



Second level courses (Sophomore)

First semester (Fall)

No.	Cod	Course Name	Instructor					
1	CECE 102	Fundamental of structured and anomaling	Dr. Mohamed Mahmoud Ahmed					
I CECE 102	CECE 102	Fundamental of structured programming	Mohamed El-Ghoboushi					
r	CECE 201	Digital Lagia Degian I	Dr. Mohamed Mahmoud Ahmed					
2 CECE 201		Digital Logic Design I	Mohamed El-Ghoboushi					
3	CECE 202	Electric Circuits I	Dr. Ibrahim Ali Mahmoud Abdel Dayem					
4	MATH 201	Calculus III	Dr. Gamal El-Anani					
5	ENGR 206	Strength and Testing of Materials	Prof. Dr. Al-Desouki Ibrahim Saleh Eid					
6	ENGR 102	Lower intermediate English	Dr. Ahmed El-Hosseini					
7	BASE309	Human Rights	Dr. Abd El-Aziz Ramadan					





Course specification Course code: Course name CECE 102 Fundamental of structured programming A- Affiliation **Relevant program:** Control and computer system 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 2023-2024 **B-** Basic Information **Course Name** Fundamental of structured programming Code **CECE 102 Course Level** Second level courses (Sophomore)- First semester (Fall) **Credit Hours** 3Cr. Hr Lectures 2hr Lab 3hr Total 5hr **Prerequisite CECE 101 Instructor name/Email** Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi mohammed.ghaboushy@sva.edu.eg

C- Professional information

1-Course core

Overview of basic programming constructs. Functions, parameter passing and files. Data modeling with arrays, structures and classes. Pointers and linked lists. Recursion. Basic program design and analysis, testing and debugging techniques. Programming in C++.

2- Course learning objectives:

	8 J
oc 1	Describe the most important rulings related to advanced course in C++ which will provide him with the fundamental knowledge and skills to become a C++ programmer.
oc 2	Explain how transpose the physical problem domain into a hierarchy of objects.
oc 3	Demonstrate the Objects, their behaviors, and their relationships will be modeled and these models will be programmed into a functional application that the student will compile, modify, enhance and run.
oc 4	Demonstrate how write the program in a structured style whereby reinforcing the concepts of software quality, reliability and maintainability.

3-Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

- LO1 Identify OOPs concepts
- LO2 Explain arrays and strings and create programs using them
- LO3 Describe and use constructors and destructors

b. Psychomotor Domains (LOs):

LO4 Apply functions and pointers in your C++ program





A 66											
c. Affe	ctive Domains (LOs):										
LO5	Communicate effectively with expre	ssions, and	control structures								
-	None										
3- Prog	gram LOs served by the course:										
Upon the con	Upon the completion of the Program the student should be able to:										
Lo9	Identify the standard Software Engi development using an open-source deliver quality products for the orga	Identify the standard Software Engineering practices and strategies in real-time software project development using an open-source programming environment or commercial environment to deliver quality products for the organization's success									
Lo27	Design and develop computer progral algorithms, networking, web design complexity.	Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics of varying complexity.									
Lo37	Acquaint with the contemporary tre solutions to existing problems.	Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems.									
	4- The relation between the co	ourse learn	ing outcomes and the program LOs								
	Course (LOs)		program LOs								
LO1	Identify OOPs concepts	Lo9	Identify the standard Software Engineering practices and strategies in real-time software project development using an open-source programming environment or commercial environment to deliver quality products for the organization's success								
LO2	Explain arrays and strings and create programs using them	Lo9	practices and strategies in real-time software project development using an open-source programming environment or commercial environment to deliver quality products for the organization's success								
LO3	Describe and use constructors and destructors	Lo9	Identify the standard Software Engineering practices and strategies in real-time software project development using an open-source programming environment or commercial environment to deliver quality products for the organization's success								
LO4	Apply functions and pointers in your C++ program	Lo27	Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics of varying complexity.								
LO5	Communicate effectively with expressions, and control structures	Lo37	Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems.								





		5- C	ourse cont	ent and	d the rel	ation be	etween f	the cours	se content	s and the	course	LOs		
W			Торі	c			L	ecture	Tutoria	Practi	ic	course l	LOs	
ee								hr.	l hr.	al hou	rs			
K N														
1	Introdu	cing C ++	- Program	ning				2	0	2		LOI		
2	Variabl	es	8	8				2	0	2		LO1		
3	Workin	ig with To	kens, Expi	ression	s and C	ontrol		2	0	2		LO1		
	Structu	res in C+-	+					2	0	2				
4	Manag	ing Input	and Outpu	t Data				2	0	2		LO4		
5	Arrang	ing the Sa	ime Data S	ystem	atically:	Arrays		2	0	2		LO5		
6	Revisio	on and qui	Z					2	0	2		LO5		
7	Decisio	ons						2	0	2		LO5		
8	Midter	m							1.0					
9	Functio	ons						2	0	2		LO4		
10	Pointer	$rs + (Qu_1z)$)					2	0	2		LO4		
11	Maximum power transfer.							2	0	2		LO2		
12	Quiz(2) + solved examples							2	0	2		LO2		
13	Uasses	s and Obje	ODa Caraa	ta in	CLI			2	0	2				
14	Genera	1 revision	OFS Conce	pis m	C^{++}			$\frac{2}{2}$	0	2				
15	Einal E							2	0	2		1.05		
10		xam						• •	2.0	• •				
Tota	al hours							28	0	28				
		6- I	he leachir	ig and	learning	g metho	ds and	their rela	tion to the	e Los of th	e cours	se		
						Tea	aching a	and Lear	ning metho	Jus				
		ce	76		-			<u>-</u>		k es				
Co	urse	ofa	ete		/inç	ing	ab	Sel		rch row	5	_	-	
lea	rning	te t res	she	cts	sol	E		ng/	isit	sea ve j	atic	sio	linç	
Outo	comes	fac	lls: etcl	oje	Ë	stc	tice	eri	9 >	re: rati	ent	sno	del	
(L	.Os))er le	oria sk	pr	ble	ain	rac	S is	Sit	nts, pe	- res	Disc	ê	
		ili	Iute		Pro	ä	Ъ	Dis		ode DoC	٩			
		ō	•							Ϋ́ Ϋ́				
LO1		\checkmark												
LO4		\checkmark	\checkmark		\checkmark		\checkmark	✓						

LO4	✓	~	V		V	✓				
LO5	\checkmark									
LO2	\checkmark									
LO3	\checkmark									
Matea										

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.

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
LO1 LO4 LO5 LO2 LO3	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓		✓ ✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓		✓ ✓ ✓	
				b	- Time	schedule	of asses	ssment			
QuizzesQuiz (1) Quiz (2)Week (3) Week (10)DiscussionsEvery week for any studentPresentations and MoviesWeeklySheets and SketchesWeeklyAttendanceWeeklyMid-term examWeek (8) Week (16)											
	7- Grading system										
QuizzesQuiz (1 Quiz (2 DiscussionsDiscussions50%Sheets and Sketches50%AttendanceMid-term exam final exam					z (1) z (2))%)%	(5) marks (5) marks 20 marks (10) marks (20) marks (40) marks (100) marks					
		п	Jiai		10- L ie	t of rofor	ancasi	(1	(00) marks		
a) Course notes Lecture notes and handouts b) Required books Holly Moore, Salt Lake Community College. Pearson Education Inc, (2022). MATLAB for Engineers, 6th edition. ISBN: 9780137627981; Language: English. c) Recommend books Walter Savitch, Kenrick Mock.Problem-Solving C++, 10th edition								Inc, 7981; on			
d) Periodicals, Web sites, etc • <u>www.prenhall.com</u> • presentations, handouts by Mohamed, N.A.											
				11. 5	oilition r	oquirad f	or toachi	ng and loars	ina		
•	 11- Facilities required for teaching and learning: Appropriate teaching design studios including presentation board, data show Google classroom E- learning 										

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





Course coordinator:	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi	14
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul	
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem	
Date:	2023/2024	





Course specification								
Course code:		Course name						
CECE 201	Digita	l logic design I						
	A- Affiliat	ation						
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 minis	27/1/2008							
Date of course operation	202۳-202٤							
	B- Basic Infor	rmation						
Course Name	Digital logic design	Ι						
Code	CECE 201							
Course Level	Second level courses	s (Sophomore)- First semester (Fall)						
Credit Hours	3Cr. Hr							
Lectures	2hr							
Tutorial	2hr							
Total	4hr							
Prerequisite	CECE 101							
Instructor name/Email	Dr. Mohamed Mahm	oud Ahmed Mohamed El-Ghoboushi						
	mohammed.ghabous	hy@sva.edu.eg						
C- Professional information								

1-Course core:

The nature of digital logic and numbering systems. Boolean algebra, Karnaugh map, decision-making elements, memory elements, design of combinational circuits, integrated circuits and logic families, combinational circuits, adders, subtracters, multiplication and division circuits, memory types.

2-Course learning objectives:

oc 1	Explain the logic gates concepts								
oc 2	Explain the boolean algebra and logic simplification.								
oc 3	Explain karnaugh map								
oc 4	Explain combinational logic analysis								
oc 5	Describe the most important rulings related to understand functions of combinational logic								
3- Lea	3- Learning outcomes of the course (LOs)								
Upon the co a. Co	Upon the completion of the course, the student should be able to: a. Cognitive Domains (LOs):								
LO1	Recognize logic gates: definition, function and practice.								
LO2	Recognize boolean algebra and logic simplification: definition, function and practice.								
LO3	Recognize laws and rules of boolean algebra and demorgan's theorems.								
LO4	Recognize boolean analysis of logic circuits and logic simplification using boolean algebra.								
b. Psy	chomotor Domains (LOs):								
1.0									

- LO5 Solve standard forms of boolean expressions and boolean expressions and truth tables
- LO6 Apply knowledge the karnaugh map, combinational logic analysis and functions of combinational logic.





LO5

LO5

LO6

LO6

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c.	Affective Domains (LOs):										
	- None										
4-	Program LOs served by the course:										
Upon th	Upon the completion of the Program the student should be able to:										
Lo12.	Principles of operation and performance specifications of electrical and electromechanical engineering systems										
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.										
5- The relation between the course learning outcomes and the program LOs Course (LOs) program LOs											
LO1	Recognize logic gates: definition, function and practice.	Lo12.	Principles of c electrical and	peration and electromech	d performanc anical engine	e specifications of eering systems					
LO2	simplification: definition, function and practice.	Lo12.	electrical and	electromech	anical engine	e specifications of eering systems					
LO3	LO3 Recognize laws and rules of boolean Lo12 . Principles of operation and performance specification electrical and electromechanical engineering systems										
LO4	circuits and logic simplification using boolean algebra.										
LO5	Solve standard forms of boolean expressions and boolean expressions and truth tables	Lo19.	Solve comp problems in t	blex engine the field of o	ering proble electrical and	ems and solve electrical power					
LO6	Apply knowledge the karnaugh map, combinational logic analysis and functions of combinational logic	Lo19.	Solve comp problems in t	olex engine the field of o	ering proble electrical and	ems and solve electrical power					
	6- Course content and the relat	ion betw	een the course	contents an	d the course	LOs					
Week	Торіс		Lecture	Tutorial	Practical	course LOs					
No.	-		hr.	hr.	hours						
1	Introduction		2	2	0	LO1					
2	Number systems		2	2	0	LO1					
3	Logic Gates		2	2	0	LOI					
4	Boolean algebra and logic simplification	1	2	2	0	LO2					
5	Laws and rules of Boolean algebra		2	2	0						
07	Demorgan's theorem		2	$\frac{2}{2}$	0	LO3					
8	Midterm		2	1.0	U	LUS					
9	Boolean analysis of logic circuits		2	2	0	LO4					
10	Logic simplification using Boolean alge	bra	2	2	0	LO4					

2

2

2

2

2

2

2

2

Standard forms of Boolean expressions

Boolean expressions and truth tables

Combinational logic analysis

Karnaugh map

11

12

13

14





15	Combinational logic analysis	2	2	0	LO6
16	Final Exam		2.0		
Total h	ours	28	28	0	



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-	Assess	ment n	nethod	and its	relation to	the Los	s of the co	ourse			
		Tools of assessment									
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
LO1											
LO2											
LO3	\checkmark	\checkmark	\checkmark	✓							
LO4	\checkmark	\checkmark	\checkmark	✓				\checkmark		\checkmark	
LO5	\checkmark	\checkmark	\checkmark	✓				\checkmark		\checkmark	
LO6	\checkmark	\checkmark	\checkmark	\checkmark				\checkmark		\checkmark	
					b- Tim	e sched	ule of ass	sessment			
Ouizzes			Qu	iz(1)		We	ek (3)				
Q			Qu	iz(2)		We	ek (10)				
Discussions						Eve	ery week	tor any stud	ent		
Presentations and	Movies	5				We	ekly				
Sheets and Sketcl	nes					We	ekly				





Attendance Mid-term exam final exam		Weekly Week (8) Week (16)						
c- Grading system								
Quizzes	Quiz(1) Quiz(2)	Quiz (1) (5) marks Quiz (2) (5) marks						
Discussions Sheets and Sketches	50% 50%	5 marks	(40) marks					
Attendan Mid-term e	ce xam	(10) marks (15) marks						
final exa Total	m		(60) marks (100) marks					
	10- List of	references:						
 a) Course notes b) Required books c) Recommend books d) Periodicals, Web sites, 	Lecture notes ar 1. Digital Func 2. Digital Desi Prentice Hall, 20 Mentioned at tir etc No periodicals a	nd handouts lamentals, 11th Edition gn Principles and Practi 017 ne. ure needed.	by Thomas L, Floyd ices- 5th Ed, John F. Wakerly,					
	11- Facilities requ	ired for teaching and lea	arning:					
Appropriate teachGoogle classroorE- learning	ning design studios inclu n	ding presentation board	, data show					
	12- Requireme	nts for Disable facilitie	es:					
On line teachiExtra example	ng hours if it is needed and research in specifi	ic topic						
Course coordinator:	Dr. Mohamed Mahmoud	Ahmed Mohamed El-G	ihoboushi					
program Coordinator	Dr. Ehab Mohamed Nabi	il Ismail Abdel Rasoul	151					
Head of the Department	Dr. Ibrahim Ali Mahmou	d Abdel Dayem	6					
Date:	2023/2024							





