequisite	Conc. with CECE 302
Instructor name/Email	Dr. Ibrahim Ali Mahmoud Abdel Dayem
	dr.ibrahim@sya.edu.eg

C- Professional information

1-Course core

Experiments illustrating material in CECE 302

3- Course learning objectives:

oc 1	Recognize and verify the network theorems and operation of typical electronics circuits.
oc 2	Recognize how to used the various stages of a Zener diode based regulated power supply.
oc 3	Recognize various biasing concepts, BJT based amplifiers.
oc 4	Recognize diode and it's applications in clipping and clamping circuits, Rectifiers and design regulated power supply using Zener diodes.
oc 5	Recognize how plot the current voltage characteristics of Diode, Transistors, and its different biasing conditions.
oc 6	Recognize the usage of semiconductor devices in designing the circuits.

4- program objectives served by the course:

Upon the completion of the course the student should be able to:




OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications						
OP 9	The students will gain familiarity with the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry needs.						
	1- The relation between the course	objective	es and the program objectives				
	Course objectives		program objectives				
oc 1	Recognize and verify the network theorems and operation of typical electronics circuits.	OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications				
oc 2	Recognize how to used the various stages of a Zener diode based regulated power supply.	OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications				
oc 3	Recognize various biasing concepts, BJT based amplifiers.	OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications				
oc 4	Recognize diode and it's applications in clipping and clamping circuits, Rectifiers and design regulated power supply using Zener diodes.	OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications				
oc 5	Recognize how plot the current voltage characteristics of Diode, Transistors, and its different biasing conditions.	OP 7 OP 9	Teach students to use experimental and data analysis techniques for electrical power engineering applications The students will gain familiarity with the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry				
oc6	Recognize and verify the network theorems and operation of typical electronics circuits.	OP 7	needs. Teach students to use experimental and data analysis techniques for electrical power engineering applications				





The students will gain familiarity with the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry needs.

5- Learning outcomes of the course (LOs)

OP 9

Upon the completion of the course, the student should be able to:

- **CR(1.1)** Apply acknowledge in a systematic manner suitable for analysis and design and further analyze the electric circuit using network theorems.
- CR(2.1) Use laboratory to identify the different types of semiconductor devices and their characteristics.
- CR(2.2, Apply acknowledge to deal with transistors, transistor-based amplifiers, and its biasing.
- CR(2.3,3.2) Apply acknowledge to deal with the concepts of feedback and oscillations and construct feedback amplifiers
- CR(3.3, Communicate effectively with the analogue electronics design integrally to solve engineering problems.

6- Program competencies served by the course:

Upon the completion of the Program the student should be able to:

- CR1 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.
- **CR 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
- CR 3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.
- CR 5 Adopt suitable national and international standards and codes to design, build, operate, inspect, and maintain electrical/electronic/digital equipment, systems and services.

1- The relation between the course learning outcomes and the program competencies

Course (LOs)

program competencies





CR(1.1)	Apply acknowledge in a systematic manner suitable for analysis and design and further analyze the electric circuit using network theorems.	CR1	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.
CR(2.1)	Use laboratory to identify the different types of semiconductor devices and their characteristics.	CR 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
CR(2.2, 3.1)	Apply acknowledge to deal with transistors, transistor-based amplifiers, and its	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Design and implement elements, modules, sub-systems, or systems in
CR(2.3,3.2)	Apply acknowledge to deal with the concepts of feedback and	CR 3	electrical/electronic/digital engineering using technological and professional tools. Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
	oscillations and construct feedback amplifiers	CR 3	Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.
CR(3.3, 5.1)	Communicate effectively with the analogue electronics design integrally to	CR 3	Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.





		solve	engineerin	ng	Ado	pt suitable	e national ar	nd
		problems	5	CD	inter	mational s	tandards an	d codes to
				CK.	5 desi	gn, build, (ntain electi	operate, ins	pect, and pic/digital
					equi	pment, sv	stems, and s	services.
7	- Course	e content an	d the relation	between	the cours	e contents	and the cour	se LOs
Week		То	pic		Lecture	Tutorial	Practical	course LOs
No.	Study an	d operation	of digital mult	i-meter	hr.	hr.	hours	CP(1 1)
1	function CRO, etc	generator, re	gulated power	supply,	0	0	2	CK(1.1)
2	Verificat	ion of KVL a	and KCL		0	0	2	CR(1.1)
3	Verificat	ion of Superp	position theore	m.	0	0	2	CR(1.1)
4	Verificat: Theorem	ion of T	hevenin's, N	Norton's	0	0	2	CR(2.1)
5	To plot th and Zene	ne IV-charact er diode and I	teristics of an c LED.	ordinary	0	0	2	CR(2.2
6	Study c Rectifier	of Half wa s.	we and Full	Wave	0	0	2	CR(2.2
7	Study of Feedbacl	Fixed Bias, configuration	, Voltage divid on for transisto	ler bias ors.	0	0	2	CR(2.3,3.2)
8	Midterm	8				1.0		
9	Input and	l output amp	lifiers& quiz		0	0	2	CR(3.3, 5.1)
10	Multistag	ge amplifiers			0	0	2	CR(3.3,
11	Coupling	; between sta	lge.		0	0	2	CR(3.3,
12	Propertie	es of OP-AM	PS.		0	0	2	5.1) CR(3.3,
10					<u>_</u>	c	c	5.1)
13	Study of	transistor an	nplifier circuit.		0	0	2	CR(3.3, 5.1)
14	Final Exa	am				2.0		
Total hours					0	0	28	

8- The Teaching and learning methods and their relation to the Los of the course Teaching and Learning Methods





Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
CR(1.1)	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
CR(2.1)	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
CR(2.2, 3.1)	\checkmark	\checkmark	\checkmark			✓	✓			√	✓	✓	
CR(2.3,3.2)	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
CR(3.3, 5.1)	\checkmark	\checkmark	✓			✓	✓			✓	✓	✓	
Notes:													

The research concerns the cooperative work, the discussio and the presentations.

