



Second level courses (Sophomore) First semester (Fall)

No.	Cod	Cod Course Name		Ins	tructor	
1	CECE 102	Fundamental of structured programming	Dr.	Mohamed	Mahmoud	Ahmed
1	CECE 102	Fundamental of structured programming		med El-Ghob	oushi	
2	CECE 201	Digital Logic Design I	Dr.	Mohamed	Mahmoud	Ahmed
2	CECE 201	Digital Logic Design 1	Mohai	med El-Ghob	oushi	
3	CECE 202	Electric Circuits I	Dr. Ib	rahim Ali Ma	hmoud Abdel	Dayem
4	MATH 201	Calculus III	Dr. Ga	amal El-Anar	ni	
5	ENGR 206	Strength and Testing of Materials	Prof. I	Dr. Al-Desou	ki Ibrahim Sal	eh Eid
6	ENGR 102	Lower intermediate English	Dr. Al	hmed El-Hos	seini	
7	BASE309	Human Rights	Dr. Al	od El-Aziz Ra	amadan	





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 e	ducation 27/1/2008				
Date of course operation	2022-2023				

B- Basic Information

Course Name Fundamental of structured programming

Code CECE 102

Course Level Second level courses (Sophomore)- First semester (Fall)

Credit Hours3Cr. HrLectures2hrLab3hrTotal5hrPrerequisiteCECE 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:

oc 1	Describe the most important rulings related to advanced course in C++ which will provide him with the
00 1	fundamental knowledge and skills to become a C++ programmer.

- oc 2 Explain how transpose the physical problem domain into a hierarchy of objects.
- 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.
- Demonstrate how write the program in a structured style whereby reinforcing the concepts of software quality, reliability and maintainability.

3-program objectives served by the course:

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

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

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



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



4- The	relation between the course objective	ves and the program objectives
	Course objectives	program objectives
oc 1	That the student knows 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.	methodologies.
oc 2		OP6Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
oc 3	That the student understands and knows 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.	OP5Teach students to use experimental and data analysis techniques for electrical power engineering applications
oc 4	Program in a structured style whereby reinforcing the concepts of software quality, reliability and maintainability.	
	· · · · · · · · · · · · · · · · · · ·	g outcomes of the course (LOs)
-	repletion of the course, the student show	ald be able to:
CR2.1	Identify OOPs concepts	
CR2.2	Apply functions and pointers in your	
CR2.3	Communicate effectively with expres	
	Explain arrays and strings and create	
CR(2.4, 3.2)	Describe and use constructors and de	
	<u> </u>	ompetencies served by the course:
∪pon the con	npletion of the Program the student sho	
CR2	Design, model and analyze an eleapplication; and identify the tools req	ectrical/electronic/digital system or component for a specific juired to optimize this design
CR3	Design and implement: elements, rengineering using technological and p	modules, sub-systems or systems in electrical/electronic/digital professional tools.
	7- The relation between the cour	se learning outcomes and the program competencies
	Course (LOs)	program competencies
CR(2.1)	·	Design, model and analyze an electrical/electronic/digital CR2system or component for a specific application; and identify the tools required to optimize this design
CR(2.2)	Apply functions and pointers in your C++ program	Design, model and analyze an electrical/electronic/digital CR2system or component for a specific application; and identify the tools required to optimize this design





CR(2.3)	Generate tokens, expressions, and CR2system or component for a specific application; and identify the tools required to optimize this design
	Design, model and analyze an electrical/electronic/digital
	CR2system or component for a specific application; and identify
CD(2.4.2.1)	Explain arrays and strings and create the tools required to optimize this design
CK(2.4, 3.1)	Explain arrays and strings and create programs using them the tools required to optimize this design Design and implement: elements, modules, sub-systems or
	CR3systems in electrical/electronic/digital engineering using
	technological and professional tools.
CR(2.4, 3.2)	Design, model and analyze an electrical/electronic/digital
	CR2system or component for a specific application; and identify
	Describe and use constructors and the tools required to optimize this design
	destructors Design and implement: elements, modules, sub-systems or
	CR3systems in electrical/electronic/digital engineering using
	,
	technological and professional tools.