Course specification Course code: Course name CECE 202 Electric circuits (I) 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 27/1/2008 Date of approval from the higher ministry of education Date of course operation 2025-2025 **B-** Basic Information Electric circuits (I) **Course Name** Code **CECE 202** Second level courses (Sophomore)- First semester (Fall) Course Level Credit Hours 3Cr.hr Lectures 2hr Tutorial 2hr Total 4hr Prerequisite **PHYS 102 Instructor name/Email** Dr. Ibrahim Ali Mahmoud Abdel Davem dr.ibrahim@sva.edu.eg

C- Professional information

1- <u>Course core</u>

Ohm's law, Kirchhoff's law, Mesh current method, node-voltage method, superposition theorem, reciprocity theorem, Thevenin's theorem, Norton's theorem, maximum power transfer theorem, compensation theorem, T and II networks, transformation equations II to T and T to II. Transients in RC and RL circuits, time constants, mutual inductance and transformers. Time domain behavior of inductance and capacitance, energy storage

2- Course learning objectives:

- oc 1Identify electrical components (resistors, capacitors, inductors, and etc.)oc 2Recognize and performs circuit analysis and calculations for resistive, capacitive, and inductive DC circuits.
- oc 3 Recognize the most important rulings related to apply basic laws and calculations to circuit theorems such as Superposition, Thevenin's, and Nortons.
- oc 4 Recognize the principles of DC and AC.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

- LO1 Recognize to apply basic laws to resistive circuits.
- LO2 Recognize to perform mesh and nodal analysis.

b. Psychomotor Domains (LOs):

- LO3 Apply knowledge to apply circuit theorems.
- LO4 Apply knowledge to use phasors to analyze steady-state sinusoidal circuit analysis.
- LO5 Apply knowledge to calculate the complex power.
- c. Affective Domains (LOs):





	-	None										
4	- Pro	gram LOs served by the course:										
Upon	Upon the completion of the Program the student should be able to:											
Lo11	Lo11. Principles of for electrical equipment and systems.											
Lo12	.012 Principles of operation and performance specifications of electrical and electromechanical engineering systems .											
Lo19	•	solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.										
Lo29	029. Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.											
5	- The	relation between the course learnin	g outcomes and	the program	LOs							
		Course (LOs)	program Los									
LO1	Recogn circuits	ize to apply basic laws to resistive	Lo11.	Principles of systems.	f for electrical of	equipment and						
LO2	Recogn analysis	ize to perform mesh and nodal s.	Lo12	Principles of specification	f operation and is of electrical a	performance and ing systems						
LO3	Apply l	pply knowledge to apply circuit theorems. Lo19. solve complex engineering problems in the field of electrical ar power engineering.										
LO4	Apply steady-	knowledge to use phasors to analyze state sinusoidal circuit analysis.	Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power								
LO5	Apply power.	knowledge to calculate the complex	Lo29.	generation, of Utilize comp problems an and examine systems of e generation, of	control, and dis outer program t d interpret num e components, o lectrical and el control, and dis	tribution systems. o analyze design ierical data and test equipment and ectric power tribution systems.						
		6- Course content and the relati	on between the c	course conten	ts and the cour	se LOs						
Wee No.	k	Торіс	Lecture hr.	Tutorial hr.	Practical hours	course LOs						

vveek	Ιορις	Lecture	Tutorial	Practical	course LOS	
No.		hr.	hr.	hours		
1	Introduction to electric circuit variables and	2	2	0	LO1	
	elements.					
2	Magnetic field quantities	2	2	0	LO1	
3	Simple resistive circuits+ Solved	2	2	0	LO1	
	examples+ Quiz (1).					
4	Techniques for circuit analysis.	2	2	0	LO2	
5	Node voltage method.	2	2	0	LO3	
6	Mesh current method.	2	2	0	LO3	
7	Source transformation.	2	2	0	LO3	
8	Midterm		1.0			
9	Superposition.	2	2	0	LO2	
10	Thevenin and Norton equivalent circuits.	2	2	0	LO3	
11	Maximum power transfer.	2	2	0	LO5	





12 13 14 15	Quiz (2) + solved examples Operational Amplifiers. Introduction to inductance and capacitance. Sinusoidal steady state analysis (a.c.	2 2 2 2	2 2 2 2	0 0 0 0		LO4 LO5 LO5 LO6
16	Final Exam		2.0			
Total ho	urs	28		28	0	



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- Assessment method and its relation to the Los of the course												
Course	e Tools of assessment											
ILUS	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	Presentation	modelling	
Lo1												
Lo2	\checkmark	\checkmark	\checkmark	\checkmark							✓	
Lo3	\checkmark	\checkmark	\checkmark	\checkmark					✓		✓	
Lo4	\checkmark	\checkmark	\checkmark	\checkmark				\checkmark	\checkmark	\checkmark	\checkmark	
Lo5	\checkmark	\checkmark	\checkmark	\checkmark				\checkmark	\checkmark	\checkmark	\checkmark	
					b-	Time sch	edule of as	sessment				
Quizzes				Quiz (1 Quiz (2)	W W	eek (3) eek (10)					





Discussions Presentations and Movies Sheets and Sketches Researches and reports Practical modelling Attendance Mid term strem		Every week for any Weekly Weekly Week (2,3) Week (4,8) Weekly	y student				
Mid-term exam		Week (8)					
linai exam	a Cradir	week (16)					
	C- Gradii	ig system	(40)				
quizes	Quiz(1)	(2.5) marks	(40) marks				
D	$\operatorname{Quiz}(2)$	(2.5) marks					
Discussions	15%	15 marks					
Sheets and Sketches	15%						
Researches and reports	35%						
Practical modelling	35%	(7) 1					
Attendar	ice	(5) marks					
Mid-term o	exam	(15) marks $((0)$ model					
Tinal exa	im		(60) marks (100) marks				
Total	10 List of	Frafaranaaa	(100) marks				
	T antique materia	l reierences:					
a) Course notes b) Required books	1 James W	V Nilsson and Susan	A Diadal Electric Circuits 11th				
b) Required books	1. Jailles v	v. Misson, and Susan	A. Riedel, Electric Circuits, 11th				
	2 Charles	K Alexander & Math	new Sadiku Fundamental of Electric				
	2. Citatics	7th edition	iew Sauku, Fundamental of Electric				
c) Recommend books	Mentioned at tim						
d) Periodicals Web sites	etc. No periodicals or	e needed					
d) Feriodicais, web sites	, etc No periodicais ai	e needed.					
	44						
	11- Facilities re	equired for teaching an	id learning:				
Appropriate teach	ching design studios inclu	iding presentation boa	ard, data show				
Google classroo	m						
• E- learning							
	12- Require	ments for Disable faci	lities:				
On line teach	ing hours if it is needed						
• Extra examp	les and research in specif	fic topic					
Course coordinator:	Dr. Ibrahim Ali Mahmoi	ıd Abdel Davem	GA				
program Coordinator	Dr. Ehab Mohamed Nab	il Ismail Abdel					
program overamator	Di. Linuo monumeu Mau	11 1011011 / 10001					

Rasoul

2023/2024

Dr. Ibrahim Ali Mahmoud Abdel Dayem

Head of the Department Date:





Course specification

Course code:	Course name						
Math201	Calculus III						
	A- Affiliation						
Relevant program:	Electrical power engineering						
Department offering the program:	Electrical and communication engineering						
Department offering the course:	Basic science						
Date of program operation:	2008-2009						
Date of approval from the higher ministry of	of education 27/1/2008						
Date of course operation	2022-2023						
B- Basic Information							
Course Name	Calculus III						
Code	Math201						
Course Level	Second level courses (Sophomore)- First semester (Fall)						
Credit Hours	3Cr. hr						
Lectures	2hr						
Tutorial	2hr						
Total	4hr						
Prerequisite	Math102						
Instructor name/Email	Dr. Gamal El Anani						
	gamalanany@sva.edu.eg						

c- Professional information

1- Course core

Sequences and series (including power series). Vectors and planes. Surfaces. Partial differentiation. Introduction to double integrals (including double integrals in polar coordinates). Multiple integrals. Parametric equations. Cylindrical and spherical coordinates. Vector-valued functions, vector calculus: Green's Theorem, Gauss Theorem and Stokes' Theorem and their applications. Complex numbers.

2- Course learning objectives:

oc 1	Explain concepts of sequences and series.
oc 2	Recognize concepts of mathematical Vectors and planes.
oc 3	Differentiate between knowledge of mathematics to solve Partial differentiation problems.
oc 4	Differentiate between the concepts of double integrals
oc5	identify how to search and analyze data, to Deal with design situations within solving design problems based on the analytical process for Multiple integrals
oc 6	demonstrate methodologies of solving engineering problems with Green's Theorem.
oc 7	Recognize the theory of equations, and Complex numbers to solve engineering problems.
	•

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

- LO1 Explain concepts and theories of mathematics and sciences, appropriate to calculus III.
- LO2 Demonstrate methodologies of solving engineering problems, data collection and interpretation





b. Psychon	notor Domains (LOs):
LO3	Produce appropriate solutions for engineering problems based on analytical thinking
LO4	Apply knowledge of mathematics to solve engineering problems.
LO5	Apply knowledge of linear algebraic equations, iterative methods, differential problems, and infinite series to solve engineering problems.
LO6	Make a technical report about application of matrices to solve engineering problems.
c. Affectiv	e Domains (LOs):
LO7	Communicate effectively in tutorial class room with the demonstrator.
LO8	Organize and manages tasks, time, and resources, when solving mathematics problems, and in exams
4- Program	n LOs served by the course:
Upon the complet	tion of the Program the student should be able to:
Lo1.	Identify, formulate basic science and mathematics.
Lo2.	Simulate, analyze and interpret data.
Lo3.	Assess and evaluate findings.
Lo19.	Conduct and develop appropriate experimentation.

Lo30. Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.

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

	Course (LOs)	program LOs							
LO1	Explain concepts and theories of mathematics and sciences, appropriate to calculus III.	Lo1.	Identify, formulate basic science and mathematics.						
LO2	Demonstrate methodologies of solving engineering problems, data collection and interpretation	Lo1.	Identify, formulate basic science and mathematics.						
LO2	Produce appropriate solutions for engineering problems based on analytical thinking	Lo2.	Simulate, analyze and interpret data.						
LO3	Apply knowledge of mathematics to solve engineering problems.	knowledge of mathematics to Lo2. Simulate, analyze and interpret data.							
LO4	Apply knowledge of linear algebraic equations, iterative methods, differential problems, and infinite series to solve engineering problems.	Lo2.	Simulate, analyze and interpret data.						
LO5	Make a technical report about application of matrices to solve engineering problems.	Lo19.	Conduct and develop appropriate experimentation.						
LO6	Communicate effectively in tutorial class room with the demonstrator.	Lo30.	Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.						





LO7	Organize and manages tasks, time, and resources, when solving mathematics problems, and in exams	Lo30.	Communicat numerically, effectively wi	e to co graphicall ith a range	nvey ideas verbally, y, and using symbols of audiences.
	6- Course content and the relation I	between the	course conten	ts and the c	ourse LOs
Week	Торіс	Lect	ure Tutorial	Practica	l course LOs
No.		hi	. hr.	hours	
1	Sequences and series (including power series	er 2	2	0	LO1,LO2
2	Vectors and planes.	2	2	0	LO1,LO3
3	Partial differentiation	2	2	0	LO6, LO7, LO8
4	Introduction to double integrals	2	2	0	LO2,LO4
5	Double integrals in polar coordinates	2	2	0	LO2,LO4
6	Multiple integrals.	2	2	LO2,LO4	
7	Cylindrical and spherical coordinates	2	2	0	LO4
8	Midterm		1.0		
9	Vector-valued functions,	2	2	0	LO1,LO4
10	vector calculus	2	2	0	LO2,LO4
11	Green's Theorem	2	2	0	LO2,LO5,LO6
12	, Gauss Theorem	2	2	0	LO2,LO4
13	Stokes' Theorem and applications	2	2	0	LO2,LO4
14	Complex numbers.	2	2	0	LO2,LO4
15	Revision	2	2	0	LO2,LO4,LO5,LO6
16	Final Exam		2.0		
Total hours		28	3 28	0	

7- 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
LO1	\checkmark	\checkmark		✓	\checkmark						\checkmark	\checkmark	
LO2	\checkmark	\checkmark		\checkmark	\checkmark			_			\checkmark	\checkmark	
LO3	✓	\checkmark		~	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	
LO4	\checkmark	\checkmark		\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO5	\checkmark	\checkmark		 ✓ 	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	
LO6	\checkmark	\checkmark		✓	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
CLO7	√	✓		✓	√		√		√	√	√	√	
LO8	✓	√		√	√		√		✓	√	√	√	
LO9	\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- /	Assess	ment method	and it	ts rela	tion to th	ne Los of t	he cours	se			
						Tools of a	assessm	ent			
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
LO1 LO2 LO3 LO4 LO5 LO6 LO7 LO8 LO9	 ✓ ✓			 ✓ ✓					 ✓ 	$ \begin{array}{c} \checkmark \\ \checkmark $	
b- Time schedule of assessment											
Quizzes			Qui	z(1)		We	ek(10)				
Quiz (2)Week (10)DiscussionsEvery week for any studentPresentations and MoviesweeklySheets and SketchesweeklyResearches and reportsWeek (2,3)AttendanceweeklyMid-term examWeek (8)final examWeek (16)											
				c-	$\operatorname{Grs}_{\pi(1)}$	ading syst	tem	aulta			
Quiz Discus Sheets and Researches	zzes ssions l Sketc and rej	hes ports Attendance id-term exam		Qui Qui 2 5 2	z (2) 5% 0% 5%		(5) ma (5) ma 10 ma (10) m (20) m	arks arks arks arks	(50) marks	
		final exam						(:	50) marks		
		Total		10	- List of	reference	S:	(1	00) marks		
 a) Course notes b) Required books Lecture notes and handouts Mary Attenborough, Engineering Mathematics, McGraw HILL Book Company Europe. Anthony croft, Robert Davison, Engineering Mathematics modern Foundation for Electrical, Electronic & Control Engineering Addison Waslay Publiching Company 						raw - natics A rol 19.					
c) Recomme	c) Recommend books Engineering, Addison - Wesley - Publishing Company. Stokowski, E, Olinick, M and Pence, D., Calculus, PWS Publishing Company - Boston, 1994						ishing				





d) Periodicals, Web sit	es, etc Web Sites related to Mathematics and Mathematical engineering as: www.math.hmc.edu, www.tutorial.math.lamar.edu, www.web.mit.edu							
11- Facilities required for teaching and learning:								
 Appropriate teaching design studios including presentation board, data show Google classroom E- learning 								
Ŭ	12- Requirements for Disable facilities:							
On line teacExtra example	hing hours if it is needed ples and research in specific topic							
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:	2023/2024							





Course specification

Course code:	Course name
ENGR 206	Strength and Testing of Materials
	A- Affiliation
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Basic Science
Date of program operation:	2008-2009
Date of approval from the higher ministry of e	education 27/1/2008
Date of course operation	202۳-202 ٤
Е	B- Basic Information
Course Name	Strength and Testing of Materials
Code	ENGR 206
Course Level	Second level courses (Sophomore)- First semester (Fall)
Credit Hours	3Cr. Hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	ENGR 103
Instructor name/Email	Prof. Dr. Al -Desouki Ibrahim Saleh Eid
	eldesuki.eid@sva.edu.eg

C- Professional information

1- Course core

Concept of stress and strain in components, mechanical behavior of materials under tensile, compressive, and shear loads, hardness, impact loading, fracture and fatigue. Analysis of stresses and the corresponding deformations in components, axial loading, torsion, bending, and transverse loading. Statically indeterminate problems. Transformation of plane stresses, and Mohr's circle. For Electrical and Communication Department.