The Tutorials concerns on sheets

Attendance

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

			0	Chud			m oth o				
	9- Student assessment method										
			a- As	sessm	ent metho	d and its	relatior	n to the Los	of the co	urse	
					Т	ools of a	ssessm	ent			
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
CR(1.1)		✓	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	
CR(2.1)		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	
CR(2.2,		1	1	1	1	1	1	1		1	
3.1)			·	•	·	·	·	·			
CR(2.3,3		~	1	\checkmark	\checkmark	\checkmark	✓	\checkmark		\checkmark	
.2)					·						
CR(3.3,		~	\checkmark	\checkmark	\checkmark	\checkmark	✓	\checkmark		\checkmark	
5.1)											
	b- Time schedule of assessment										
Discussions						Eve	ery weel	c for any stu	ıdent		
Presentations	s and N	lovies				wee	ekly				
Sheets and S	ketche	s				wee	ekly				
the Projects						wee	екіу				

weekly





Mid-term exam final exam							
c- Grading system							
Discussions Sheets and Sketches the Projects Attendance Mid-term exam	20% 70% 10%	40 marks (10) marks (10) marks	(60) marks				
Total			(100) marks				
10- List of references:							
 a) Course notes b) Required books c) Recommend books d) Periodicals, Web sites, etc 	 Lecture notes and handouts AdelS.Sedra Kenneth C.Smith microelectronic circuits international, Eighth Edition D.P. Patnaika, "Analog electronics and opamp", 3rd ed, 2007 Mentioned at time. 						
11- Fa	cilities require	ed for teaching an	d learning:				
 Appropriate teaching Google classroom	g design studio	os including presen	tation board, data show				

• E- learning

12- Requirements for Disable facilities:

- On line teaching hours if it is needed
- Extra examples and topic-specified research

Course coordinator:	Dr. Ibrahim Ali Mahmoud Abdel Dayem	SÞ
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul	to!
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem	GÞ
Date:	2022/2023	





Course specification					
Course code:	Course name				
CECE 306	Electromagnetic Theory				
	A- A Affiliation				
Relevant program:	Electrical power engineering				
Department offering the program:	Electrical and communication engineering				
Department offering the course:	Electrical and communication engineering				
Date of program operation:	2008-2009				
Date of approval from the higher m	ninistry 27/1/2008				
of education					
Date of course operation	2022-2023				
	B- Basic Information				
Title	Electromagnetic Theory				
Code	CECE 306				
Course Level	Third level courses (Junior) - Second semester (Spring)				
Credit Hours	3Cr. hr				
Lectures	2hr				
lab	3hr				
Total	5hr				
Prerequisite Conc. with PHYS 102, MATH 201					
Instructor name/Email	Prof. Dr. Hussein Hamed Al-Ghaz				
	Hussein Al-goz@sva edu eg				

C- Professional information

1- <u>Course core</u>

Electric field and potential. Gauss's law; divergence. Conductors, dielectrics and capacitance. Poisson's and Laplace's equations. Electrostatic analogs. Magnetic field and vector potential. Time varying fields; displacement current. Maxwell's equations in differential form

2- Course learning objectives:

oc 1Recognize how determine length, area, and volume in three dimensional (3D)
orthogonal coordinate system (rectangular, cylindrical, and spherical
coordinates).oc 2Recognize how formulate vector representation of an electric field or electric
flux density given a known charge distribution or a potential field.oc 3Recognize and develop relationship between electric field, potential, and energy
density (potential energy stored) in the electrostatic field.oc 4Recognize the relate static electric or magnetic field in the presence of dielectric
or magnetic materials. Identify them across the boundaries of various insulating
or magnetic materials.





oc 5	find the capacitance and stored energy with one dimensional potential variation using direct integration (Laplace's equation).
oc 6	apply known magnetic field laws to quantify different magnetic fields due to direct current. Define physical interpretation of curl and divergence with application of divergence and Stoke's theorems
oc 7	determine the force or moment of force exerted by the magnetic field on other charges. Formulate point and integral forms of Maxwell's equations for time- varying electric and magnetic fields and apply them to simple EM problems.

1- program objectives served by the course:

Upon the completion of the course the student should be able to:

- OP 5 Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
- OP 6 Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
- OP 7 Teach students to use experimental and data analysis techniques for electrical power engineering applications
- OP 12 Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
 - 2- The relation between the course objectives and the program objectives

Course objectives

program objectives

oc 1	Recognize how determine length, area, and volume in three dimensional (3D) orthogonal coordinate system (rectangular, cylindrical, and spherical coordinates).	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 2	Recognize how formulate vector representation of an electric field or electric flux density given a known charge distribution or a potential field.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 3	Recognize and develop relationship between electric field, potential, and energy density (potential energy stored) in the electrostatic field.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.





oc 4	Recognize the relate static electric or magnetic field in the presence of dielectric or magnetic materials. Identify them across the boundaries of various insulating or magnetic materials. find the capacitance and stored energy with one dimensional potential variation using direct integration (Laplace's equation).	OP 6 OP 7	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems. Teach students to use experimental and data analysis techniques for electrical power engineering applications
oc 5	apply known magnetic field laws to quantify different magnetic fields due to direct current. Define physical interpretation of curl and divergence with application of divergence and Stoke's theorems	OP 6 OP 7	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems. Teach students to use experimental and data analysis techniques for electrical
oc 6	Recognize how determine length, area, and volume in three dimensional (3D) orthogonal coordinate system (rectangular, cylindrical, and spherical coordinates). Recognize how formulate vector representation of an electric field or electric flux density given a known charge distribution or a potential field. Recognize and develop relationship between electric field, potential, and energy density (potential energy stored) in the electrostatic field.	OP 6 OP 7 OP 12	power engineering applications Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems. Teach students to use experimental and data analysis techniques for electrical power engineering applications Prepare engineers who can work on electrical power systems, including designing and realizing such systems.





oc 7 Recognize the relate static electric or magnetic field in the presence of dielectric or magnetic materials. Identify them across the boundaries of various insulating or magnetic materials. Prepare undergraduate students who can create new ways to meet society's needs

OP 6 by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.

OP 7 Teach students to use experimental and data analysis techniques for electrical power engineering applications

OP Prepare engineers who can work on 12 electrical power systems, including designing and realizing such systems.

3- Learning outcomes of the course (LOs)

Upon the completion of the course, the student should be able to:

- CR(2.1) Determine length, area, and volume in three dimensional (3D) orthogonal coordinate system(rectangular, cylindrical, and spherical coordinates).
- **CR(2.2)** Produce the vector representation of an electric field or electric flux density given a known charge distribution or a potential field.
- CR(2.3) Conduct and Develop relationship between electric field, potential, and energy density (potential energy stored) in the electrostatic field.
- CR(2.4) Produce the relate static electric or magnetic field in the presence of dielectric or magnetic materials. Identify them across the boundaries of various insulating or magnetic materials.
- **CR**(2.5,3.1) Solve the capacitance and stored energy with one dimensional potential variation using direct integration (Laplace's equation).