	8- Course content and the relation between the course contents and the course LOs								
Week No.	Торіс	Lecture hr.	Tutoria l hr.	Practic al hours	course LOs				
1	Introducing C ++ Programming	2	0	2	CR(2.1)				
2	Variables	2	0	2	CR(2.1)				
3	Working with Tokens, Expressions and Control Structures in C++	2	0	2	CR(2.1)				
4	Managing Input and Output Data	2	0	2	CR(2.2)				
5	Arranging the Same Data Systematically: Arrays	2	0	2	CR(2.3)				
6	Revision and quiz	2	0	2	CR(2.3)				
7	Decisions	2	0	2	CR(2.3)				
8	Midterm		1.0						
9	Functions	2	0	2	CR(2.2)				
10	Pointers + (Quiz)	2	0	2	CR(2.3)				
11	Maximum power transfer.	2	0	2	CR(2.4, 3.2)				
12	Quiz (2) + solved examples	2	0	2	CR(2.4, 3.1)				
13	Classes and Objects in C++	2	0	2	CR(2.4, 3.2)				
14	Implementing OOPs Concepts in C++	2	0	2	CR(2.4, 3.2)				
15	General revision	2	0	2	CR(2.3)				
16	Final Exam		2.0						
Total h	ours	28	0	28					





	9- Th	9- The Teaching and learning methods and their relation to the Los of the course											
Teaching and Learn						nd Learni	ng Met	hods					
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
CR2.1	✓												
CR2.2	✓	✓		✓		✓	✓						
CR2.3	✓	\checkmark	✓	✓	✓	✓	\checkmark			✓	\checkmark	\checkmark	
CR(2.4, 3.1)	✓	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark			✓	\checkmark	\checkmark	
CR(2.4, 3.2)	✓	\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.

be on line.											
Student assessment method											
	a- Assessment method and its relation to the Los of the course										
Tools of assessment											
Course ILOs	duizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
CR(2.1) CR(2.2) CR(2.3) CR(2.4, 3.1) CR(2.4, 3.2)	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓ ✓	Time s	✓ ✓ ✓ ✓	✓ ✓ ✓	√ √ √		✓ ✓ ✓	
Ovigges			(Quiz (1)			ek (3)				
Quizzes				Quiz (2)			ek (10)				
Discussions				Every week for any student							
Presentations an		ies		Weekly							
Sheets and Sketo	ches			Weekly							
Attendance Mid-term exam							ekly ek (8)				
final exam							ek (16))			
mar exam					D- (Grading)			
				Oui	z(1)	Grauing	(5) ma	rks			
Qui	zzes			~	z(2)		(5) ma		,	(0)1	
Discussions Sheets and Sketches				5	0% 0%		(60) marks 20 marks				





Attendance Mid-term exam final exam Total	(10) marks (20 marks (40) marks (100) marks
	10- List of references:
a) Course notes	Lecture notes and handouts
b) Required books	Holly Moore, <i>Salt Lake Community College</i> . 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
d) Periodicals, Web sites, etc	 www.prenhall.com presentations, handouts by Mohamed, N.A.

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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

Course coordinator:	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi	2
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul	
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem	6
Date:	2022/2023	100000000000000000000000000000000000000





Course specification

Course code:	Course name
CECE 201	Digital logic design 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
Date of approval from the higher ministry of e	education 27/1/2008
Date of course operation	2022-2023

B- Basic Information

Course Name Digital logic design I

Code CECE 201

Course Level Second level courses (Sophomore)- First semester (Fall)

Credit Hours 3Cr. Hr
Lectures 2hr
Tutorial 2hr
Total 4hr

Prerequisite CECE 101

Instructor name/Email Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi

mohammed.ghaboushy@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- program objectives served by the course:

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

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

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





	Course objectives	program objectives				
oc 1	Explain the logic gates concepts	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.			
oc 2	Explain the boolean algebra and logic simplification.	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.			
oc 3	Explain karnaugh map	OP5	Teach students to use experimental and data analysis techniques for electrical power engineering applications			
oc 4	Explain combinational logic analysis	OP7	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.			
oc 5	Describe the most important rulings related to understand functions of combinational logic	OP12	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.			
	5- Learning ou	itcomes of	the course (LOs)			

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

- CR(2.1) Recognize logic gates: definition, function and practice.
- CR(2.2, 3.1) Recognize boolean algebra and logic simplification: definition, function and practice.
 - CR(2.3) Recognize laws and rules of boolean algebra and demorgan's theorems.
 - CR(2.4) Recognize boolean analysis of logic circuits and logic simplification using boolean algebra.
 - CR(2.5) Solve standard forms of boolean expressions and boolean expressions and truth tables
 - CR(5.1) Apply knowledge the karnaugh map, combinational logic analysis and functions of combinational logic.

6- Program competencies served by the course:

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

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

maintain electrical/electronic/digital equipment, systems and services.								
7- The relation between the course learning outcomes and the program competencies								
	Course (LOs)		pro	ogram compe	etencies			
CR(2.1)	Recognize logic gates: definition, function and practice.	CR2		olication; and		analyze or componen the tools requi		
CR(2.2, 3.1)	Recognize boolean algebra and logic simplification: definition, function and practice.	CR2		olication; and		analyze or componen the tools requi		





	Recognize laws and rules of boolean algebra and demorgan's theorems.	CR3	Design and implement: elements, modules, sub- systems or systems in electrical/electronic/digital engineering using technological and professional tools.
CR(2.3)	Recognize boolean analysis of logic circuits and logic simplification using boolean algebra.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.4)	Solve standard forms of boolean expressions and boolean expressions and truth tables	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.5)	Apply knowledge the karnaugh map, combinational logic analysis and functions of combinational logic.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(5.1)	Recognize logic gates: definition, function and practice.	CR5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

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

١	Week No.	Topic Lecture hr. Tut		Tutorial hr.	Practical hours	course LOs
1		Introduction	2	2	0	CR(2.1)
2		Number systems	2	2	0	CR(2.1)
3		Logic Gates	2	2	0	CR(2.1)
4		Boolean algebra and logic simplification	2	2	0	CR(2.2, 3.1)
5		Laws and rules of Boolean algebra	2	2	0	CR(2.2, 3.1)
6		Demorgan's theorem	2	2	0	CR(2.3)
7		Demorgan's theorem	2	2	0	CR(2.3)
8		Midterm		1.0		
9		Boolean analysis of logic circuits	2	2	0	CR(2.4)
10)	Logic simplification using Boolean algebra	2	2	0	CR(2.4)
11		Standard forms of Boolean expressions	2	2	0	CR(2.5)
12	?	Boolean expressions and truth tables	2	2	0	CR(2.5)
13	;	Karnaugh map	2	2	0	CR(5.1)
14	ļ	Combinational logic analysis	2	2	0	CR(5.1)
15	Combinational logic analysis		2	2	0	CR(5.1)
16	Ó	Final Exam		2.0		
To	otal ho	urs	28	28	0	





	9- The	9- The Teaching and learning methods and their relation to the Los of the course							
				Teachi	ng and Learning M	lethods			
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects Problem solving	Brain storming	Practical: lab Discovering/ Self Iearning	Site visit Reports/ researches	Cooperative work	presentation Discussion	modelling
CR(2.1)	✓								
CR(2.2, 3.1)	✓	✓							
CR(2.3)	✓	\checkmark	✓ ✓	\checkmark	✓		✓		
CR(2.4)	✓	✓	✓ ✓	\checkmark	✓		✓ .	✓ ✓	
CR(2.5)	✓	\checkmark	\checkmark	✓	✓		✓ ,	✓ ✓	
CR(5.1)									

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.