2- Course learning objectives:

	learning objectives.				
oc 1	Identify the fundamentals of stress and strain in components				
oc 2	Recognize how apply the mechanical behavior of materials under tensile, compressive, and shear loads.				
oc 3	identify and develop the appropriate experiment discussion of mechanical behavior of materials under hardness, impact loading, fracture and fatigue.				
oc 4	identify the application of stresses and the corresponding deformations in components				
oc 5	Recognize how to search and analyze data, to deal with axial loading, torsion, and bending				
oc 6	apply the analytics of statically indeterminate problems				
oc7	Apply the application of transformation of plane stresses				
oc8	solve problems on Mohr's circle.				
oc9	identify the application of transverse loading				
3- Learning outcomes of the course (LOs)					

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





a. C	Cognitive Domains (LOs):										
LO1		Identify the various physical, chemical, and mechanical properties of metals,									
LO2		Explain	n the standard specifications of	of test spe	cimens and	test proced	lure,				
b. Ps	sycho	motor D	Oomains (LOs):								
LO3		Use the	e theoretical basis of material	tests.							
LO4		prepare	prepare results of standard tests.								
LO5		Produc	e the required data processing	g on test re	esults.						
LO6		prepare	prepare standard tests.								
LO7		Use laboratory for testing to industrial school students									
c. A	Affective Domains (LOs):										
-		None									
4- P	rograi	m LOs s	served by the course:								
Upon the c	omple	tion of t	he Program the student shou	ld be able	to:						
Lo1.			Identify, formulate basic sci	ence and	mathematic	s.					
Lo2.			Simulate, analyze and interp	oret data.							
Lo17.			Solve complex engineering	problems.							
Lo18			Apply engineering fundame	entals, basi	ic science a	nd mathem	atics.				
Lo19.			conduct and Develop appro-	priate exp	erimentation	n					
5- The relation between the course learning outcomes and the program LOs											
Course (LOs) program LOs											
		Cours	se (LOs)			progran	n LOs				
LO1		Course Identify chemic propert	se (LOs) y the various physical, al, and mechanical ies of metals,	Lo1.	Identify, f mathemat	progran ormulate baics.	n LOs asic science a	nd			
LO1 LO2		Course Identify chemic propert Explain of test procedu	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure,	Lo1. Lo2.	Identify, f mathemat Simulate,	program ormulate ba ics. analyze an	n LOs asic science a d interpret da	nd ta.			
LO1 LO2 LO3		Course Identify chemic propert Explain of tes procedu Use t materia	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure, he theoretical basis of il tests.	Lo1. Lo2. Lo17.	Identify, f mathemat Simulate, Solve com	program formulate ba ics. analyze an pplex engin	n LOs asic science a d interpret da accering proble	nd ta. ems.			
LO1 LO2 LO3 LO4		Course Identify chemic propert Explain of tes procedu Use t materia prepare	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure, he theoretical basis of al tests. e results of standard tests.	Lo1. Lo2. Lo17. Lo18	Identify, f mathemat Simulate, Solve com Apply en and mathe	program formulate ba ics. analyze an pplex engin gineering f	n LOs asic science a d interpret da teering proble fundamentals	nd ta. ems. , basic science			
L01 L02 L03 L04 L05		Course Identify chemic propert Explain of tes procedu Use t materia prepare Produc process	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure, he theoretical basis of il tests. e results of standard tests. e the required data sing on test results.	Lo1. Lo2. Lo17. Lo18 Lo19.	Identify, f mathemat Simulate, Solve com Apply en and mathe conduct experimer	program formulate ba- ics. analyze an oplex engin gineering f ematics. and otation	n LOs asic science a d interpret da teering proble fundamentals Develop	nd ta. ems. , basic science appropriate			
L01 L02 L03 L04 L05 L06		Course Identify chemic propert Explain of tes procedu Use t materia prepare Produc process prepare	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure, he theoretical basis of il tests. e results of standard tests. e the required data sing on test results. e standard tests.	Lo1. Lo2. Lo17. Lo18 Lo19.	Identify, f mathemat Simulate, Solve com Apply en and mathe conduct experimen conduct experimen	program ormulate ba ics. analyze an pplex engin gineering f ematics. and ntation and ntation	n LOs asic science a d interpret da eeering proble fundamentals Develop Develop	nd ta. ems. , basic science appropriate appropriate			
LO1 LO2 LO3 LO4 LO5 LO6 LO7		Course Identify chemic propert Explain of tes procedu Use t materia prepare Produc process prepare	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure, he theoretical basis of al tests. e results of standard tests. e the required data sing on test results. e standard tests. aboratory for testing to	Lo1. Lo2. Lo17. Lo18 Lo19. Lo19.	Identify, f mathemat Simulate, Solve com Apply en and mathe conduct experimer conduct experimer conduct	program ormulate ba- ics. analyze an pplex engin gineering frematics. and tematics. and ntation and ntation and	n LOs asic science a d interpret da eeering proble fundamentals Develop Develop Develop	nd ta. ems. , basic science appropriate appropriate appropriate			
L01 L02 L03 L04 L05 L06 L07		Course Identify chemic propert Explain of tes procedu Use t materia prepare Produc process prepare	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure, he theoretical basis of al tests. e results of standard tests. e the required data sing on test results. e standard tests. aboratory for testing to ial school students	Lo1. Lo2. Lo17. Lo18 Lo19. Lo19. Lo19.	Identify, f mathemat Simulate, Solve com Apply en and mathe conduct experimer conduct experimer conduct experimer	program ormulate ba- ics. analyze an pplex engin gineering f ematics. and ntation and ntation and ntation	n LOs asic science a d interpret da eeering proble fundamentals Develop Develop Develop	nd ta. ems. , basic science appropriate appropriate appropriate			
LO1 LO2 LO3 LO4 LO5 LO6 LO7		Course Identify chemic propert Explain of tes procedu Use t materia prepare Produc process prepare Use la industr 6- Co	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure, he theoretical basis of al tests. e results of standard tests. e the required data sing on test results. e standard tests. aboratory for testing to ial school students urse content and the relation	Lo1. Lo2. Lo17. Lo18 Lo19. Lo19. Lo19.	Identify, f mathemat Simulate, Solve com Apply en and mathe conduct experimer conduct experimer conduct experimer conduct experimer	program ormulate ba- ics. analyze an oplex engin gineering the matics. and otation and otation and otation optents and	n LOs asic science a d interpret da eering proble fundamentals Develop Develop Develop the course LO	nd ta. ems. , basic science appropriate appropriate appropriate			
L01 L02 L03 L04 L05 L06 L07 Week No.		Course Identify chemic propert Explain of tes procedu Use t materia prepare Produc process prepare Use la industr 6- Co	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure, he theoretical basis of al tests. e results of standard tests. e the required data sing on test results. e standard tests. aboratory for testing to ial school students urse content and the relation Topic	Lo1. Lo2. Lo17. Lo18 Lo19. Lo19. Lo19.	Identify, f mathemat Simulate, Solve com Apply en and mathe conduct experimer conduct experimer conduct experimer e course co Lecture hr.	program ormulate ba- ics. analyze an pplex engin gineering f ematics. and ntation and ntation and ntation ontents and Tutorial hr.	n LOs asic science a d interpret da eeering proble fundamentals Develop Develop Develop the course Lo Practical hours	ind ta. ems. basic science appropriate appropriate appropriate course LOs			
LO1 LO2 LO3 LO4 LO5 LO6 LO7 Week No. 1	Anal	Course Identify chemic propert Explain of tes procedu Use t materia prepare Produc process prepare Use la industr 6- Co	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure, he theoretical basis of al tests. e results of standard tests. e the required data sing on test results. e standard tests. aboratory for testing to ial school students urse content and the relation Topic he different problems of stresponents	Lo1. Lo2. Lo17. Lo18 Lo19. Lo19. Lo19. between th	Identify, fr mathemat Simulate, Solve com Apply en and mathe conduct experimer experimer e	program ormulate ba- ics. analyze an oplex engin gineering freematics. and otation and otation and otation tation contents and frutorial hr. 2	n LOs asic science a d interpret da eering proble fundamentals Develop Develop Develop the course Lu Practical hours 0	ind ta. ems. basic science appropriate appropriate appropriate course LOs LO1,LO2			
LO1 LO2 LO3 LO4 LO5 LO6 LO7 Week No. 1	Anal strain Mecl	Cours Identify chemic propert Explain of tes procedu Use t materia prepare Produc process prepare Use la industr 6- Co	se (LOs) y the various physical, al, and mechanical ies of metals, n the standard specifications st specimens and test ure, he theoretical basis of al tests. e results of standard tests. e the required data sing on test results. e standard tests. aboratory for testing to ial school students urse content and the relation Topic he different problems of stress ponents behavior of materials under test	Lo1. Lo2. Lo17. Lo18 Lo19. Lo19. Lo19. ss and ensile	Identify, f mathemat Simulate, Solve com Apply en and mathe conduct experimer 2 2 2	program formulate ba- ics. analyze an applex enging gineering frematics. and antation and antation and antation ontents and Tutorial hr. 2 2	n LOs asic science a d interpret da eering proble fundamentals Develop Develop Develop the course LO Practical hours 0 0	nd ta. ems. , basic science appropriate appropriate appropriate DS course LOS LO1,LO2 LO1,LO3			





4	Harc	lness, impact loading	2	2	0	LO2,LO4	
5	Frac	ture and fatigue.	2	2	0	LO2,LO4	
6	Ana defo	lysis of stresses and the corresponding rmations in components	2	2	0	LO2,LO4	
7	Axia	l loading	2	2	0	LO4	
8	Mid	term	1.0				
9	Tors	ion	2	2	0	LO2,LO4	
10	Ben	ding	2	2	0	LO2,LO4	
11	Tran	sverse loading	2	2	0	LO2,LO5	
12	Stati	cally indeterminate problems.	2	2	0	LO2,LO4	
13	Tran	sformation of plane stresses.	2	2	0	LO2,LO4	
14	Moh	r's circle.	2	2	0	LO2,LO4	
15	Revi	sion	2	2	0	L02,L04,L05	
16	Fina	l Exam	2.0				
Total hou	rs		28	28	0		
	7-	The Teaching and learning methods and t	heir relation to the	e Los of the	course		
Course lear	ning	Teac	hing and Learning	Methods			
Outcomes	;	ð	ο ο				

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
LO1	✓	\checkmark		✓	\checkmark			\checkmark	\checkmark	\checkmark	\checkmark	
LO2	✓	\checkmark		✓	\checkmark			\checkmark	\checkmark	\checkmark	\checkmark	
LO3	✓	\checkmark		✓	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
LO4	✓	\checkmark		✓	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
LO5	✓	\checkmark		✓	\checkmark		✓	\checkmark	\checkmark	\checkmark	\checkmark	
LO6	✓	\checkmark		 ✓ 	\checkmark		 ✓ 	\checkmark	\checkmark	\checkmark	\checkmark	
LO7	√	\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-	Stu	dent asses	sment m	ethod				
a- Assessment method and its relation to the Los of the course											
					Te	ools of as	ssessmen	t			
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling





$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	 ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ 		
$LO6$ \checkmark \checkmark \checkmark \checkmark	\checkmark	\checkmark \checkmark	\checkmark \checkmark
	b- Time sch	edule of assessment	
Ouizzes	Quiz (1)	Week (3)	
Discussions	Quiz (2)	Week (10) Every week for any st	ident
Presentations and Movies		weekly	ident
Sheets and Sketches		weekly	
Attendance		weekly	
Mid-term exam		Week (8)	
final exam	G G	Week (16)	
	Ouiz(1)	(5) marks	
quizes	Quiz (2)	(5) marks	
Discussions	20%		
Sheets and Sketches	40%	10 marks	(50) marks
Researches and reports	40%	(10) marks	
Mid-term exa	m	(10) marks	
final exam		(20) marito (2	50) marks
Total		(1	00) marks
	10- List of	f references:	
a) Course notes	Lecture	notes and handouts	S. Caina 2021
c) Recommend books	Enginee	Engineering, Elsaboagn A pring Materials $\Delta \Delta T \Delta \& F$.S, Calfo,2021 1-Frian A I ondon 1976
d) Periodicals. Web sites, etc	No perio	odicals are needed.	I-Enan A., London, 1970.
	110 point		
	11- Facilities requ	uired for teaching and learning	ng:
Appropriate teaching des	sign studios including	g presentation board, data sl	now
Google classroom	-		
• E- learning			
	12- Requiren	nents for Disable facilities:	
• On line teaching hours if i	t is needed		
• Extra examples and topic-	specified research		
Course coordinator:	Prof. Dr. Al -Desou	iki Ibrahim Saleh Eid	6
program Coordinator	Dr. Amera Marey		أميرة
Head of the Department	Dr. Amera Marey		أميرة
Date:	2023/2024		





Course specification Course code: Course name ENGL 102 Lower Intermediate English A- Affiliation **Relevant program:** Electrical power engineering Department offering the program: Electrical and communication engineering **Department offering the course: Basic Science** Date of program operation: 2008-2009 Date of approval from the higher ministry of education 27/1/2008 Date of course operation 2027-2025 **B-** Basic Information **Course Name** Lower Intermediate English Code **ENGL 102** Second level courses (Sophomore)- First semester (Fall) **Course Level Credit Hours** 3Cr. Hr Lectures 2hr Tutorial 2hr Total 4hr Prerequisite ENGL 101 **Instructor name/Email** Dr. Ahmed El-Husani ahmed.elhousiny@sva.edu.eg

C- Professional information

1- <u>Course core</u>

Develops the skills to produce effective persuasive writing with a focus on organization, content, analysis of readings, critical thinking. Provides training in the use and integration of sources, library and online research. With Emphasis on the language skills.