CR(2.6,3.2) Apply known magnetic field laws to quantify different magnetic fields due to direct current. Define physical interpretation of curl and divergence with

application of divergence and Stoke's theorems.

CR(2.7,3.3) Express the acknowledge for force or moment exerted by the magnetic field on other charges and express the equation for point and integral forms of Maxwell's equations for time-varying electric and magnetic fields and apply them to simple EM problems.

4- Program LOs served by the course:

Upon the completion of the Program the student should be able to:

- CR2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
- CR3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.





5- The rela	ation between the course le	earning o	outcomes and the program competencies				
Cou	rse (LOs)		program competencies				
CR(2.1)	Determine length, area, and volume in three dimensional (3D) orthogonal coordinate system(rectangular, cylindrical, and	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design				
CR(2.2)	spherical coordinates). Produce the vector representation of an electric field or electric flux density given a known charge distribution or a potential field	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design				
CR(2.3)	Conduct and Develop relationship between electric field, potential, and energy density (potential energy stored) in the electrostatic field.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design				
CR(2.4)	Produce the relate static electric or magnetic field in the presence of dielectric or magnetic materials. Identify them across the boundaries of various insulating or magnetic materials.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design				
CR(2.5,3.1)	Solve the capacitance and stored energy with one dimensional potential variation	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design				





		using direct integration (Laplace's equation).	CR3	Design and sub-system electrical/e using tech	d implem ns, c electronic nological	ent eleme or sy c/digital and profe	ents, modules, stems in engineering essional tools.
CR(2.6	,3.2)	Produce the relate static electric or magnetic field in the presence of dielectric or magnetic materials.	CR2	Design, electrical/c componen identify th design	model electronic t for a sp e tools re	and c/digital pecific ap equired to	analyze an system or plication; and optimize this
		Identify them across the boundaries of various insulating or magnetic materials.	CR3	Design and sub-system electrical/e using techn	d implem ns, c electronic nological	ent eleme or sy c/digital and profe	ents, modules, stems in engineering essional tools.
CR(2.7,3.3)		Express the acknowledge for force or moment exerted by the magnetic field on other charges and express the equation for point and integral forms of Maxwell's equations for time- varying electric and	CR2 CR3	Design, electrical/e componen identify th design Design and sub-system electrical/e using techn	model electronic t for a sp e tools re d implem ns, c electronic nological	and c/digital becific ap equired to ent eleme or sy c/digital and profe	analyze an system or plication; and optimize this ents, modules, stems in engineering essional tools.
		magnetic fields and apply them to simple EM problems.					
6- Course content and the relation between the course contents and the course LOs							
Week No.		Торіс		Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduct systems Divergen	ion Review of vector algebra, and transformation, vector ce and Stokes' theorems, and t	Coordinat calculus the Laplac	te s, 2 ce 2	0	2	CR(2.1)
2	Focuses	on Coulomb's law and Electro	static field	ls 2	0	2	CR(2.1)

2	Focuses on Coulomb's law and Electrostatic fields	2	0	2	CR(2.1)
	for discrete and continuous charges in vacuum.	2			
3	Electric flux density, gauss's law, applications of	2	0	2	CR(2.1)
	gauss's law, electric scalar potential.	2			
4	relationship between electrostatic fields and the	2	0	2	CR(2.2)
	scalar potential, and work done.	2			
5	Electric dipole, energy and energy density,	2	0	2	CR(2.3)
	fundamental postulates of electrostatic field.	2			()
6	boundary conditions of static electric field in	r	0	2	CR(2.3)
	conductor Poisson's and Laplace's equations.	2			()
7	Discrete memoryless channel.	r	0	2	CR(2.3)
	-	2			(-)





8	Midterm		1.0		
9	Dielectrics and polarization, boundary conditions and capacitance, Conductors, Current density, and Pasietance	2	0	2	CR(2.4)
10	Image method and Boundary value problems (Poisson's and Laplace's equations in different coordinate systems)	2	0	2	CR(2.4)
11	Magnetostatic fields Biot savart and Ampere's law.	2	0	2	CR(2.5,3.1)
12	magnetic flux density, magnetic scalar and vector potentials	2	0	2	CR(2.5,3.1)
13	Comparison between Magnetostatic and Electrostatic fields	2	0	2	CR(2.6,3.2)
14	Magnetic force, magnetic dipole, magnetic materials, magnetic energy, boundary conditions, and Magnetic circuits	2	0	2	CR(2.6,3.2)
15	Maxwell's equation for time varying fields, Faraday's law.	2	0	2	CR(2.7,3.3)
16	Final Exam		2.0		
Total hours		28	0	28	

	/- TI	he Teaching	j and lea	arning I	method	is and t	heir rela	ation to	o the Lo	os of tl	ne cou	rse	
				Tea	aching	and Lea	arning N	lethod	s				
Course learning Outcom es (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
CR(2.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
CR(2.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			✓	\checkmark	\checkmark	
CR(2.3)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			✓	\checkmark	\checkmark	
CR(2.4)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			✓	\checkmark	\checkmark	
CR(2.5,3 .1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			~	\checkmark	\checkmark	
CR(2.6,3 .2)	\checkmark	✓	\checkmark	\checkmark	✓	✓	\checkmark			~	\checkmark	\checkmark	
CR(2.7,3	\checkmark	\checkmark	✓	\checkmark	\checkmark	\checkmark	\checkmark			✓	\checkmark	\checkmark	

.3) Notes:

The research concerns the cooperative work, the discussion and the presentations.

The Tutorials concerns the brain storming and the problem solving.

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.





	8-	St	udent	assessm	ent m	ethod					
			a- As	sessment	metho	d and it	s relation	n to the Lo	s of the co	ourse	
						Tools o	f assessr	ment			
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
CR(2.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	
CR(2.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	✓		✓	
CR(2.3)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	
CR(2.4)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	
CR(2.5,3.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	
CR(2.6,3.2)	✓	✓	√	√	~	√	√	 ✓ 		✓	
CR(2.7,3.3)	✓	✓	\checkmark	✓	 ✓ 	~	~	✓ ✓		\checkmark	
	0		`	b·	Tim	e sched	ule of as	sessment			
Quizzes Discussions Presentations a Sheets and Ske the Projects Attendance Mid-term exam	C Q nd M tches	ovies)			Week (Every v weekly weekly weekly Weekly Week (8)	any student	t		
final exam				6-	Grad	Week (ling syst	16)				
Quize	es ions		(c- Quiz (1) Quiz (2) 30%	Grad	ung syst	(5) mar (5) mar	ks ks			
Sheets and S	Sketcl	nes		40%	5 marks (40) marks						
the Projects 30% Attendance Mid-term exam final exam Total					(10) marks (15) marks (60) marks (100) marks						

10- List of references:

a)	Course notes	Lecture notes and handouts
b)	Required books	W.Haytand J. Buck, Engineering Electromagnetic, McGraw - Hill, 9th
	*	Ed.
c)	Recommend books	Mentioned at time.
d)	Periodicals, Web sites, etc	No periodicals are needed.