on ime.									
	10- Student assessment method								
a- Assessment method and its relation to the Los of the course									
				Tools	of asses	sment			
Course ILOs	Mid -term exam	Final exam sheets/ sketches	Projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
CR(2.1) CR(2.2, 3.1) CR(2.3) CR(2.4) CR(2.5) CR(5.1)	· ✓	✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓ ✓	✓ ✓ ✓			✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓	
				me sched	ule of as	sessment			
Quizzes Quiz (1) Quiz (2) Discussions Presentations and Movies Sheets and Sketches Mid-term exam final exam		Wee Ever Wee Wee Wee	kly kly k (8) k (16)	for any stude	ent				
			c- Grac	ling syste	em				
Qu	nizzes		uiz (1) uiz (2)	(5) marks (5) marks (40) marks					
Discussions 50%			5 marks						





Sheets and Sketches 50%

Attendance (10) marks Mid-term exam (15) marks

final exam (60) marks
Total (100) marks

10- List of references:

a) Course notes Lecture notes and handouts

b) Required books 1. Digital Fundamentals, 11th Edition by Thomas L, Floyd

2. Digital Design Principles and Practices- 5th Ed, John F. Wakerly,

Prentice Hall, 2017

c) Recommend books Mentioned at time.

d) Periodicals, Web sites, etc No periodicals are needed.

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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

Course coordinator: Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi

program Coordinator Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul

Head of the Department Dr. Ibrahim Ali Mahmoud Abdel Dayem

Date: 2022/2023







Course specification

Course code:	Course name
CECE 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
Date of approval from the higher ministry of o	education 27/1/2008
Date of course operation	2022-2023

B- Basic Information

Code Electric circuits (I)
Code CECE 202

Course Level Second level courses (Sophomore)- First semester (Fall)

Credit Hours3Cr.hrLectures2hrTutorial2hrTotal4hrPropositionPhysics

Prerequisite PHYS 102

Instructor name/Email Dr. Ibrahim Ali Mahmoud Abdel Dayem

dr.ibrahim@sva.edu.eg

C- Professional information

1- Course core

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 1	Identify electrical components (resistors, capacitors, inductors, and etc.)				
oc 2	Recognize 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.				
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3- program objectives served by the course:

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

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





4- The relation between the course objectives and the program objectives							
	Course objectives		program objectives				
oc 1	Identify electrical components (resistors, capacitors, inductors, and etc.)	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.				
oc 2	Recognize and performs circuit analysis and calculations for resistive, capacitive, and inductive DC circuits.	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design				
	Recognize the most important rulings related to apply basic laws and calculations to circuit theorems such as Superposition, Thevenin's, and Nortons.	OP7	and syntheses of electrical components, circuits, and systems. Teach students to use experimental and dat analysis techniques for electrical power engineering applications				
oc 3	Recognize the principles of DC and AC.	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.				
oc 4	Identify electrical components (resistors, capacitors, inductors, and etc.)	OP7	Teach students to use experimental and dat analysis techniques for electrical power engineering applications				
		OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.				

5- Learning outcomes of the course (LOs)

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

CR(2.2, 3.1) Recognize to perform mesh and nodal analysis.
CR(2.3, 3.2) Apply knowledge to apply circuit theorems.
CR(4.1, 5.1) Apply knowledge to use phasors to analyze steady-state sinusoidal circuit analysis.
CR(2.4) Apply knowledge to calculate the complex power.

6- Program competencies served by the course:

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

CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR 3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
CR 4	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application
CR 5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.