2-	Course l	earning objectives:	
oc 1		Recognize to read and understand passages about the field of management and accounting	
oc 2		Recognize to write CVs and official letters	
oc 3		Recognize how to use this knowledge in open market environments	
oc 4		Recognize how acquiring business terminologies and abbreviations	
		3- Learning outcomes of the course (LOs)	
Upon th a.	e comple [.] Cognitiv	tion of the course, the student should be able to: /e Domains (LOs):	
Lo1		Select the academic formulates, paraphrase, quotation, attribution, and bibliographical forms.	
b.	Psychon	notor Domains (LOs):	
Lo2		Prepare and present thoughtfully to competing claims	
Lo3	use appropriate texts for citation.		
c.	Affectiv	e Domains (LOs):	
Lo4		Express the style, using one's reading as a resource for theoretical models.	
		4- Program LOs served by the course:	
TT (1			

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





Lo1.		Identify, formulate basic science and mathematics.								
Lo24.		Conduct techniques and methods of	of investiga	ation as researches and reports.						
Lo32.		Work efficiently as an individual a	nd share in	n team works.						
Lo33.	Lo33. Communicate to convey ideas verba with a range of audiences.				phically, a	nd using symbo	ols effectively			
		5- The relation between the cou	urse learni	ng outcom	es and the	program LO	S			
		Course (LOs)			program	n LOs				
Lol	Sel par bib	ect the academic formulates, aphrase, quotation, attribution, and liographical forms	Lo1.	Identify, mathema	formulate atics.	basic science a	and			
Lo2	Pre	pare and present thoughtfully to npeting claims	Lo24.	Conduct techniques and methods of investigation as researches and reports.						
Lo3	use	appropriate texts for citation.	Lo24.	Conduct investiga	investigation as researches and reports.					
	Exp as a	press the style, using one's reading a resource for theoretical models.	Lo32.	Work eff team wo	Work efficiently as an individual and share in team works.					
Lo4			Lo33.	Commun numerica effective	nicate to co ally, graph ly with a r	onvey ideas ver ically, and usin ange of audien	rbally, g symbols ces.			
6- Co	urse	content and the relation between the	course con	tents and the	ne course L	.0s				
Week No.	J	Горіс		Lecture hr.	Tutori al hr.	Practical hours	course LOs			
1	U k u	Inderstand the differences between t inds of writing academic writers are non to do abbreviations	the e called	2	2	0	LO2,LO 3			
2	L d	Junderstand that readers in different lisciplines approach text with different	ent	2	2	0	LO1,LO 2			

	kinds of writing academic writers are called	2	2	0	3
2	Uunderstand that readers in different disciplines approach text with different expectations and preferences	2	2	0	LO1,LO 2
3	Imagine meaningful shapes for ideas, so that a text's form is a natural manifestation of what one wants to say	2	2	0	LO1,LO 4
4	Recognize identifiable genres and shape texts around different generic expectations	2	2	0	LO3,LO 4
5	Sequence thoughts effectively, articulating connections between a text's individual discussions	2	2	0	LO3,LO 4
6	How to write CVs and official letters	2	2	0	LO3,LO 4
7	How to write CVs and official letters	2	2	0	LO3,LO 4
8	Midterm	1.0			
9	About erosion and weathering of the rocks.	2	2	0	LO3,LO 4
10	The present condition & the past perfect	2	2	0	LO3,LO 4





Total hours		28	28	0	
16	Final Exam	2.0			
15	Sequence thoughts effectively, articulating connections between a text's individual discussions	2	2	0	LO3,LO 4
14	Recognize identifiable genres and shape texts around different generic expectations where appropriate	2	2	0	LO3,LO 4
13	Revision	2	2	0	LO2,LO 3,LO4
12	Revision	2	2	0	LO3,LO 4
11	Dailogues	2	2	0	LO1,LO 4

Total nours							20	4	20	0			
	7-	The Teac	hing and	learnin	ng meth	ods and	their relation	ation t	to the Lo	s of the	cours	se	
					a- T	eaching	g and Lea	rning	Methods	5			
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
LO1	\checkmark	✓		\checkmark	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	
LO2	\checkmark	\checkmark		\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO3	\checkmark	\checkmark		\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
					,		· ·						
LO4	\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-	Stude	ent assessr	nent meth	od				
		a- /	Assessm	ent metho	od and its i	relation to	the Los	of the course	e		
					Tools	of assess	sment				
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Rannte/	presentation	modelling
LO1	\checkmark	\checkmark	\checkmark	\checkmark				✓	\checkmark	\checkmark	
LO2	\checkmark	\checkmark	\checkmark	\checkmark				\checkmark	√	\checkmark	
LO3	\checkmark	\checkmark	\checkmark	\checkmark			✓	\checkmark	\checkmark	\checkmark	
LO4	\checkmark	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark	 ✓ 	\checkmark	
			b-	Tin	ne schedul	e of asses	sment				
Quizzes				Quiz (1 Quiz (2))	We We	ek (3) ek (10)				





Discussions Presentations and Movies Sheets and Sketches Researches and reports Attendance Mid-term exam final exam quizes Discussions Sheets and Sketches Researches and reports Attendance	Every week for any student weekly Week $(2,3)$ weekly Week $(2,3)$ Week $(2,3)$ Week $(2,3)$ Week $(2,3)$ Week (16) C- Grading system Quiz (1) (5) marks Quiz (2) (5) marks 5% 45% 10 marks (50) marks 50% (10) marks
Mid-term exa	um (20) marks
final exam	(50) marks
lotal	(100) marks
a) Course notesb) Required books	 Lecture notes and handouts The English Language department implements two learning
c) Recommend books	 Digital Learning Platform for Oxford University Press, www.Oxfordlearn.com ITools for Q: Skills for Success (A digital reference for the book) Randall's ESL Cyber Listening Lab, http://www.esl-lab.com/ Dutch Journal of Applied Linguistics ELT Journal, Oxford University Press International Journal of Applied linguistics International Journal of Research and Practice in Interpreting Journal of English Language Teaching- ETP Directory Listing
d) Periodicals, Web sites, etc	 Journal of English Language Teaching- FTP Directory Listing Journal of Clinical Linguistics & Phonetics Journal of t5he Internationals Phonetics Association Second Language Research, University Press Studies in Second Language Research, University Press The Journal of Applied Linguistics. Electronic Materials, Web Sites etc Language laboratories Blackboard, E-Podium and smart board, http:// ud.edu.sa http://ezp.ud.edu.sa/menu http://library.ud.edu.sa http://library.ud.edu.sa http://www.classzone.com/books/researchguide. http://dictionary.cambridge.org/dictionary/british/criterion?q=criteria a http://www.merriam-webster.com/ http://oxforddictionaries.com/words/the-oxford-english-dictionary
	11- Excilition required for teaching and learning

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





•	E-1	learning
•	L-1	carining

2-	Reg	uirements	for	Disable	facilities:
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On line teaching hours if it is needed

- Extra examples and topic-specified research.
- Course coordinator: Dr. Ahmed El-Husani

program Coordinator Head of the Department Date:

Dr. Amera Marey Dr. Amera Marey 2023/2024







Course specification				
Course code:	Course name			
BASE 309	Human Rights			
Α	- Affiliation			
Relevant program:	Electrical power engineering			
Department offering the program:	Electrical and communication engineering			
Department offering the course:	Basic Science			
Date of program operation:	2008-2009			
Date of approval from the higher ministry of educa	tion 27/1/2008			
Date of course operation	202۳-202٤			
B- Basic Information				
Course Name	Human Rights			
Code	BASE 309			
Course Level	Second level courses (Sophomore)- First semester (Fall)			
Credit Hours	0 Cr. hr			
Lectures	0 hr			
Tutorial	1hr			
Total	1hr			
Prerequisite	-			
Instructor name/Email	Dr. Abd El-Aziz Ramadan			
	abdelaziz.Ramadan@sva.edu.eg			
C- Professional information				

1- <u>Course core</u>

The course aims to identify the nature and concepts of human rights, the origin, sources and types of human rights and their applications in the engineering field and their relationship to the ethics and duties of the profession, as well as the international institutional framework for dealing with human rights issues and the mechanisms for protecting these rights at the international and national levels. It also addresses the definition of non-governmental organizations working in the field of human rights

2- Course learning objectives: oc 1 Recognize the main topics and feature of human rights concerning the engineers and the clients. oc 2 identify on analyzing and presenting the international institutional framework to deal with human rights issues. oc 3 Utilize the role of the non-governmental organizations in the field of protecting human rights. 3- Learning outcomes of the course (LOS)

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

a. Cognitive Domains (LOs):

- None

b. Psychomotor Domains (LOs):

- LO1 Apply the concept of the human rights and the international organizations and the non-governmental organizations in the field of human rights.
- LO2 Present research issues and share teams while conducting research's
- LO3 Produce the frame work of the various organizations in protecting the human rights.





 LO4
 develop the case studies concerning the self-learning.

 LO5
 Apply the self-learning concept to in contact with the main issues related to the human rights.

 c.
 Affective Domains (LOs):

 None

 4- Program LOs served by the course:

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

Lo23. Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.

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

	Course (LOs)		program LOs
LO1	Apply the concept of the human rights and the international organizations and the non- governmental organizations in the field of human rights.	Lo23.	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.
LO2	Present research issues and share teams while conducting research's	Lo23.	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.
LO3	Produce the frame work of the various organizations in protecting the human rights.	Lo23.	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.
LO4	develop the case studies concerning the self-learning.	Lo23.	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.
LO5	Apply the self-learning concept to in contact with the main issues related to the human rights.	Lo23.	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.





6- Course content and the relation between the course contents and the course LOs					
Wee	Торіс	Lecture	Tutoria	Practical	course LOs
k		hr.	l hr.	hours	
No.	Introducing to the concept of human rights (from				102105
1	its inception to the present time)	0	2	0	103,103
2	Types of human rights as stated in the Egyptian	0			1.031.05
-	constitution 1971.	0	2	0	100,100
3	Human rights in light of the provisions of Islamic	0	r	0	LO3,LO5
	law		Z	0	
4	Human rights as stated on both Holly Quran and	0			LO1:LO5
	in the prophet Mohamed Sunna. (Research as case		2	0	
5	studies)	0			102105
5	Egyptian numan rights during the eras of modern Egypt (one hundred years)	0	2	0	103,105
6	The changes of human rights since early age of	0			LO1:LO5
·	Egyptian kingdom till now. (Research as case	-	2	0	
	studies)				
7	Human rights in Egyptian law.	0	2	0	LO3,LO5
8	Midterm		1.0		
9	Statements of human rights as specified in various	0	2	0	LO3,LO5
10	countries in the world.	0			101105
10	the world (Research)	0	2	0	LUI:LUS
11	Human rights between the individual and society	0			L01·L05
	and between state sovereignty and international	0	2	0	LonLot
	protection. (Research)				
12	The conflict between nations sovereignty and	0			LO1:LO5
	international society in relation to human rights		2	0	
10	concept. (Research)	0			
13	The loss of Egyptian human rights between	0	r	0	LOI:LOS
	habits (Research)		Z	0	
14	Factors influencing the loss of the Egyptian citizen	0			LO1:LO5
	human rights (family old beliefs, ignorance of		2	0	
	environmental rules by society and hardship of		2	0	
	competent authorities). (Research)				
15	The sodden abrupt changes of western nations	0	2	0	LO1:LO5
	policy towards the mean and Arab countries, and				
16	Final Exam		2.0		
10		C C	2.0	<u></u>	
lotal l	iours	0	28	U	







Notes:

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







Quizzes Presentations Researches and reports Attend Mid-terr final e Tot	Quiz (1) Quiz (2) 50% 50% lance n exam exam al	5 marks 5 marks 10 marks 10 marks	(30) marks (20) marks (50) marks (100) marks			
	10- List of	references:				
 a) Course notes b) Required books c) Recommend books d) Periodicals, Web sites, etc 	 a) Course notes b) Required books Lecture notes and handouts Lizabeth A. Stephan, David R. Bowman, William J. Park, Benjamin I Sill, Matthew W. Ohland, "Thinking like an engineer", Published by Pearson 2018. Harris, C. E., Jr., Pritchard, M. S., & Rabins, M. J. Engineering Ethic Second edition. Belmont, CA: Wadsworth, 2000. c) Recommend books d) Periodicals, Web sites, etc 					
	11- Facilities requi	red for teaching and lea	rning:			
Appropriate teGoogle classreeE- learning	 Appropriate teaching design studios including presentation board, data show Google classroom E- learning 					
	12- Requireme	nts for Disable facilities	:			
On line teach	ching hours if it is needed					
• Extra exam	 Extra examples and topic-specified research 					