11- Facilities required for teaching and learning:

- Appropriate teaching design studios including presentation board, data show
- Google classroom
- E- learning

12- Requirements for Disable facilities:

- On line teaching hours if it is needed
- Extra examples and topic-specified research

Course coordinator:	Prof. Dr. Hussein Hamed Al-Ghaz	140
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul	
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem	-
Date:	2022/2023	





Course specification

Course code:	Course name					
CECE 325	ECE 325 Fundamental of communication					
	Affiliation					
Relevant program:	Electronic and communication engineering					
Department offering the program:	Electrical and communication engineering					
Department offering the course:	Electrical and communication engineering					
Date of program operation:	2008-2009					
Date of approval from the higher minist	ry of 27/1/2008					
education						
Date of course operation	2022-2023					
Basic Information						
Course Name	Fundamental of communication					
Code	CECE 325					
Course Level	Third level courses (Junior) - Second semester (Spring)					
Credit Hours	3Cr. hr					
Lectures	2hr					
Tutorial	2hr					
Total	4hr					
Prerequisite	CECE 303					
Instructor name/Email	Ass. Prof. Dr. Ashraf Mohamed Ali Hassan					
	Asherf Ali @sva.edu.eg					
Prof	essional information					

1- <u>Course core</u>

Signal representation and classification, time and frequency domains and transform, power spectral analysis. Basics of analog communication: amplitude, angle, and analog pulse modulation; modulators and demodulators; frequency multiplexing. Basics of digital communication: sampling, quantization, pulse code modulation, (PCM), Delta Modulation, Differential PCM, time division multiplexing, binary signal formats. Introduction to Random Processes. Noise in communication systems.

Professional information

1- Course learning objectives:						
oc 1	Recognize the basic science and basic mathematics and be able to use these tools in their own engineering field.					
oc 2	Produce the necessary techniques, hardware, and communication tools for modern engineering applications					
oc 3	Make the work in a multi-disciplinary environment, and follow and contribute to the developments in their own field recognizing the significance of lifelong learning.					
oc 4	Recognize the fields of integrated electronic circuits, electronic data storage, high-speed computing, communications, signal processing, microwave, wave propagation and antenna, optoelectronics, automation, automatic control, and monitoring systems, circuit analysis, network analysis, digital signal processing, and microprocessors					





oc 5	Recognize how balance between theoretical and laboratory experience and to impart a fundamental and practical understanding of the principles required for a successful career in electronics engineering.					
oc 6	recognize the solid core of foundation courses in physics, mathematics, computer science, and general engineering, which is also essential for lifelong learning.					
oc 7	Recognize the electromagnetic, wave propagation and antenna, circuits, electronics, power electronic devices, digital logic design, computers, programming, computer networks, signal processing, opto-electronics ,and communications					
2- program objectives served by the course:						
Upon the con	npletion of the course the student should be able to:					

- OP 5 Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
- OP 6 Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
- OP 12 Prepare engineers who can work on electrical power systems, including designing and realizing such systems.

3- The relation between the course objectives and the program objectives

	Course objectives	program objectives				
oc 1	Recognize the basic science and basic mathematics and be able to use these tools in their own engineering field.	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.			
	Produce the necessary techniques, hardware, and communication tools for modern engineering applications Make the work in a multi-	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies. Prepare undergraduate students who can			
oc 2	disciplinary environment, and follow and contribute to the developments in their own field recognizing the significance of lifelong learning.	OP 6	create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.			
oc 3	Recognize the fields of integrated electronic circuits, electronic data storage, high-speed computing,	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.			



	communications, signal processing, microwave, wave propagation and antenna, optoelectronics, automation, automatic control, and monitoring systems, circuit analysis, network analysis, digital signal processing, and microprocessors Recognize how balance between theoretical and laboratory experience and to impart a fundamental and practical understanding of the principles required for a successful career in electronics engineering.	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
oc 4	recognize the solid core of foundation courses in physics, mathematics, computer science, and general engineering, which is also essential for lifelong learning.	OP 5 OP 6	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies. Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components circuits and systems
oc 5	Recognize the basic science and basic mathematics and be able to use these tools in their own engineering field.	OP 12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
	Produce the necessary techniques, hardware, and communication tools for modern engineering applications	OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 6	Make the work in a multi- disciplinary environment, and follow and contribute to the developments in their own field recognizing the significance of lifelong learning.	OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.

131140 100 a.	HOTE ON CHOIL	Ministry o High valley institute f Electrical pow	of higher of for engine rer engine	education ering and technology ering program			
oc 7	c 7 Recognize the fields of integrated electronic circuits, electronic data storage, high-speed computing, communications, signal processing, microwave, wave propagation and antenna, optoelectronics, automation,		OP 5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies. Prepare undergraduate students who can create new ways to meet society's needs			
	systen analys and m	alysis, digital signal processing, d microprocessors		by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.			
		4- Learning ou	tcomes of	the course (LOs)			
Upon t	he comp	letion of the course, the student sh	ould be ab	le to:			
CR	.(2.1)	Recognize the signals fundamentation systems.	al & linear	time invariant systems used in			
CR	.(2.2)	Recognize the basic concepts of s	ampling th	neory			
CR(2	2.3,3.1)	Recognize the probability, rando	m variable	s & random processes			
CR	.(2.4)	Identify different types of analog techniques used in these systems	communic	cation system and different modulation			
CR	.(2.5)	Apply acknowledge to analyze th signals	e propertie	roperties of Fourier series for continuous time			
CR	.(2.6)	Apply acknowledge to analyze of techniques.	f noise and	its impact on different modulation			
CR(2	2.7,3.2)	Express all of the preceding basic	concepts	to practical issues			
		5- Program comp	etencies se	erved by the course:			
Unon f	he comn	letion of the Program the students	should be a	ible to:			
CR2	Des app	sign, model and analyze an electric lication; and identify the tools req	cal/electror uired to op	nic/digital system or component for a specific stimize this design			
CR3	Des	ign and implement elements, mod trical/electronic/digital engineerir	lules, sub-s	systems or systems in chnological and professional tools.			
	6- Th	e relation between the course lea	rning out	comes and the program competencies			
		Course (LOs)		program competencies			
C	R(2.1)	Recognize the signals fundamental & linear time invariant systems used in communication systems.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design			