7- The relation between the course learning outcomes and the program competencies							
	Course (LOs)	program co	mpetencies				
CR(2.1)	Recognize to apply basic laws to resistive circuits.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design				
CR(2.2, 3.1)	Recognize to perform mesh and nodal analysis. Apply knowledge to apply circuit theorems.	CR 2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Design and implement: elements, modules,				
		CR 3	sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.				
CR(2.3, 3.2)	Apply knowledge to use phasors to analyze steady-state sinusoidal circuit analysis.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design				
		CR 3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.				
CR(4.1, 5.1)	Recognize to apply basic laws to resistive circuits. Recognize to perform mesh and nodal analysis.	CR 4	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application Adopt suitable national and international				
er(, 5.1.)		CR 5	standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.				
CR(2.4)	Apply knowledge to apply circuit theorems.	CR 2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design				





	8- Course content and the relation between	een the cour	se contents and	d the course	LOs
Week No.	Торіс	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduction to electric circuit variables and elements.	2	2	0	CR(2.1)
2	Magnetic field quantities	2	2	0	CR(2.1)
3	Simple resistive circuits+ Solved examples+ Quiz (1).	2	2	0	CR(2.1)
4	Techniques for circuit analysis.	2	2	0	CR(2.2, 3.1)
5	Node voltage method.	2	2	0	CR(2.3, 3.2)
6	Mesh current method.	2	2	0	CR(2.3, 3.2)
7	Source transformation.	2	2	0	CR(2.3, 3.2)
8	Midterm		1.0		
9	Superposition.	2	2	0	CR(2.2, 3.1)
10	Thevenin and Norton equivalent circuits.	2	2	0	CR(2.3, 3.2)
11	Maximum power transfer.	2	2	0	CR(2.4)
12	Quiz (2) + solved examples	2	2	0	CR(4.1, 5.1)
13	Operational Amplifiers.	2	2	0	CR(2.4)
14	Introduction to inductance and capacitance.	2	2	0	CR(2.4)
15	Sinusoidal steady state analysis (a.c. circuits).	2	2	0	CR(2.3, 3.2)
16	Final Exam		2.0		
Total hou	ırs	28	2	8 0	

9- The Teaching and learning methods and their relation to the Los of the cours	se
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				Te	eaching	and Lea	rning Met	hods					
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering/ Self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
CR(2.1)	✓												
CR(2.2,	1												✓
3.1)	·	✓											
CR(2.2, 3.1) CR(2.3, 3.2)	√	√		✓	✓		✓	۱	✓	✓			✓
CR(2.3, 3.2) CR(4.1, 5.1)	√ ✓	✓ ✓		✓✓	✓ ✓		✓ ✓	Ī	✓ ✓	✓ ✓	✓	✓	✓

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.





						essment						
	a- <i>F</i>	Assessme	nt method	and its r			s of the cour					
Course					Tools of assessment							
ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling	
CR(2.1)												
CR(2.2, 3.1) CR(2.3, 3.2)	√	√	√	√					✓	_	√	
CR(4.1, 5.1)	√	√	√	√				✓	· ✓	✓	■ ✓	
CR(2.4)	✓	✓	✓	✓				✓	✓	✓	✓	
					b- Tir		ule of asses	sment				
Quizzes Discussions Presentations Sheets and S Researches a Practical mo Attendance Mid-term ex final exam	ketche ind rep delling	es ports			Grad z (1) z (2)	V E W W V V	Week (3) Week (10) Wery week 1 Weekly Weekly Week (2,3) Week (4,8) Week (8) Week (16) em (2.5) mar (2.5) mar	ks	adent			
Sheets Researc	ches a	Sketches nd reports odelling Atte Mid-te fina	ndance orm exam I exam	1 1 3	5% 5% 5% 5%		15 mark (5) mark (15) mark	s s ks	(• 50) marks 00) marks	40) marks	S	
					10- List	of refere	nces:	`				
,	ırse no juired	otes books		 Lecture notes and handouts James W. Nilsson, and Susan A. Riedel ,Electric Circuits , 11th edition. Charles K. Alexander & Mathew Sadiku, Fundamental of Electric Circuits, 7th edition. 								
,		end books ls, Web si			oned at		•					

11- Facilities required for teaching and learning:

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





E- learning

12- Requirements for Disable facilities:

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

Course coordinator:

program Coordinator

Dr. Ibrahim Ali Mahmoud Abdel Dayem

Dr. Ehab Mohamed Nabil Ismail Abdel
Rasoul

Dr. Ibrahim Ali Mahmoud Abdel Dayem

Date:

2022/2023





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 e	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

C- Professional information

gamalanany@sva.edu.eg

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- program objectives served by the course:

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

OP 1	Sequences and series (including power series).
OP 2	Vectors and planes.