Course coordinator:	Dr. Abd El-Aziz Ramadan	Cent
program Coordinator	Dr. Amera Marey	أمرة
Head of the Department	Dr. Amera Marey	أميرة
Date:	2023/2024	





Second level courses (Sophomore)

Second semester (Spring)

No.	Code	Course Name	Instructor
1	CECE 203	Electric Circuits II	Dr. Ibrahim Ali Mahmoud Abdel Dayem
2	CECE 213	Electric Circuits Lab	Dr. Ibrahim Ali Mahmoud Abdel Dayem
3	CECE 209	Digital Logic Design II	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi
4	CECE 211	Digital Logic Lab	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi
5	PHYS 301	Waves, Optics & Atomic Physics	Dr. Dr. Amal Elgawadi
6	PHYS 311	Optics Lab	Dr. Neven Gamal Rostom
7	MATH 202	Differential Equations	Dr. Dr. Gamal El-Anani
8	BASE 303	Engineering Economics	Dr. Abd El-Aziz Ramadan





	Course specification	1
Course code:	Co	ourse name
CECE 203	Electric circuits	(II)
	A- Affiliation	
Relevant program:	Ele	ectrical power engineering
Department offering the program:	Ele	ectrical and communication engineering
Department offering the course:	Ele	ectrical and communication engineering
Date of program operation:	200	08-2009
Date of approval from the higher ministry	of education 27/	/1/2008
Date of course operation	202	2۳-202 ٤
	B- Basic Informa	<u>ition</u>
Course Name	Electric circuits (II)	
Code	CECE 203	
Course Level	Second level courses	(Sophomore) - Second semester (Spring)
Credit Hours	3Cr. hr	
Lectures	2hr	
Tutorial	2hr	
Total	4hr	
Prerequisite	CECE 202	
Instructor name/Email	Dr. Ibrahim Ali Mahr	moud Abdel Dayem
	dr.ibrahim@sva.edu	<u>1.eg</u>

C- Professional information

1- Course core

Alternating current circuit analysis using complex numbers (phasors), complex impedance and complex admittance. Series resonance and parallel resonance, half power points, sharpness of resonance, the Q-factor, maximum power to an alternating current load, Decibels, power level measurements. The s-plane and poles and zeroes of the transfer function. Forced and natural response of circuits using complex frequency analysis.

2- Course learning objectives:

oc 1	Recognize the regarding of power calculations in ac circuits.
oc 2	Recognize the condition of resonance circuits.
oc 3	classify the used AC electric circuits and systems with AC power concepts.
oc 4	Recognize analysis of the concepts of impedance, phase and frequency response.
	3- Learning outcomes of the course (LOs)

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

A- Cognitive Domains (LOs):

LO1 Recognize circuit analysis methods to solve electrical circuits problems that involve AC power sources and AC power

b- Psychomotor Domains (LOs):

- LO2 Solve the transient states in the circuits, makes the comments of expected results and presents them in graphical forms.
- LO3 Uses different software tools for the analysis of AC circuits.

c- Affective Domains (LOs):

- None





4- Program LOs served by the course: :

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

- **Lo11.** Principles of for electrical equipment and systems.
- **Lo12.** Principles of operation and performance specifications of electrical and electromechanical engineering systems .
- **Lo19.** Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
- **Lo29.** Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.

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

	Course (LOs)			program L	Os					
Re	cognize circuit analysis methods to	Lo11.	Principles of	and systems.						
inv	volve AC power sources and AC power	Lo12.	Principles of operation and performance specific of electrical and electromechanical engineering systems .							
		Lo19.	Solve comp problems in engineering.	lex engineeri the field of e	ng problems lectrical and o	and solve electrical power				
So LO2ma an	lve the transient states in the circuits, ikes the comments of expected results d presents them in graphical forms.	Lo29.	Utilize comp and interpret components, electric power systems.	puter prograr numerical d equipment a er generation	n to analyze o ata and test ar nd systems o , control, and	design problems nd examine f electrical and distribution				
		Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power							
LO3 <mark>Us</mark> an	es different software tools for the alysis of AC circuits.	Lo29.	Utilize com and interpre components, electric pow	engineering. Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution						
	6- Course content and the	relation betw	een the course	contents and	I the course L	.Os				
Wee No	k Topic		Lecture hr.	Futorial hr.	Practical hours	course LOs				
1	Capacitor and inductors.		2	2	0	LO2				
2	First order circuit.		2	2	0	LO3				
3	Second order circuit.		2	2	0	LO2				
4	Sinusoidal steady state analysis & Q	Juiz.	2	2	0	LO2				
5	Sinusoidal steady state analysis AC calculation and analysis.	power	2	2	0	LO3				
6 7	Balanced three phase circuits. Mutual inductance.		2	2	0	LO3 LO3				
8	Midterm			1.0						





9	Frequency selective circuits.	2	2	0	LO1
10	Laplace transform in circuit analysis.	2	2	0	LO3
11	Passive Filters	2	2	0	LO4
12	Quiz (2) + solved examples	2	2	0	LO1
13	Passive Filters	2	2	0	LO4
14	Active Filters	2	2	0	LO4
15	General Review				LO3
16	Final Exam		2.0		
Total b	iours	28	28	0	

7- 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 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										
Tools of assessment											
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
LO1										_	
LO2		/									/
LO3	v v		v	v	v h Time ee	ماريام م	£	v	v	V	v
				• •	D- Time sc		of asses	sment			
Quizzes			Q	uiz (uiz (2	1) 2)	Wee Wee	ek (3) ek (10)				
Discussions						Eve	ry week	for any stude	ent		
Presentations an	nd Movie	es				wee	kly	•			
Sheets and Sket	ches					wee	kly				
Researches and	reports					Wee	$e^{1}(2,3)$				
Attendance	-					wee	kly				





Mid-term exam final exam		Week (8) Week (16)				
	c- Gradin	g system				
quizes Discussions Sheets and Sketches Researches and reports Attendance Mid-term exan final exam Total	Quiz (1) Quiz (2) 15% 55% 35%	(2.5) marks (2.5) marks 10 marks (10) marks (15) marks (15) (15)	(40) marks 60) marks 100) marks			
	10 List of	raforonoos:				
 a) Course notes b) Required books Lecture notes and handouts James W. Nilsson, and Susan A. Riedel, Electric Circuits, 11 edition. Charles K. Alexander & Mathew Sadiku, Fundamental of Electric Circuits, 6th edition 						
c) Recommend booksd) Periodicals, Web sites, etc	No periodicals a	ne. re needed.				
Appropriate teachingGoogle classroom	11- Facilities requi design studios includ	red for teaching and learnin ling presentation board, da	ng: ata show			
• E- learning	40					
• On line teaching h	12- Requirement	ts for Disable facilities:				
 On fine teaching if Extra examples an 	d topic-specified reso	earch				
Course coordinator:	Dr. Ibrahim Ali Mah	moud Abdel Dayem	50			
program Coordinator	Dr. Ehab Mohamed	Nabil Ismail Abdel Rasou				
Head of the Department Date:	Dr. Ibrahim Ali Mah 2023/2024	moud Abdel Dayem	-GA			





Cour	se specification
Course code:	Course name
CECE 213	Electric circuits 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 edu	ication 27/1/2008
Date of course operation	202۳-202٤
В-	Basic Information
Course Name	Electric circuits lab
Code	CECE 213
Course Level	Second level courses (Sophomore) - Second semester
	(Spring)
Credit Hours	1 Cr. hr
Lectures	Ohr
lab	3hr
Total	3hr
Prerequisite	Conc. with CECE 203
Instructor name/Email	Dr. Ibrahim Ali Mahmoud Abdel Dayem, Eng. Aliaa Mosa
	Freej
	dr.ibrahim@sva.edu.eg, aliaa.mousa@sva.edu.eg

C- Professional information

1- <u>Course core</u>

Experiments illustrating material in CECE 203.

2- Course learning objectives:

•
different electrical terms and define them with examples
e basic principles, laws and theorems of electrical circuits
fferent types of basic electrical circuits
circuits, analyze data and compare measured performance to theory and simulation.

3- Learning outcomes of the course (LOs)

Upon the completion of the course, the student should be able to: a. Cognitive Domains (LOs):

a. Cog	nitive Domains (LOS):
-	None
b. Psyc	chomotor Domains (LOs):
LO1	Uses the proper concepts for analysis of relevant topics from the electrical circuit's domain
LO2	Use circuit analysis methods to solve electrical circuits problems that involve AC power sources and AC power
LO3	produce experiments concerning the electric circuits with the use of proper instrumentation and explain the results
LO4	Use laboratory to get the transient states in the circuits, makes the comments of expected results and presents them in graphical forms
c. Affe	ctive Domains (LOs):





LO5	Ex	Express the performance of AC circuits by using the software tools											
		4- Program LOs served by the course:											
Upon the com	plet	tion of the Program the student should l	be able to:										
Lo29.	Ut exa and	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.											
Lo39.	Sh res	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.											
5- The relation between the course learning outcomes and the program competencies													
		Course (LOs)		progra	am compe	tencies							
LO1		Uses the proper concepts for analysis of relevant topics from the electrical circuit's domain	Lo29.	Utilize design p data and equipmo electric distribut	computer problems a l test and c ent and sys power gen tion system	program to a nd interpret : examine com stems of elec teration, cont ns.	nalyze numerical ponents, trical and rrol, and						
LO2		Use circuit analysis methods to solve electrical circuits problems that involve AC power sources and AC power	Lo29.	Utilize design p data and equipmo electric distribut	nalyze numerical ponents, trical and trol, and								
LO3		produce experiments concerning the electric circuits with the use of proper instrumentation and explain the results	Lo29.	Utilize design p data and equipmo electric distribu	computer problems a l test and e ent and sys power gen tion system	program to a nd interpret = examine com stems of elec leration, cont ns.	nalyze numerical ponents, trical and trol, and						
LO4	Use laboratory to get the transient states in the circuits, makes the comments of expected results and presents them in graphical forms equipmelectric distribution of the states in the circuits and the states are commented by the states are presented to					ize computer program to analyze gn problems and interpret numerical and test and examine components, pment and systems of electrical and tric power generation, control, and ibution systems							
LO5		Express the performance of AC circuits by using the software tools	Lo39.	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related electrical and electrical power systems.									
		6- Course content and the relation bet	ween the co	urse conter	its and the	course LOs							
Week No. 1	Re	Topic sistors and the Color Code.		Lecture hr. 2	Tutori al hr. 2	Practical hours 0	course LOs LO1						
2	Oh	m's Law.		2	2	0	LO1						
3	Sei	ries Resistance.		2	2	0	LO1						
4	Sei	ries dc Circuits.		2	2	0	LO3						





5	Parallel Resistance	2	2	0	LO4
6	Parallel dc Circuits.	2	2	0	LO4
7	Series-Parallel dc Circuits.	2	2	0	LO4
8	Midterm		1.0		
9	Thevenin's Theorem and Maximum Power	2	2	0	LO3
	Transfer.				
10	Norton's Theorem and Current Sources.	2	2	0	LO4
11	Methods of Analysis.	2	2	0	LO5
12	Tests of circuits	2	2	0	LO2
13	Capacitors.	2	2	0	LO5
14	Active Filters	2	2	0	LO5
15	R-L and R-L-C Circuits with a dc Source Voltage	2	2	0	LO4
16	Final Exam		2.0		
Total hours		28	28	0	

							-	-					
	7- The	Teaching	and lear	ning meth	nods and	their r	elation to	the Los	s of the	cours	e		
Course learning		Teaching and Learning Methods											
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
LO1	✓	\checkmark	\checkmark			✓	\checkmark			✓	\checkmark	✓	
LO3	✓	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
LO4	✓	\checkmark	\checkmark			✓	\checkmark			✓	\checkmark	\checkmark	
LO2	\checkmark	\checkmark	\checkmark			✓	\checkmark			✓	\checkmark	\checkmark	
LO5	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	

Notes:

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

The Tutorials concerns on sheets and sketches

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 assessm	nent method
0-	010000111 03303311	

			Ŭ	0.			liiou				
		a-	Assess	ment m	ethod and	its relation	to the Los	s of the co	urse		
Course ILOs						Tools of a	ssessmen	t			
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modeling
LO1		✓	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	

High	Ministry of higher education High valley institute for engineering and technology Electrical power engineering program				
LO3 LO4 LO2 LO5 ✓			✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	
Quizzes	b- limes	chedule of assessme	ent		
Quizzes	Quiz(1) Quiz(2)				
Discussions Presentations and Movies Sheets and Sketches the Projects Attendance Mid-term exam final exam		Every weekly weekly weekly weekly Week	week for any s y y y (8) (16)	tudent	
	c-	Grading system		((0)) 1	
quizzes Discussions Sheets and Sketches the Projects	Quiz (Quiz (20% 60% 20%) marks) marks) marks	(60) marks	
Attend Mid-terr final e Tot	ance n exam xam al	(10 (10	9) marks 9) marks (40 (100)) marks 0) marks	
 a) Course notes b) Required books c) Recommend books d) Periodicals, Web sites 	, etc	at of references: notes and handouts James W. Nilsson, a 11 th edition. Charles K. Alexando Electric Circuits, 6 th ed at time. dicals are needed.	nd Susan A. Ri er & Mathew S edition	iedel, Electric Circuits, adiku, Fundamental of	
Appropriate teac Googla classroo	1- Facilities thing design studios	required for teaching	J and learning: on board, data s	show	
 Google classroo E- learning 	111				
On line teachExtra example	2- Requi ing hours if it is need es and topic-specifie	<mark>rements for Disable f</mark> ded d research	acilities:		
Course coordinator:	Dr Ibrahim Al	i Mahmoud Abdel D	avem	GA	
program Coordinator	Dr. Ehab Moh	amed Nabil Ismail A	bdel Rasoul		
Head of the Department	Dr. Ibrahim Al	i Mahmoud Abdel D	Dayem	SA	
Date:	2023/2024				





	Course specifica	tion		
Course code:		Course name		
CECE 209	Digital Lo	gic Design II		
	A- Affilia	tion		
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		202۳-202 ٤		
	B- Basic Infor	rmation		
Course Name	Digital Logic Desi	gn II		
Code	CECE 209			
Course Level	Second level cours	ses (Sophomore) - Second semester (Spring)		
Credit Hours	3Cr. Hr			
Lectures	2hr			
Tutorial	2hr			
Total	4hr			
Prerequisite	CECE 201			
Instructor name/Email	Dr. Mohamed Mał	nmoud Ahmed Mohamed El-Ghoboushi		
	mohammed.ghabo	ushy@sva.edu.eg		
(C- Professional i	<u>nformation</u>		
<u>1-Course core</u>				
Latches, flip-flops, design of sequential circuits, sh	ift registers, counters	, Exposure to logic design automation software.		
2- Course learning objectives:				
Recognize the basic philosophy underlying the various number systems, negative number				

- oc 1 representation, binary.
- oc 2 Recognize the arithmetic, binary codes and error detecting and correcting binary codes.
- oc 3 Recognize the combinational logic design of various logic and switching devices and their realization.
- oc 4 Recognize the sequential logic circuits design both in synchronous and asynchronous modes.