Week No.	Topic			Lecture Tutorial Practical course Los hr. hr. hours
Weel	7- Cou Tomic	irse content and the relation	between	the course contents and the course Los
		Express all of the preceding basic concepts to practical issues	CR2 CR3	electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.
CR(2 CR(2.7	2.6) 7,3.2)	Apply acknowledge to analyze of noise and its impact on different modulation techniques.	CR2	optimize this design Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Design, model and analyze an
CR(2	2.5)	Apply acknowledge to analyze the properties of Fourier series for continuous time signals	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to
CR(2	2.4)	Identify different types of analog communication system and different modulation techniques used in these systems	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to entimize this design
CR(2.3	5,3.1)		CR3	and identify the tools required to optimize this design Design and implement elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
		Recognize the probability, random variables & random processes	CR2	optimize this design Design, model and analyze an electrical/electronic/digital system or component for a specific application;
CR(2	2.2)	Recognize the basic concepts of sampling theory	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to





1	Introduction to Signals, Signal Classification,	2	2	0	CR(2.1)
2	Fourier series. Fourier transform & Its Properties'.				CR(2,2)
_	Time-Invariant, Signal transmission through LTI Systems Auto correlation Cross correlation Energy	2	2	0	011(2.2)
	and power spectral density.				
3	Probability, Random Variables & their moments,				CR(2.3,3.
	their significance, Gaussian & Rayleigh Probability	2	2	0	1)
Л	density functions Amplitude Modulation: Need of Modulation Block				CP(2 4)
7	schematic of a typical communication system	2	2	0	CK(2.4)
5	AM modulation system, Modulation index,	2	2	0	CR(2.3,3.
	Generation (Squire Law & Switching Modulator)	2	2	0	1)
6	AM Detection (Envelope & Squire Law Detector) of	f			CR(2.4)
	AM wave , Side bands & Power contents in AM	2	2	0	
7	Wave, AM transmitter block diagram TDE receiver & its				CD(2.5)
/	limitations. Necessity of heterodyning. Super				CK(2.3)
	heterodyne radio receivers, IF amplifiers & selection				
	of IF				
8	Midterm	1.0			
9	DSB-SC (Balanced, Ring Modulator & Synchronous	2	2	0	CR(2.4)
	detection	Z	Z	0	
10	VSB modulation. Comparison of various AM				CR(2.5)
	systems, Frequency division multiplexing, Group	2	2	0	011(210)
	delay & phase delay.				
11	Revision	2	2	0	CR(2.2)
12	Frequency Modulation: Relationships between Phase				CR(2.6)
	Wideband FM & their Spectrum Transmission	2	2	0	
	bandwidth of FM And PM signals.				
13	Methods of generation (Direct & Indirect) &				CR(2.7,3.
	detection of FM (Discriminators : Balanced, Phase	2	2	0	2)
	Shift And PLL Detector), Pre- Emphasis & De-				
14	Revision 1	2	2	0	CR(2 4)
15	Revision 2	2	2	0	CR(2.4)
16	Final Exam	2.0		-	
Total hou	irs	28	28	0	

8- The Teaching and learning methods and their relation to the Los of the course Teaching and Learning Methods





Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	nroiects	Problem solving	Brain storming	Practical: lab	discovering	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
CR(2.1)	\checkmark												
CR(2.2)	\checkmark	\checkmark											
CR(2.3,3.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark			\checkmark
CR(2.4)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
CR(2.5)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
CR(2.6)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
CR(2.7,3.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	✓	\checkmark	✓	\checkmark

Notes:

The research concerns the cooperative work, the discussion and the presentations.

The Tutorials concerns the brain storming and the problem solving.

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

9- Student assessment method											
a- Assessment method and its relation to the Los of the course											
					Too	ls of ass	essmer	nt			
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
CR(2.1)											
CR(2.2)							_		_		,
CR(2.3,3.1)	✓	\checkmark	✓	✓	✓		~		~		v
CR(2.4)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	\checkmark	✓ _	\checkmark	\checkmark
CR(2.5)	\checkmark	\checkmark	\checkmark	\checkmark	✓		~	✓	\checkmark	\checkmark	\checkmark
CR(2.6)	\checkmark	\checkmark	✓	✓	\checkmark		~	\checkmark	\checkmark	\checkmark	\checkmark
CR(2.7,3.2)	✓	✓	\checkmark	✓	✓		✓	✓	✓	\checkmark	✓
	b- Time schedule of assessment										





Quizzes Discussions Presentations and Movies Sheets and Sketches Researches and reports the Projects Practical modelling Attendance Mid-term exam final exam	Quiz (1) Quiz (2)	Week (3) Week (10) Every week for any weekly Week (2,3) Week (4,8) Week (4,8) Week (4,8) weekly Week (7) Week (14)	y student		
	c- Grading syste	em			
quizes Discussions Sheets and Sketches Researches and reports the Projects Practical modelling Attendance Mid-term exam	Quiz (1) Quiz (2) 15% 20% 20% 30% 20%	 (5) marks (5) marks 5 marks (10) marks (15) marks 	(40) marks		
final exam		(60) marks			
Total		(100) marks			
	10- List of refe	rences:			
e) Course notes	Fundamental of Con	mmunication			
f) Required books	 Fundamenta 	als of Signals and S	ystems Using the Web and		
	MATLAB I	Edward W. Kamen I	Bonnie S Heck Third Editior		
	 K. Deergha Rao. Signals and Systems 				
g) Recommend books	Mentioned at time.				
h) Periodicals, Web sites, etc	No periodicals are needed.				