OP 3 Partial differentiation.





	OP 4	Introduction to double integrals (includ	ling double	integrals in polar coordinates).					
	OP 5	Multiple integrals.							
	OP 6	Cylindrical and spherical coordinates Vector-valued functions, vector calculus: Green's Theorem, Gauss Theorem and Stokes' Theorem and their applications.							
	OP7	Complex numbers.							
	4- The relation between the course objectives and the program objectives								
	Course objectives program objectives								
	oc 1	Explain concepts of sequences and series.	OP1	Sequences and series (including power series).					
	oc 2	Recognize concepts of mathematical Vectors and planes.	OP2	Vectors and planes.					
	oc 3	Differentiate between knowledge of mathematics to solve Partial differentiation problems.	OP3	Partial differentiation.					
	oc 4	Differentiate between the concepts of double integrals	OP4	Introduction to double integrals (including double integrals in polar coordinates).					
	oc 5	identify how to search and analyze data, to Deal with design situations within solving design problems based on the analytical process for Multiple integrals	OP5	Multiple integrals.					
	oc 6	demonstrate methodologies of solving engineering problems with Green's Theorem.	OP6	Cylindrical and spherical coordinates Vector- valued functions, vector calculus: Green's Theorem, Gauss Theorem and Stokes' Theorem and their applications.					
	oc 7	Recognize the theory of equations, and Complex numbers to solve engineering problems.	OP7	Complex numbers.					
		5- Learning	outcomes	of the course (LOs)					
U	pon the	completion of the course, the student she	ould be abl	le to:					
	C(1.1)	Explain concepts and theories of mathe	matics and	sciences, appropriate to calculus III.					
	C(1.2)			problems, data collection and interpretation					
	C(1.3)	Produce appropriate solutions for engine							
	C(1.4)	Apply knowledge of mathematics to sol	_						
	C(2.1)	to solve engineering problems.		rative methods, differential problems, and infinite series					
	C(2.2)	Make a technical report about application							
	C(2.3)	Communicate effectively in tutorial class							
	C(2.4)	Organize and manages tasks, time, and i	resources, w	when solving mathematics problems, and in exams					

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

C1 Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics

6- Program competencies served by the course:





C2

Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions

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

	Course (LOs)			competencie	
C(1.1)	Explain concepts and theories of mathematics and sciences, appropriate to calculus III.	C1		oblems by ap	ve complex plying engineering and mathematics
C(1.2)	Demonstrate methodologies of solving engineering problems, data collection and interpretation		Identify, formuengineering pro	late, and solv oblems by ap	
C(1.3)	Produce appropriate solutions for engineering problems based on analytical thinking	C1	fundamentals,	oblems by ap basic science	plying engineering and mathematics
C(1.4)	Apply knowledge of mathematics to solve engineering problems.	C1		oblems by ap	ve complex plying engineering and mathematics
C(2.1)	Apply knowledge of linear algebraic equations, iterative methods, differential problems, and infinite series to solve		Develop and co experimentation	onduct approp on and/or sim	priate ulation, analyze
	engineering problems.		and interpret d findings, and u objective engir conclusions	se statistical	analyses and
C(2.2)	Make a technical report about application of matrices to solve engineering problems.	C2	Develop and co	on and/or simulata, assess and se statistical	ulation, analyze d evaluate analyses and
C(2.3)	Communicate effectively in tutorial class room with the demonstrator.		Develop and co experimentation and interpret diffindings, and un objective engine conclusions	on and/or simulata, assess and se statistical	ulation, analyze d evaluate analyses and
C(2.4)	Organize and manages tasks, time, and resources, when solving mathematics problems, and in exams	C2	Develop and co	on and/or simuata, assess an assess an	ulation, analyze d evaluate analyses and
	8- Course content and the relation be	tween the	course contents	and the cour	se LOs
Week	Topic	Lectu	re Tutorial	Practical	course LOs
No.	Commence and conice Contesting and con-	hr.	hr.	hours	C(1, 1, 1, 2)
1 2	Sequences and series (including power series Vectors and planes.	2 2	2 2	0	C(1.1, 1.2) C(1.1, 1.3)
3	Partial differentiation	2	2	0	C(2.2, 2.3, 2.4)
4	Introduction to double integrals	2	2	0	C(1.2, 1.4)