3- Learning outcomes of the course (LOs):

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

a. Cognitive Domains (LOs):

- LO1 Recognize various types of number systems and their conversions.
- LO2 Recognize the Boolean expressions and apply the Boolean theorems through logical gates

b. Psychomotor Domains (LOs):

- LO3 Prepare the variety of logical devices using combinational circuits concepts.
- LO4 Prepare the construction of programmable logic devices and different types of ROM
- LO5 Produce the sequential circuits like registers and counters using flip-flops.

c. Affective Domains (LOs):

- None

4- Program LOs served by the course:





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

- Lo12. Principles of operation and performance specifications of electrical and electromechanical engineering systems.
- **Lo29.** Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.

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

Course (LOs)		program LOs
LO1 Understand various types of number systems and their conversions.	Lo12.	Principles of operation and performance specifications of electrical and electromechanical engineering systems.
LO2 Simplify the Boolean expressions and apply the Boolean theorems through logical gates	Lo12.	Principles of operation and performance specifications of electrical and electromechanical engineering systems .
LO3 Design and implement variety of logical devices using combinational circuits concepts.	Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO4 Demonstrate and compare the construction of programmable logic devices and different types of ROM	Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO5 Analyze sequential circuits like registers and counters using flip-flops.	Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.

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	Half adder and full adder description	2	2	0	LO1	
2	Ripple carry and look ahead adder description	2	2	0	LO1	
3	Look ahead carry adder + Solved examples+ Quiz (1).	2	2	0	LO1	
4	Comparator description	2	2	0	LO2	
5	comparator+ solved examples.	2	2	0	LO3	
6	Decoder and Encoder	2	2	0	LO3	
7	Multiplexer.				LO3	
8	Midterm		1.0			
9	Design Exercises	2	2	0	LO2	
10	Sequential circuits and latches	2	2	0	LO3	
11	Sequential circuits and latches	2	2	0	LO5	





12 13	Quiz (2) + solved examples Flip Flop	2 2	2 2	0 0	LO5 LO5
14	Shift Registers	2	2	0	LO5
15	Memory				LO3
16	Final Exam		2.0		
Total hours		28	28	0	

	7- The	Teaching	and learning	metho	ds and their relat	ion to t	he Los	of the c	ourse		
				Teach	ing and Learning	j wietno	as				
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	Modeling
LO1	✓										
LO2	\checkmark	\checkmark									
LO3	✓	\checkmark	 ✓ 	✓	✓		✓	\checkmark			✓
LO4	✓	\checkmark	✓	\checkmark	\checkmark		✓	\checkmark	\checkmark	✓	_ √
LO5	\checkmark	\checkmark	\checkmark \checkmark	\checkmark	\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Notoo											

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.



HATHOF PARTING



Discussions		Every week for any	student	
Presentations and Movies		Weekly	student	
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 (8)		
final exam		Week (16)		
	c- Grading	system		
Ouizes	Quiz (1)	(5) marks		
	$\operatorname{Quiz}(2)$	(5) marks		
Discussions	15%			
Sheets and Sketches	20%			
Researches and reports	20%	5 marks	(40) marks	
the Projects	30%			
Practical modelling	20%			
Attendance		(10) marks		
Mid-term exam		(15) marks		
final exam		(60) marks		
Total			(100) marks	

		10- List of references:			
 Course notes 		Lecture notes and handouts			
 Required books 		 Thomas I, Floyd, Digital fundamentals, 11th edition by 			
•		 Digital design principles and practices- 5th ed, john f. wakerly, prentice hall. 			
 Recommend bo 	oks	Mentioned at time.			
 Periodicals, We 	b sites, etc	No periodicals are needed.			
,	,	1			
	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	e teaching hour	s if it is needed			
• Extra o	examples and to	opic-specified research			
•	D 1/1				

Course coordinator:	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi	1
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul	21
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem	
Date:	2023/2024	





Course specification

Course code:	Course name			
CECE 211	Digital Logic Design 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	of education 27/1/2008			
Date of course operation	202۳-202٤			
B- Basic Information				
Course Name	Digital Logic Design Lab			
Code	CECE 211			
Course Level	Second level courses (Sophomore) - Second semester (Spring)			
Credit Hours	1Cr. Hr			
Lectures	Ohr			
Tutorial	3hr			
Total	3hr			
Prerequisite	Conc. with CECE 203			
Instructor name/Email	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi			
	mohammed.ghaboushy@sva.edu.eg			

C- Professional information

1- <u>Course core</u>

The laboratory component will cover experiments in digital design and experiments illustrating material of the course

2- Course learning objectives:

oc 1	Recognize the number representation and conversion between different representation in digital electronic circuits
oc 2	Recognize the logic processes and implement logical operations using combinational logic circuits.
oc 3	Recognize the characteristics of memory and their classification.
oc 4	Recognize the theoretical concepts through laboratory and simulation experiments.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

-	None							
b. Psyc	b. Psychomotor Domains (LOs):							
LO1	Produce the Concept of Number Systems.							
LO2	Make the Combinational Logic Circuits.							
LO3	Make the Synchronous Sequential Circuits.							
LO4	Produce the Asynchronous Sequential Circuits.							
c. Affe	ctive Domains (LOs):							
LO5	Express using laboratory how use the Programmable Logic Devices.							
	4- Program LOs served by the course:							

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





Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
Lo39.	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.

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

Cours	se (LOs)	program LOs				
LO1	Produce the Concept of Number Systems.	Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.			
LO2	Make the Combinational Logic Circuits.	Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.			
LO3	Make the Synchronous Sequential Circuits.	Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.			
LO4	Produce the Asynchronous Sequential Circuits.	Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.			
LO5	Express using laboratory how use the Programmable Logic Devices.	Lo39.	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.			

6- Course content and the relation between the course contents and the course Los

Week	Торіс	Lectur e hr	Tutorial br	Practical	course
1	Basic Electronic instruments and measurements, oscilloscope.	2	2	0	LO3 LO1
2	Lab report outline and results presentation.	2	2	0	LO1
3	Inverters.	2	2	0	LO1
4	AND gates .	2	2	0	LO2





5	OR gates .	2	2	0	LO3
6	NAND gates .	2	2	0	LO3
7	NOR gates.	2	2	0	LO3
8	Midterm		1.0		
9	XOR gates .	2	2	0	LO2
10	XNOR gates.	2	2	0	LO3
11	Combinational circuits.	2	2	0	LO5
12	Test circuits	2	2	0	LO4
13	Half adder and full adder description	2	2	0	LO5
14	Ripple carry and look ahead adder description	2	2	0	LO5
15	Look ahead carry adder	2	2	0	LO3
16	Final Exam		2.0		
Total hou	rs	28	28	0	

/-	I he I	eaching	and lea	rnıng n	nethod	s and the	ir relat	tion to 1	the Los of t	the cou	irse		
					Teach	ing and L	.earnin	ig Meth	ods				
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / self	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	Modeling
Lo1	\checkmark	\checkmark	\checkmark			✓	\checkmark			\checkmark	\checkmark	\checkmark	
Lo2	\checkmark	\checkmark	\checkmark			\checkmark	✓			\checkmark	\checkmark	\checkmark	
Lo3	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
Lo4	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
Lo5	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	

Notes:

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

The Tutorials concerns the sheets and sketches

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	tudent ass	sessment r	nethod				
	a-		Asses	sment n	nethod an	d its relation	on to the	Los of the c	ourse		
						Tools of	assessm	ent			
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	Modeling
Lo1		\checkmark	\checkmark	\checkmark	\checkmark	✓	\checkmark	\checkmark		✓	

High Contraction of the second	N gh valley i Electr	Ainistry of nstitute fo rical powe	f higher or engine er engine	education eering and eering pro	n d technolog ogram	3Y	
Lo2 √ Lo3 √ Lo4 √ Lo5 √			✓ ✓ ✓ ✓		* * *		✓ ✓ ✓ ✓
	Ouiz	D- II 7 (1)	ime sched	ule of asses	ssment		
Quizzes Discussions Presentations and Movies Sheets and Sketches the Projects Attendance Mid-term exam final exam	Quiz	2(2)		Every week Weekly Weekly Weekly Weekly Week (8) Week (16)	c for any stude	ent	
		c- Gra	ding syste	em			
Discussions Sheets and Sketches the Projects Atter Mid-ter final	idance m exam exam otal	20% 70% 10%		40 mar (10) ma (10) ma	ks rks rks (40) : (100)	(60) marks marks	marks
	Juli	10- List	t of refere	nces:	(100)	marks	
10- List of references: a) Course notes b) Required books c) Recommend books d) Periodicals, Web sites, etc 10- List of references: Lecture notes and handouts • Digital fundamentals, 11th edition by Thomas I, Floyd • Digital design principles and practices- 4th ed, john f. wakerly, prentice hall, 2005. Mentioned at time. No periodicals are needed.						s l, Floyd d, john f.	
	44 -						
 Appropriate t Google classr E- learning On line tea 	11- Fa eaching desi oom 12- uching hours	acilities requirements of the second	ured for te including ents for Di led	eaching and presentatio	t learning: on board, data ties:	show	
• Extra exam	iples and to	pic-specifie	u research	1			~
Course coordinator:	Dr. Mohar	ned Mahmo	oud Ahme	d Mohame	d El-Ghobous	shi	And
program Coordinator	Dr. Ehab M	Mohamed N	labil Isma	il Abdel Ra	asoul		151
Head of the Department	Dr. Ibrahir	n Ali Mahn	noud Abd	el Dayem			SÞ

2023/2024

Date:





Co ι	urse specification
Course code:	Course name
PHYS 301 Opt	ics, waves, and introduction to modern physics
	A- Affiliation
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Basic Science
Date of program operation:	2008-2009
Date of approval from the higher ministry of educat	ion 27/1/2008
Date of course operation	202۳-202٤
E	- Basic Information
Course Name	Optics, waves, and introduction to modern physics
Code	PHYS 301
Course Level	Second level courses (Sophomore) - Second semester (Spring)
Credit Hours	3Cr. hr.
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	PHYS 102
Instructor name/Email	Dr. Dr. Amal Elgawadi
	<u>dr.amal@sva.edu.eg</u>
C- 1	Professional information

1- Course core

Wave phenomena; EM waves, geometrical and physical optics; atomic physics. Basic experiments in physical optics with special emphasis on laser optics

2- Course learning objectives:

oc 1		Recognize some of the basic optics principles such as the nature of light, interference, diffraction, polarization, and geometric optics.
oc 2		Recognize how to solve problems of these physical principles.
oc 3		Identify the developing an intuition (feeling) and knowledge of the physical world.
oc 4		Identify for the scientists and engineers make up physics models and theories as well as their applications, in technology, engineering, medical sciences, etc
oc 5		Describe the basic science (e.g. Physics) and technology (e.g. engineering) are two faces of the same coin.
		3- Learning outcomes of the course (LOs)
TT	.1	

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

a. Cognitive Domains (LOs):

- LO1 Explain the ability to understand the basics of physics related to several branches in engineering.
- LO3 describe the ability to research a topic, develop an argument, and organize supporting details.

b. Psychomotor Domains (LOs):

LO4	Apply acknowledge effectively, recognizing the two as distinct activities and developing strategies for generating critical distance when rereading.
LO5	Conduct and develop a claim that matters in the context of a continuing discussion, writing with a sense of intellectual purpose and stake.





LO6	P	repare and present engineering desi	gns a proces	ss of thinking, not just delivering information							
c.	Affect	ive Domains (LOs):									
	Ν	one									
		4- Progra	m LOs serve	ed by the course:							
Upon the	e comp	letion of the Program the student sh	ould be abl	e to:							
Lo1.	Ident	ify, formulate basic science and ma	thematics								
L06.	Def mar	ine standards, quality guidelines, he agement principles.	alth and saf	ety requirements, environmental issues and risk							
Lo20.	App	ly engineering fundamentals, basic	science and	l mathematics.							
Lo23.	Use requ	contemporary technologies, codes irrements.	of practice a	and standards, quality guidelines, health and safety							
5- The relation between the course learning outcomes and the program LOs											
Course (LOs) program LOs											
LO1		Explain the ability to understand the basics of physics related to	Lo1.	Identify, formulate basic science and mathematics							
		several branches in engineering. describe the ability to research a topic, develop an argument, and organize supporting details.	L06.	Define standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.							
LO3		Apply acknowledge effectively, recognizing the two as distinct activities and developing strategies for generating critical	Lo1.	Identify, formulate basic science and mathematics							
		distance when rereading. Conduct and develop a claim that matters in the context of a continuing discussion, writing with a sense of intellectual purpose and stake.	Lo6.	Define standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.							
			Lo20.	Apply engineering fundamentals, basic science and							
LO4	ł	Prepare and present engineering designs a process of thinking, not just delivering information		mathematics.							
LOS	5	Explain the ability to understand the basics of physics related to several branches in engineering.	Lo23.	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.							