13- Facilities required for teaching and learning:

- Appropriate teaching design studios including presentation board, data show
- Google classroom
- E- learning

Date:

14- Requirements for Disable facilities:

- On line teaching hours if it is needed
- Extra examples and topic-specified research

Course coordinator:	Ass. Prof. Dr. Ashraf Mohamed Ali Hassan
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem

2022/2023







Course specification					
Course code:		Course name			
CECE 326		Communication Lab			
	A- At	ffiliation			
Relevant program:		Electronic and communication engineering			
Department offering the prog	ram:	Electrical and communication engineering			
Department offering the cours	se:	Electrical and communication engineering			
Date of program operation:		2008-2009			
Date of approval from the hig	her ministry	27/1/2008			
of education					
Date of course operation		2022-2023			
	B- <u>Basic I</u>	<u>nformation</u>			
Course Name	Communication	n Lab			
Code	CECE 326				
Course Level	Third level cou	rses (Junior) - Second semester (Spring)			
Credit Hours	1Cr. hr				
Lectures	0hr				
Lab	3hr				
Total	3hr				
Prerequisite	Conc. with CECE 325				
Instructor name/Email	Ass. Prof. Dr. Ashraf Mohamed Ali Hassan				
	<u>Asherf Ali</u> @s	<u>va.edu.eg</u>			
C- Professional information					

1- <u>Course core</u>

Laboratory practice and experimental studies on topics covered in the course

2- Course learning objectives:

oc 1	Produce the necessary techniques, hardware, and communication tools for modern engineering applications
oc 2	make in a multi-disciplinary environment and follow and contribute to the developments in their own field recognizing the significance of lifelong learning.
oc 3	recognize the fields of integrated electronic circuits, electronic data storage, high- speed computing, communications, signal processing, microwave, wave propagation and antenna, optoelectronics, automation, automatic control, and monitoring systems, circuit analysis, network analysis, digital signal processing, and microprocessors
oc 4	make a balance between theoretical and laboratory experience and to impart a fundamental and practical understanding of the principles required for a successful career in electronics engineering.



oc 5

Ministry of higher education High valley institute for engineering and technology Electrical power engineering program



Recognize the electromagnetic, wave propagation and antenna, circuits, electronics, power electronic devices, digital logic design, computers, programming, computer networks, signal processing, optoelectronics, and communications

1- program objectives served by the course:

Upon the completion of the course the student should be able to:

- OP 7 Teach students to use experimental and data analysis techniques for electrical power engineering applications
- OP 9 Provide students with an awareness of the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry needs.

2- The relation between the course objectives and the program objectives

Course objectives

program objectives

oc 1	Produce the necessary techniques, hardware, and communication tools for modern engineering applications	OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications
oc 2	make in a multi-disciplinary environment and follow and contribute to the developments in their own field recognizing the significance of lifelong learning.	OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications
	recognize the fields of integrated electronic circuits, electronic data storage, high-speed computing, communications, signal processing, microwave,		Teach students to use experimental and data analysis techniques for electrical power engineering applications
oc 3	wave propagation and antenna, optoelectronics, automation, automatic control, and monitoring systems, circuit analysis, network analysis, digital signal processing, and microprocessors	OP 7	





oc 4	make a balance between theoretical and laboratory experience and to impart a fundamental and practical understanding of the principles required for a successful career in	OP 7	Teach students to use experimental and data analysis techniques for electrical power engineering applications				
oc 5	Recognize the electromagnetic, wave propagation and antenna, circuits, electronics, power electronic devices, digital logic design, computers, programming, computer networks, signal processing, optoelectronics, and communications	OP 7 OP 9	Teach students to use experimental and data analysis techniques for electrical power engineering applications Provide students with an awareness of the tools and skills necessary for participating effectively in building a robust national economy and meeting current and future modern industry needs.				
3- Learning outcomes of the course (LOs)							
Upon the completion of the course, the student should be able to:							
CR(2.1)	Apply the Knowledge of probab	oility, rand	lom variables & random processes.				
CR(2.2)	An ability to apply knowledge of	f commun	ication theory and equations practically				
CR(2.3,3.1)	Ability to simulate communication experiment using Emonal01.						

- CR(2.4) Ability to simulate communication experiment using MATLAB simulation (Simulink & coding).
- CR(2.5,3.2) Ability to create the function in teams.
- CR(2.6,3.3) Communicate effectively for design the electronic component related to communication.

4- Program competencies served by the course:

Upon the completion of the Program the student should be able to:

- **CR2** Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
- CR3 Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional tools.
 - 5- The relation between the course learning outcomes and the program competencies

Course (LOs)

program competencies





CR(2.1)	Apply the Knowledge of probability, random variables & random processes.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.2)	An ability to apply knowledge of communication theory and equations practically	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Design, model and analyze an
CR(2.3,3.1)	Ability to simulate communication experiment using Emona101.	CR2 CR3	electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional
CR(2.4)	Ability to simulate communication experiment using MATLAB simulation (Simulink & coding).	CR2	tools. Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Design, model and analyze an
CR(2.5,3.2)	Ability to function in teams.	CR2 CR3	electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Design and implement elements, modules, sub-systems, or systems in electrical/electronic/digital engineering using technological and professional
CR(2.6,3.3)	Communicate effectively for design the electronic component related to communication.	CR2	tools. Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design





		CR3	Design and modules, sub- electrical/elect using technol tools.	implemen systems, or ronic/digita ogical and	t elements, r systems in l engineering professional
6-	Course content and the relation b	petween the	course contents	and the cours	e Los
Week No.	Торіс	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduction to Signals, simulate different kind of signal (Analogue- Digital)	0	0	2	CR(2.1)
2	Apply different simple process (multiplication-addition- subtraction-convolution) using kit and MATLAB	0	0	2	CR(2.2)
3	Apply the Probability of Random Variables(using AWGN) & their moments, their significance, Gaussian & Rayleigh Probability density functions	0	0	2	CR(2.3,3.1)
4	Simulate Amplitude Modulation: Need of Modulation, Block schematic of a typical communication system using Kit and MATAB	0	0	2	CR(2.4)
5	Simulate AM modulation system, Modulation index, Generation (Squire Law & Switching Modulator) using Kit and MATAB	0	0	2	CR(2.3,3.1)
6	Simulate AM Detection (Envelope & Squire Law Detector) of AM wave , Side bands & Power contents in AM Wave, using Kit and MATAB	0	0	2	CR(2.4)
7	Simulate AM transmitter block diagram, TRF receiver & its limitations, Necessity of heterodyning, Super heterodyne radio receivers, IF amplifiers & selection of IF, using Kit and MATAB	0	0	2	CR(2.5,3.2)
8	Midterm		1.0		
9	Simulate DSB-SC (Balanced, Ring Modulator & Synchronous Detector), SSB-SC, Methods of generation & detection, using Kit and MATAB	0	0	2	CR(2.4)
10	Simulate SSB modulation, Comparison of various AM systems using Kit and MATAB.	0	0	2	CR(2.5,3.2)





11	Revision					0		0			2	CR(2.2)
12	Simulate Frequ Relationships & Frequency Mod FM, Wideband Transmission & PM signals, us	uency Mo between dulation, FM & th bandwidt	odulatic Phase Narrov eir Spe h of FM nd MAT	on: & vband ctrum, I And AB.		0		0			2	CR(2.6,3.3)
13	Simulate Me (Direct & Indire (Discriminators Shift And F Emphasis Stereophonic F Kit and MATAB	thods ect)& c = : Bal PLL D & = M Broa	of ge detectio anced, etector) De-En dcastin	neratio n of FI Phas n, Pre nphasis g, usin	n VI e e- s, g	0		0			2	CR(2.6,3.3)
14	Revision					0		0			2	CR(2.2)
15	Simulate Frequ Relationships & Frequency Mod FM, Wideband Transmission & PM signals, us	uency Mo between dulation, FM & th bandwidt	odulatic Phase Narrov eir Spe h of FN nd MAT	on: & vband ctrum, I And AB.		0		0			2	CR(2.6,3.3)
16	Final Exam							2.0)			
Total hours						0		0			28	
7-	The Teaching	and le	earning	a metł	nods a	and the	ir relat	tion to	the L	os of	the co	urse
		,		Te	achin	g and	Learni	ng Me	thods			
Course learning Outcomes (LOs)	On line / face to face lectures Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	discovering	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
CR(2.1) CR(2.2) CR(2.3,3.1) CR(2.4) CR(2.5,3.2)		✓ ✓ ✓ ✓			✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓			 <	 <	✓ ✓ ✓ ✓	

Notes:

The research concerns the cooperative work, the discussion and the presentations.

The Tutorials concerns on sheets

Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.





8- Student assessment method a- Assessment method and its relation to the Los of the course											
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab oo sio	Oral exam	ent qiscussions	Reports/ researches	presentation	modelling
CR(2.1) CR(2.2) CR(2.3,3 .1) CR(2.4) CR(2.5,3 .2) CR(2.6,3 .3)		✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	\checkmark	✓ ✓ ✓ ✓	 ✓ ✓ ✓ ✓ ✓ ✓ ✓ 	√ √ √ √	✓ ✓ ✓ ✓		✓ ✓ ✓ ✓ ✓	
				b	- Time	schedul	e of ass	sessment			
QuizzesQuiz (1) Quiz (2)DiscussionsEvery week for any studentPresentations and MoviesweeklySheets and Sketchesweeklythe ProjectsweeklyAttendanceweeklyMid-term examWeek (8)final examWeek (16)											
				c-	Gradi	ng systei	\mathbf{m}				
Quizes Discussions Sheets and Sketches the Projects Attendance Mid-term exam final exam			Quiz Quiz 20 70 10	z (1) z (2))%)%	(0) marks (0) marks (60) marks 40 marks (10) marks (10) marks (40) marks						
				10-	List o	f referei	nces:	(1)	,		
a) Con b) Rec	10- List of references:a) Course notesFundamental of Communicationb) Required books• Emona 101 lab manual										





- Fundamentals of Signals and Systems Using the Web and MATLAB Edward W. Kamen Bonnie S Heck Third Edition
- c) Recommend books
- Mentioned at time.
- d) Periodicals, Web sites,
- Mentioned at time.

Facilities required for teaching and learning: 11-

- Appropriate teaching design studios including presentation board, data show
- Google classroom
- E- learning

etc

12-**Requirements for Disable facilities:**

On line teaching hours if it is needed

Extra	example	es and	topic-s	pecified	research
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Course coordinator:	Ass. Prof. Dr. Ashraf Mohamed Ali Hassan
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	2022/2023







Course specification

Course ander	Course name
Course coue:	Course name
MATH 302	Linear Algebra and Matrices
Affil	iation
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	2022-2023
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Basic Information

Course Name	Linear Algebra and Matrices				
Code	MATH 302				
Course Level	Third level courses (Junior) - Second semester (Spring)				
Credit Hours	3Cr. hr				
Lectures	2hr				
Tutorial	2hr				
Total	4hr				
Prerequisite	MATH 202				
Instructor name/Email	Dr. Gamal El-Anani				
	gamalanany@sva.edu.eg				

Professional information

1- course core

Covers systems of linear equation, algebra of matrices, linear transformation determinants, vector spaces, inner product spaces, eigenvalues and eigenvector diagonalization and orthogonally, special matrices and applications. The use of compute software such as MathCAD, mathematic, or MATLAB is essential

2- Course learning objectives:

- oc 1 Recognize the concepts of systems of linear equation
- oc 2 explain the concepts of mathematical of algebra of matrices
- oc 3 apply knowledge of mathematics to linear transformations
- oc 4 explain the concepts of determinants
- oc 5 Identify and analyze data, to Deal with design situations within solving design problems based on the analytical process for vector spaces.
- oc 6Recognize the methodologies of solving engineering problems with inner product spaceoc 7apply knowledge of theory of equations, eigenvalues, and eigenvectors to solveoc 7engineering problems.

3- program objectives served by the course:





Upon the completion of the course the student should be able to:

- OP 1 Understand the concept of Covers systems of linear equation.
- OP 2 Understand the concept of Algebra of matrices.
- OP 3 Understand the concept of Linear transformations.
- OP 4 Understand the concept of Determinants.
- OP 5 Solve vector spaces problems.
- OP 6 Solve and practice on inner product spaces problems.
- OP 7 Understand the concept of Eigenvalues and eigenvectors.

4-The relation between the course objectives and the program objectives

	Course objectives	program objectives					
oc 1	Recognize the concepts of systems of linear equation	OP 1	Understand the concept of Covers systems of linear equation.				
oc 2	explain the concepts of mathematical of algebra of matrices	OP 2	Understand the concept of Algebra of matrices.				
oc 3	apply knowledge of mathematics to linear transformations	OP 3	Understand the concept of Linear transformations.				
oc 4	explain the concepts of determinants	OP 4	Understand the concept of Determinants.				
oc 5	Identify and analyze data, to Deal with design situations within solving design problems based on the analytical process for vector spaces	OP 5	Solve vector spaces problems.				
oc 6	Recognize the methodologies of solving engineering problems with inner product spaces	OP 6	Solve and practice on inner product spaces problems.				
oc 7	apply knowledge of theory of equations, eigenvalues, and eigenvectors to solve engineering problems.	OP 7	Understand the concept of Eigenvalues and eigenvectors.				
	5- Learning outcomes of the course (LOs)						

Learning outcomes of the course (LOs)

Upon the completion of the course, the student should be able to:





C1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
 C2 Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions

1- The relation between the course learning outcomes and the program competencies								
Co	urse (LOs)		program competencies					
C(1.1)	Explain concepts and theories of mathematics and sciences, appropriate to Linear Algebra and Matrices.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.					
C(1.2,2.1)	Demonstrate methodologies of solving	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.					
	engineering problems, data collection and interpretation.	C2	experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions					