LO6

describe the ability to research a topic, develop an argument, and organize supporting details.

Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.

Week	Торіс	Lecture	Tutorial	Practical	course
1 1	Introduction to the course, grading policy, etc. The nature of light. Introduction of the classical particle and wave models of light. Introduction of the modern models of the dual nature of light. Fizeau's measurement	nr.	nr.	0	LO1:6
2	of the speed of light. Introduction to ray optics approximation (or Geometrical Optics). Longitudinal versus transverse wave motions. The wavelength and the amplitude. Reflection of light. Refraction of light. Introduction to microscopic picture for a light in a medium. Index of refraction Snell's law of refraction	2	2	0	LO1:6
3	Prism and some definitions. Dispersion of light or wavelengths. Refraction in a Prism. Introduction to the electromagnetic spectrum. Introduction to the origin of some electromagnetic waves (absorption and emission). Total internal reflection. Critical angle of total internal reflection. Fiber optics and Fiber Optics. Some amplications for total internal reflection	2	2	0	LO1:6
4	Physical optics or wave optics. Revisions from physics (1): Sinusoidal nature of Simple harmonic motion "SHM." Constructing the trigonometric Functions. Superposition of waves. Brief introduction of the Young's double slit experiment. Conditions for interference. Diffraction of light. Relationship: Diffraction to Interference	2	2	0	LO1:6
5	Waves in interference, details of the Young's double slit interference. Conditions for constructive and distractive interference	2	2	0	LO1:6
6	Intensity distribution of double slit interference pattern. Revision from physics "1": particle in simple harmonic motion. Introduction of the electromagnetic wave nature of light. The average light intensity of double-slit interference at a point. Multiple-slit interference patterns. Change of phase due to reflection. Phase reversal. Interference in thin films. Effect of phase reversal. Newton's ringe	2	2	0	LO1:6
7	Diffraction patterns and polarization. The f-number, the depth of field, and diffraction. Diffraction simple analogy. Edge diffraction due to lens aperture. Introduction to diffraction patterns. Diffraction pattern created by a ball, a penny, or a slit. Some daily life	2	2	0	LO1:6





	examples of diffraction. Nature of light and ray optics. Huygens's principle. Fresnel and Fraunhofer diffraction approximations. Diffraction patterns from Narrow slits				
8	Midterm		1.0		
9	Intensity of single-slit diffraction patterns. Difference between interference and diffraction patterns. Relationship: Diffraction to Interference. Intensity of two-slit diffraction patterns. Multiple-slit interference pattern. Resolution of single-slit and circular apertures. Rayleigh resolution criteria. The diffraction grating.	2	2	0	LO1:6
10	How a diffraction grating is made. Transmission and a reflection grating. Calculation of the wavelength of monochromatic light using a diffraction grating. The intensity maxima in a diffraction grating pattern.	2	2	0	LO1:6
11	Classification of the material based on the atomic periodic system. Diffraction of X-rays by crystals. Macroscopic and microscopic crystal structures. Bragg's law.	2	2	0	LO1:6
12	Polarization of light waves. Background: Electromagnetic wave nature of light. Polarization by selective absorption. Malus's law of the intensity of polarized light by selective absorption. Polarization by reflection.	2	2	0	LO1:6
13	An application of polarization: optical stress analysis. Application of polarization in photography. Polarization by scattering.	2	2	0	LO1:6
14	Ray optics (geometrical optics). Image formation by reflection (mirrors) and by refraction (lenses). Concave and convex (divergence) mirrors.	2	2	0	LO1:6
15	The radius of curvature and cementer of curvature. Sign conventions of the radius of curvature for mirrors and lenses. Types of geometrical images: real and virtual images				LO1:6
16	Final Exam	2.0			
Total ho	urs	28	28	0	





	d. 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	Modeling
Lo1	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		 ✓ 		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Lo2	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Lo3	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Lo4	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Lo5	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark
Lo6	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	\checkmark

Notes: The research applied through the Arduino photonics projects. Arduino is an open-source electronics platform based on easy-to-use hardware and software. The brainstorming takes place during the lectures and through the projects and the homework

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.

e. 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	Modeling
Lo1 Lo2 Lo3 Lo4 Lo5 Lo6	$ \begin{array}{c} \checkmark \\ \checkmark $	 ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ 	$ \begin{array}{c} \checkmark \\ \checkmark $		✓ ✓ ✓ ✓ ✓		$\begin{array}{c} \checkmark \\ \checkmark $	✓ ✓ ✓ ✓	$ \begin{array}{c} \checkmark \\ \checkmark $		✓ ✓ ✓ ✓ ✓
				Oui z (1)	b- Tir	ne schedul	e of ass	sessment			
Quizzes Quiz (1) Quiz (2) Quiz (2) Discussions Presentations and Movies Sheets and Sketches Researches and reports the Projects Practical modelling Attendance Attendance							ry week kly kly k(2,3) k(4,8) k(4,8) kly	for any stud	ent		





Mid-term exam final exam									
	c- Grading	system							
quizes Discussions Sheets and Sketches	Quiz(1) Quiz(2) 15% 20%	Quiz (1) (5) marks Quiz (2) (5) marks 15% 20%							
Researches and reports the Projects Practical modelling	20% 30% 20%	20% 10 marks (50) marks 30% 20%							
Attendance Mid-term exam		(10) marks (20) marks							
final exam Total		(20) Marks (50) marks (100) marks							
10- List of references:									
a) Course notesb) Required books	, Physics for Scientists and								
c) Recommend booksd) Periodicals, Web sites, etc	Mentioned at tim No periodicals a	ne. re needed.							
	11- Facilities requi	red for teaching and lear	nina:						
 Appropriate teaching Google classroom E- learning 	design studios includ	ding presentation board,	data show						
	12- Requirement	nts for Disable facilities:							
On line teaching hExtra examples an	ours if it is needed d topic-specified reso	earch							
Course coordinator:	Dr. Amal Elgawadi		(12 /2/2)						
program Coordinator	Dr. Ehab Mohamed	Nabil Ismail Abdel Rase	oul						
Head of the Department	Dr. Ibrahim Ali Mał	Dr. Ibrahim Ali Mahmoud Abdel Dayem							
Date:	202٣/202٤								





Course specification

Course code:	Course name										
PHYS 311	Optics Lab										
	A- Affiliation										
Relevant program:	Electrical power engineering										
Department offering the program:	Electrical and communication engineering										
Department offering the course:	Basic Sciences										
Date of program operation:	2008-2009										
Date of approval from the higher ministry of	27/1/2008										
education											
Date of course operation	202۳-202٤										
В	B- Basic Information										
Course Name	Optics Lab										
Code	PHYS 311										
Course Level	Second level courses (Sophomore) - Second										
	semester (Spring)										
Credit Hours	1Cr. Hr										
Lectures	Ohr										
lab	3hr										
Total	3hr										
Prerequisite	Concurrent PHYS 301										
Instructor name/Email	Dr. Neven Gamal Rostom										
	neveen.kamal@sva.edu.eg										

C- <u>Professional information</u> <u>1-Course core</u>

Wave phenomena; EM waves, geometrical and physical optics; atomic physics. Basic experiments in physical optics with special emphasis on laser optics

2- Course learning objectives	:
oc 1	Recognize how to formulate the optics.
oc 2	Identify the wave nature of light in the life science
oc 3	Identify the developing and appropriate experiment discussion of models and theories of interferences of light.
oc 4	Recognize the application of reflection and refraction of light in industrial application.
oc 5	Recognize the laws of refraction of light.
oc 6	Identify the application of diffraction of light in industrial application.
oc 7	Recognize the application of interference of light in the industrial application.
3- Learning outcomes of the	course (LOs)
Upon the completion of the cou	urse, the student should be able to:

a. Cognitive Domains (LOs):

LO1 Identify the basic fundamental in optics wave nature of light; an overview of interference of light with different surfaces and materials; introduction to reflection, refraction and diffraction of light) and solve complex engineering problems.

b. Psychomotor Domains (LOs):





LO2 LO3	Jse tools for evaluate the reaction of light to predict refractive index of a prism. Solve he different problem of combustion. Analyze application of interference of light. dentify various industrial processes such as the solar panels industry Prepare and present the flexible model recalling the final configuration of masses										
c. Affective Domains (L	.Os):										
LO4	Express using the model, measuring instrumer of salt	nts, and lab tools to determine the amount									
I- Program LOs served by the course:											
Jpon the completion of the program the student should be able to:											
Lo1.	Identify, formulate basic science and mather	natics									
Lo6. Lo20.	Define standards, quality guidelines, health issues and risk management principles. Apply engineering fundamentals, basic scien	and safety requirements, environmental nce and mathematics.									
Lo23. Lo39.	Use contemporary technologies, codes of pr health and safety requirements. Show accuracy while Designing experiment experimental results related to electrical and o	actice and standards, quality guidelines, s, as well as analyzing and interpreting electrical power systems.									
5- The relation between the	course learning outcomes and the program	n LOs									
Cours	se (LOs)	program LOs									
LO1	Identify the basic fundamental in optics wave nature of light; an overview of interference of light with different surfaces and materials; introduction to reflection, refraction and diffraction of light) and solve	Identify, formulate basic science and mathematics Define standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.									
LO2	Evaluates the reaction of light to predict refractive index of a prism. Solve the different problem of combustion. Analyze application Lo20. of interference of light. Identify various industrial processes such as the solar panels industry	Apply engineering fundamentals, basic science and mathematics.									
LO3	Express his opinion by oral presentation and flexible model recalling the final configuration of masses	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.									
LO4	Conduct models to Employ, measuring instruments, and lab tools to determine the amount of Lo39. Show accuracy while Des experiments, as well as analyzin interpreting experimental results n to electrical and electrical										
6- Course co	ntent and the relation between the course cont	tents and the course LOs									
Week No.	Торіс	Lecture Tutorial Practical course hr. hr. hours LOs									





1	Introduction to optics.	0	0	2	LO1
2	Wave nature of light.	0	0	2	LO1
3	Photoelectric effect.	0	0	2	LO1
4	Verification of inverse square law.	0	0	2	LO1
5	Newtons rings.	0	0	2	LO1
6	Single slit.	0	0	2	LO1
7	Revision.	0	0	2	LO1
8	Midterm		1.0		
9	Double slit.	0	0	2	LO2
10	Refractive index of prism.	0	0	2	LO2
11	Thin film interference	0	0	2	LO2
12	Fresnel.	0	0	2	LO2
13	Fraun hofer diffraction	0	0	2	1.03.4
14	Intensity distribution.	0	0	2	LO3:4
15	Revision.	0	0	2	LO2:4
16	Final Exam		2.0		
Total hours		0	0	28	

7- 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(2.1)	✓	\checkmark	✓	\checkmark	✓	\checkmark			\checkmark	\checkmark	\checkmark	
C(2.2)	✓	\checkmark	✓	\checkmark	\checkmark	\checkmark			\checkmark	\checkmark	\checkmark	
C(2.3,4.1)	\checkmark	\checkmark	\checkmark	\checkmark	✓	\checkmark			\checkmark	\checkmark	\checkmark	
C(4.2)	\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- Assessment method and its relation to the Los of the course											
					Т	ools of a	ssessme	ent			
Course ILOs	quizzes	Mid -term exam Final exam sheets/ sketches projects				Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
$C(2.1) \\ C(2.2) \\ C(2.3,4.1) \\ C(4.2)$	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark	✓ ✓ ✓	✓ ✓ ✓			
0(1.2)	b- Time schedule of assessment										
QuizzesQuiz (1) Quiz (2)Week (3) Week (10)DiscussionsEvery week for any studentPresentations and MoviesweeklySheets and SketchesweeklyResearches and reportsWeek (2,3)the ProjectsWeek (4,8)Practical modellingWeek (4,8)AttendanceweeklyMid-term examWeek (8)final examWeek (16)											
				Qui	z(1)	iy system	(15) ma	arks			
D Sheets Researd	Qui 4 1 1	z(2) 5% 5% 0% 0%		(15) ma 10 ma	arks rks	(60) marks					
Attendance (10) marks Mid-term exam (10) marks final exam (40) marks Total (100) marks											
		4		Tari	10- List o	f referen	ces:				
a) Cot b) Req c) Rec d) Peri	urse no juired b comment iodical	tes books nd books s, Web site	es, etc	SVA a Menta No pe	academic ioned at t eriodicals	and hand book ime. are need	outs led.				

- **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 •





Course coordinator:Dr. Neven Gamal Rostomprogram CoordinatorDr. Ehab Mohamed Nabil Ismail Abdel RasoulHead of the DepartmentDr. Ibrahim Ali Mahmoud Abdel Dayem	Extra examples and topic-specified research						
program CoordinatorDr. Ehab Mohamed Nabil Ismail Abdel RasoulHead of the DepartmentDr. Ibrahim Ali Mahmoud Abdel Dayem	Course coordinator:	Dr. Neven Gamal Rostom	Ces				
Head of the Department Dr. Ibrahim Ali Mahmoud Abdel Dayem	program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul	t-1				
	Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem	SÞ				
Date: 202 ^ψ /202 ^ξ	Date:	202٣/202٤					





Course	specification			
Course code:	Course name			
MATH202 Differ	rential Equations			
A-	- Affiliation			
Relevant program:	Electrical power engineering			
Department offering the program:	Electrical and communication engineering			
Department offering the course:	Basic Science			
Date of program operation:	2008-2009			
Date of approval from the higher ministry of	27/1/2008			
education				
Date of course operation	202*-202\$			
B- <u>Ba</u>	<u>sic Information</u>			
Course Name	Differential Equations			
Code	MATH202			
Course Level	Second level courses (Sophomore) - Second semester			
	(Spring)			
Credit Hours	3Cr. hr			
Lectures	2hr			
Tutorial	2hr			
Total	4hr			
Prerequisite	MATH 201			
Instructor name/Email	Dr. Gamal El-Anani			
	gamalanany@sva.edu.eg			
C- Professional information				

1- <u>Course core</u>

Covers mathematical formulation of ordinary differential equations, methods of solution and applications of first order and second order differential equations, power series solutions, solutions by Lap lace transforms and solutions of first order linear systems. In addition, it covers functions and limits, differentiation with applications including maxima and minima, related rates, approximations, theory of integration with applications including areas, volumes, lengths, moments, center of mass and work. The course has a computer laboratory component.