C(2.2)	Select appropriate solutions for engineering problems based on analytical thinking.	C2	Deve exper analy evalu analy judgi	elop and rimentation yze and intention the finding yses and ment to draw	conduct and/or erpret data, gs, and use objective w conclusio	appropriate simulation, assess and e statistical engineering ns
C(2.3)	Apply knowledge of mathematics to solve engineering problems.	C2	Deve exper analy evalu analy judge	elop and rimentation yze and intention tate finding yses and ment to dray	conduct and/or erpret data, gs, and use objective w conclusio	appropriate simulation, assess and statistical engineering
C((1.3)	Apply knowledge of linear algebraic equations, iterative methods, and infinite series to solve engineering problems and prepare and present technical reports about application of matrices to solve engineering	C1	Ident engir engir scien	tify, formula neering pr neering a neering a	ate, and solvo oblems by fundamenta hematics.	ve complex , applying ls, basic
C(1.	4,2.4)	problems. Produce and prepare the manages tasks, time, and resources, when solving mathematics problems, and in exams.	C1	Ident engir engir scien Deve	tify, formulaneering prineering fice and mathematical methods and mathematical methods and mathematical methods and mimentation	ate, and solvoblems by fundamenta hematics. conduct	ve complex , applying ls, basic appropriate
			C2	analy evalu analy iudgi	ze and into the finding ses and ment to dray	erpret data, gs, and use objective of w conclusio	assess and e statistical engineering
C((1.5)	Produce and prepare the manages tasks, time, and resources, when solving mathematics problems, and in exams.	C1	Ident engir engir scien	tify, formula neering pr neering nee and mat	ate, and sol- oblems by fundamenta hematics.	ve complex applying ls, basic
-	7- Cou	rse content and the relation be	tween the	course	e contents an	d the course	LOs
Week No.		Торіс		Lect ure hr.	Tutorial hr.	Practical hours	course LOs





1	The concept of matrices	2	2	0	C(1.1,
2	Covers systems of linear equation	2	2	0	C(1.1, 2.2)
3	algebra of matrices	2	2	0	C(1.2,2. 1, 1.3,
4	linear transformations	2	2	0	C(1.2,2.1) C(1.2,2.1) 1, 2.3)
5	determinants	2	2	0	C(1.2,2. 1, 2.3)
6	vector spaces	2	2	0	C(1.2,2. 1, 2.3)
7	inner product spaces				C(2.3)
8	Midterm		1.0		
9	eigenvalues and eigenvectors	2	2	0	C(1.2,2. 1, 2.3)
10	diagonalization	2	2	0	C(1.2,2. 1, 2.3)
11	orthogonally	2	2	0	C(1.2,2. 1.1.3)
12	special matrices and applications	2	2	0	C(1.2,2. 1, 2.3)
13	The use of computer software such as MathCAD	2	2	0	C(1.2,2.1,2.3)
14	MATLAB	2	2	0	C(1.2,2.1)
15	Revision				C(1.2,2.1, 2.3, 1, 2.3, 1, 3)
16	Final Exam		2.0		1.5)
Total h	ours	28	28	0	




8-	The Teaching and learning methods and their relation to the Los of the course											
	Teaching and Learning Methods											
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / SELF משוויר די Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(1.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
C(1.2,2.1)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
C(2.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
C(2.3)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
C(1.3)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	✓	\checkmark	\checkmark	\checkmark	
C(1.4,2.4)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
C(1.5)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
Notos:												

The research concerns the cooperative work, the discussion and the presentations. ٠

• The Tutorials concerns the brain storming and the problem solving. Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

		9-	S	Student	t asses	sment	meth	od			
a- Assessment method and its relation to the Los of the course											
						Tools of	of asse	ssment			
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
C(1.1)	✓	\checkmark	\checkmark	✓				✓	\checkmark	\checkmark	
C(1.2,2.1)	\checkmark	\checkmark	\checkmark	✓				✓	\checkmark	\checkmark	
C(2.2)	\checkmark	\checkmark	\checkmark	✓				✓	\checkmark	\checkmark	
C(2.3)	\checkmark	\checkmark	\checkmark	\checkmark				\checkmark	\checkmark	\checkmark	
C(1.3)	\checkmark	\checkmark	\checkmark	✓				✓	\checkmark	\checkmark	
C(1.4,2.4)	\checkmark	\checkmark	\checkmark	✓				✓	\checkmark	\checkmark	
C(1.5)	\checkmark	\checkmark	\checkmark	✓				~	\checkmark	\checkmark	
				b-	Time s	schedul	e of as	sessmen	t		
Quizzes			(Quiz(1)		We	ek (3)				



Ministry of higher education High valley institute for engineering and technology Electrical power engineering program



Discussions Presentations and Movies Sheets and Sketches Researches and reports Attendance Mid-term exam final exam	Quiz (2)	Week (10) Every week for any weekly weekly Week (2,3) weekly Week (8) Week (16)	for any student			
	C-	Grading system				
quizes Discussions	Quiz(1) Quiz(2) 25%	(5) marks (5) marks				
Sheets and Sketches Researches and reports	50% 25%	10 marks	(50) marks			
Attendance Mid torm ava	~	(10) marks (20) marks				
final exam Total	11	(20) marks	(50) marks (100) marks			
	10- List o	f references:				
a) Course notes	Lecture note	s and handouts				
b) Required books	 Mar 	y Attenborough, En	gineering Mathematics,			
, 1	Mc	Graw - HILL Book (Company Europe, 1994.			
	 Ant 	hony croft, Robert D	Davison, Engineering			
	Mat	hematics A modern	Foundation for Electrical,			
	Elec	ctronic & Control Er	ngineering, Addison - Wesley -			
	Pub	lishing Company, 19	992			
c) Recommend books	Swokowski,	E, Olinick ,M and Pen	ce, D., Calculus, PWS Publishing			
d) Periodicals Web	Web Sites rel	ated to Mathematics a	nd Mathematical engineering as:			
sites etc	www.math.h	mc.edu.	na manomatoar onginooring as.			
5.005, 000	www.tutoria	l.math.lamar.edu,				
	www.web.m	it.edu				



Ministry of higher education High valley institute for engineering and technology Electrical power engineering program



11- Facilities required for teaching and learning:

- Appropriate teaching design studios including presentation board, data show
- Google classroom
- E- learning

12- Requirements for Disable facilities:

- On line teaching hours if it is needed
- Extra examples and topic-specified research

Course coordinator:	Dr. Gamal El-Anani
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Date:	2022/2023