2- Course learning objectives:

- oc 1 explaining the concepts of ordinary differential equations
- oc 2 explain concepts of mathematical of first order differential equations
- oc 3 Recognize how to apply knowledge of mathematics to solve of second order differential equation problems.
- oc 4 Explain Concepts of power series solutions.
- oc 5 Recognize how to search and analyze data, to Deal with design situations within solving design problems based on the analytical process for Laplace transforms.
- oc 6 Recognize how to use to demonstrate methodologies of solving engineering problems with Laplace transforms
- oc 7 Recognize how to apply knowledge of Theory of equations, and areas, volumes, lengths, moments to solve engineering problems.

3- Learning outcomes of the course (LOs)

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

a- Cognitive Domains (LOs):

LO1 Explain concepts and theories of mathematics and sciences, appropriate to differential equations, function and practice.





LO2 Demonstrate methodologies of solving engineering problems, data collection and interpretation.

b- Psychomotor Domains (LOs):

- LO3 Produce the appropriate solutions for engineering problems based on analytical thinking
- LO4 Apply knowledge of mathematics to solve engineering problems.
- LO5 Apply knowledge of linear algebraic equations, iterative methods, and infinite series to solve engineering problems.
- LO6 Prepare and present technical reports about application of matrices to solve engineering problems.
- LO7 Prepare and manages tasks, time, and resources, when solving mathematics problems, and in exams.
- LO8 Apply knowledge of mathematics to solve differential problems

c- Affective Domains (LOs):

- None

4- Program LOs served by the course:

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

- **Lo1.** Identify, formulate basic science and mathematics.
- **Lo2.** Simulate, analyze and interpret data.
- **Lo19.** Solve complex engineering problems.

Lo20. Apply engineering fundamentals, basic science and mathematics

5-	5- The relation between the course learning outcomes and the program LOs								
	Course (LOs)			program LOs					
LO1	Explain concepts and theories of mathematics and sciences, appropriate to differential equations, function and practice.	Lo1.	Identify, for	mulate basic scien	ce and mathematics.				
LO2	Demonstrate methodologies of solving engineering problems, data collection and interpretation.	Lo2.	Simulate, a	nalyze and interpre	t data.				
LO3	Produce the appropriate solutions for engineering problems based on analytical thinking	Lo19.	Solve com	plex engineering p	roblems.				
LO4	Apply knowledge of mathematics to solve engineering problems.	Lo19.	Solve com	plex engineering p	roblems.				
LO5	Apply knowledge of linear algebraic equations, iterative methods, and infinite series to solve engineering problems	Lo20.	Apply engine	neering fundament s	tals, basic science and				
LO6	Prepare and present technical reports about application of matrices to solve engineering problems. Prepare and manages tasks, time, and resources,	 Lo19. Solve complex engineering problems. Apply engineering fundamentals, basic science and mathematics 							
LO7	when solving mathematics problems, and in exams. Apply knowledge of mathematics to solve differential problems	Lo19.	Solve complex engineering problems.						
LO8	Produce the appropriate solutions for engineering problems based on analytical thinking	Lo20.	Apply engineering fundamentals, basic science and mathematics						
6-	Course content and the relation between	the cours	e content	s and the cours	e LOs				
Week	Торіс	Lecture	Tutorial	Practical hours	course LOs				
No.		hr.	hr.						
1	differential equations	2	2	0	LO(1:6)				
2	Methods of solution and applications of first order differential equations	2	2	0	LO(1:6)				





2					
3	Methods of solution and applications of second	2	2	0	LO(1:6)
	order differential equations	•	2	0	1.02
4	Laplace transforms	2	2	0	LO2
5	Solutions of first order linear systems by Laplace	2	2	0	LO2
	transforms	•	2	0	1.00
6	Functions and limits,	2	2	0	LO3
7	Differentiation with applications including				LO3
	maxima and minima				
8	Midterm		1.0		
9	Maxima and minima	2	2	0	LO3
10	Theory of integration with applications including	C	2	0	LO5:6
	areas.	Z	2	0	
11	Volumes.	2	2	0	LO7:8
12	Lengths.	2	2	0	LO7:8
13	Moments.	2	2	0	LO7:8
14	Center of mass and work	2	2	0	LO7:8
15	Revision				LO7:8
16	Final Exam		2.0		
Total	hours	28	28	0	

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

						Teaching	and Lea	rning Met	thods				
Course learning Dutcomes (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
LO1	✓	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO2	√	\checkmark	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO3	✓	1	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO4	✓	1	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO5	✓	1	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO6	✓	1	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO7	✓	1	\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO8	✓	1	\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 n-line learning all the used teaching and learning methods will be on line.





8- Assessment n	8- Assessment method and its relation to the Los of the course						
				Tools of as	sessment	~	
Course ILOs	quizzes Mid -term exam	Final exam sheets/ sketches	projects	Practical: lab Oral exam	discussions	Reports/ researches presentation	modelling
LO1 LO2 LO3 LO4 LO5 LO6 LO7 LO8	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	 ✓ ✓					
a- Time schedule of assessment							
Quizzes Discussions Presentations and Mov Sheets and Sketches Researches and report Attendance Mid-term exam final exam	vies s	Quiz (1) Quiz (2)	Cradin	Week (3 Week (1 Every we weekly weekly Week (2 weekly Week (Week () eek for any stude 2,3) 8) 16)	ent	
		D-	Grading	g system	nlza		
quizes Discussion Sheets and Ske Researches and n N	s tches reports Attendan /iid-term e final exa: Total	ce xam m	iz (1) iz (2) 25% 50% 25%	(5) ma (5) ma 10 mar (10) ma (20) ma	rks rks rks rks (50 (10)	(50) marks) marks)) marks	
	Total		10- List of	references:	(10)	o) marks	
a) Course notesb) Required books	•	Lecture no Mary Att Company Anthony Foundatio	otes and hat tenboroug Europ. croft, R on for Elec	andouts h, Engineerin obert Daviso trical, Electro	ng Mathematic on, Engineerin nic & Control E	s, McGraw - g Mathematic ngineering, Ado	HILL Book s A modern dison - Wesley
c) Recommend bo	c) Recommend books Swokowski, E, Olinick ,M and Pence, D., Calculus, PWS Publishing Compan - Boston, 1994						hing Company

High	Ministry of higher education High valley institute for engineering and technology Electrical power engineering program						
d) Periodicals, Web S sites, etc www. www.	Sites related to Mathematics and Mathematical engineering as: math.hmc.edu, tutorial.math.lamar.edu, web.mit.edu						
	11- Facilities required for teaching and learning:						
Appropriate teachingGoogle classroomE- learning	 Appropriate teaching design studios including presentation board, data show Google classroom F- learning 						
	12- Requirements for Disable facilities:						
On line teachingExtra examples a	 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	1					
Head of the Department Dr. Ibrahim Ali Mahmoud Abdel Dayem							





	Course specification					
Course code: Course name						
BASE 303	Engineering Economics					
	A- Affiliation					
Relevant program:	Electrical power engineering					
Department offering the program:	Electrical and communication engineering					
Department offering the course:	Basic Science					
Date of program operation:	2008-2009					
Date of approval from the higher ministry	of 27/1/2008					
education						
Date of course operation	202۳-202٤					
	B- Basic Information					
Course Name	Engineering Economics					
Code	BASE 303					
Course Level	Second level courses (Sophomore) - Second semester (Spring)					
Credit Hours	3Cr. hr					
Lectures	2hr					
Tutorial	2hr					
Total	4hr					
Prerequisite	Math 102					
Instructor name/Email	Dr. Abd El-Aziz Ramadan					
	abdelaziz.Ramadan@sva.edu.eg					
C- Professional information						

1-Course core

Economic and cost concepts, the time value of money, single, multiple and series of cash flows, gradients, functional notation, nominal and effective interest rates, continuous compounding, rates of return. Computation and applications, economic feasibility of projects and worth of investments, comparison of alternatives. Replacement, deprecation and B.E. analysis. Introduction to risk analysis. Explores the economics concepts and theories of planning. Covers the bases and methods of economic analysis of engineering projects and the application of these principles in understanding economic activity of private and public engineering companies at various micro- and macroeconomic levels.

2-	Course lear	rning objectives:
oc 1		explain pre-investment phase, project investment phase and operation phase.
oc 2		Describe the Bar chart.
oc 3		apply fixed assets costs, current assets costs, pre operation costs.
oc 4		Recognize the solve derivation of equation of cash future value
oc 5		Recognize how to solve derivation of equation of cash net present of expected future cash flow
006		Recognize how used to operate calculation of the internal rate of return.
3-	Learning or	utcomes of the course (LOs)
Upon the	e completio	n of the course, the student should be able to:
a	Cognitive I	Domains (I Os):

- None
- b. Psychomotor Domains (LOs):





LO1	Conduct and develop cash flow engineering-economic models of costs and benefits of projects
LO2	Make the comparative between the costs and benefits of alternative and mutually exclusive projects using time value of money approaches, including present worth, annual worth, payback period, and Internal Rate of Return (IRR)
LO3	Produces the effect of inflation and taxation on costs and benefits of projects, as well as developing numerical methods to account for their impact
LO4	Prepare the assessment of the elements which may affect the decision-making process for public sector projects
LO5	Develop a strategy to account for uncertainty and risk through the use of sensitivity analysis and probability distribution
c-	Affective Domains (LOs):
-	None

4- Program competencies served by the course:

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

Lo19.	Solve complex engineering problems.					
Lo20.	Apply engineering fundamentals, basic science and mathematics					
Lo22.	Apply engineering design processes to produce cost-effective solutions that meet specified needs.					
_						

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

	Course (LOs)		program competencies
LO1	Conduct and develop cash flow engineering-economic models of costs and benefits of projects	Lo19.	Solve complex engineering problems.
LO2	Make the comparative between the costs and benefits of alternative and mutually exclusive projects using time value of money approaches, including present worth, annual worth, payback period, and Internal Rate of Return (IRR)	Lo20.	Apply engineering fundamentals, basic science and mathematics
LO3	Produces the effect of inflation and taxation on costs and benefits of projects, as well as developing numerical methods to account for their impact	Lo22.	Apply engineering design processes to produce cost- effective solutions that meet specified needs.
LO4	Prepare the assessment of the elements which may affect the decision-making process for public sector projects	Lo22.	Apply engineering design processes to produce cost- effective solutions that meet specified needs.
LO5	Develop a strategy to account for uncertainty and risk through the use of sensitivity analysis and probability distribution	Lo22.	Apply engineering design processes to produce cost- effective solutions that meet specified needs.





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	Phases of engineering projects/operation.	2	2	0	LO1					
2	Project activity versus time plan	2	2	0	LO2					
3	Project total investment costs; fixed assets costs, current assets costs, pre operation costs.	2	2	0	LO2					
4	Derivation of equation of cash future value	2	2	0	LO3					
5	Derivation of equation of cash net present of expected future cash flow	2	2	0	LO3					
6	Derivation of equation of cash net present of expected future cash flow	2	2	0	LO3					
7	calculation of the internal rate of return.	2	2	0	LO3					
8	Midterm		1.0							
9	The payback periods.	2	2	0	LO5					
10	The payback periods.	2	2	0	LO5					
11	The payback periods.	2	2	0	LO5					
12	Factory break-even point (BEP).	2	2	0	LO4					
13	Factory break-even point (BEP).	2	2	0	LO4					
14	Factory break-even point (BEP).	2	2	0	LO4					
15	Revision	2	2	0	LO5					
16	Final Exam		2.0							
Total hour	°S	28	28	0						

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

Course learning Outcomes (LOs)	line / face to face lectures	utorials: sheets/ sketches	projects	roblem solving	Brain storming	Practical: lab	discovering	Site visit	oorts/ researches	ooperative work	presentation	Discussion	modelling
	On li	Tut		Ри	ā	a	•		Repo	č	<u>v</u>		
LO1	\checkmark		\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO2	\checkmark		\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO3	\checkmark		\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO4	\checkmark		\checkmark	\checkmark	\checkmark		\checkmark		\checkmark	\checkmark	\checkmark	\checkmark	
LO5	\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- 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
LO1 LO2 LO3 LO4 LO5	$ \stackrel{\checkmark}{\checkmark} \stackrel{\checkmark}{\checkmark} \stackrel{\checkmark}{\checkmark} \stackrel{\checkmark}{\checkmark} \stackrel{\checkmark}{\checkmark} $	$ \begin{array}{c} \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \\ \checkmark \end{array} $	✓ ✓ ✓ ✓		h Tim	aabadu		✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	
D- Time schedule of assessment Quizzes Quiz (1) Quiz (2) Week (3) Week (10) Discussions Every week for any student Presentations and Movies weekly Researches and reports Week (2,3) Attendance weekly Mid-term exam Week (8) final exam Week (16)											
quizes Discussions Sheets and Sketches Researches and reports the Projects Practical modelling Attendance Mid-term exam final exam Total				Quiz (1) (5) marks Quiz (2) (5) marks 25% 0% 75% 10 marks (50) marks 0% 0% (10) marks (20) marks (50) marks (100) marks							
a) Cou b) Rec c) Rec d) Per	urse not quired b	es ooks nd books , Web site	es, etc	Lectu Digit Editi Ment No p	10- List o ure notes a tal Park, C on) 3rd Ed tioned at t eriodicals	f referen and hand Chan S. (dition ime. are nee	ces: louts Contemp ded.	orary Eng	ineering Eco	onomics (3	3rd





- 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. Abd El-Aziz Ramadan

program Coordinator

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Head of the Department

Date:

Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul Dr. Ibrahim Ali Mahmoud Abdel Dayem 2023/2024