5	Double integrals in polar coordinates	2	2	0	C(1.2, 1.4)
6	Multiple integrals.	2	2	0	C(1.2, 1.4)
7	Cylindrical and spherical coordinates	2	2	0	C(1.4)
8	Midterm		1.0		
9	Vector-valued functions,	2	2	0	C(1.1, 1.4)
10	vector calculus	2	2	0	C(1.2, 1.4)
11	Green's Theorem	2	2	0	C(1.2, 2.1, 2.2)
12	, Gauss Theorem	2	2	0	C(1.2, 1.4)
13	Stokes' Theorem and applications	2	2	0	C(1.2, 1.4)
14	Complex numbers.	2	2	0	C(1.2, 1.4)
15	Revision	2	2	0	C(1.2, 1.4, 2.1, 2.2)
16	Final Exam		2.0		
Total l	Total hours		28	0	

9-	ı	ine ie	eaching and learnin	ng metnods and their relati	on to the Los of t	ne cours	se
				Teaching and Learning I	Methods		
	e	7.5	_	4 -	es	~	

Course learning Outcomes (LOs)	On line / face to face	Tutorials: sheets/ sketches projects	Problem solving	Brain storming	Practical: lab	Discovering/ Self	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(1.1)	√	✓	■ ✓	✓	_	-	_	<u> </u>		✓	✓	
C(1.2)	✓	✓	✓	\checkmark						✓	\checkmark	
C(1.3)	✓	✓	✓	\checkmark		✓		✓	✓	✓	\checkmark	
C(1.4)	✓	✓	✓	\checkmark		✓		✓	\checkmark	\checkmark	\checkmark	
C(2.1)	✓	✓	✓	\checkmark		✓		✓	\checkmark	\checkmark	\checkmark	
C(2.2)	✓	✓	✓	\checkmark		✓		✓	\checkmark	\checkmark	\checkmark	
C(2.3)	✓	√	✓	✓		✓		✓	✓	✓	✓	
C(2.4)	✓	✓	✓	✓.		√		✓	✓	✓	✓	
C(2.5)	✓	✓	✓	\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.

10-Student assessment method

Assessment method and its relation to the Los of the course

Course ILOs

Tools of assessment





	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
C(1.1) C(1.2)	√	√ ✓	✓ ✓	√ ✓				✓ ✓	✓ ✓	✓ ✓	
C(1.2)	✓	✓	\checkmark	\checkmark				✓	✓	✓	
C(1.4)	√	√	√	✓				√	✓	√ ✓	
C(2.1) C(2.2)	✓	✓	✓	✓				✓	√	✓	
C(2.3)	√	√	√	√				√	√	√	
C(2.4) C(2.5)	✓	√	√	✓				✓ ✓	√	✓ ✓	
(-)			b-		ime sched	lule of ass					
Quizzes				iz (1) iz (2)			ek (3) ek (10)				
Discussions			ν	(-)		Eve	ery week	for any stu	dent		
Presentations and Sheets and Sketch		8					ekly ekly				
Researches and re							ek (2,3)				
Attendance	•					wee	ekly				
Mid-term exam final exam							ek (8) ek (16)				
				c-		ding syste	m				
Qui	zzes				iz (1) iz (2)		(5) ma (5) ma				
	ssions			2	25%						
Sheets and					50%		10 mai	rks	(50) marks		
Researches	and rej	Attendar	nce	2	25% (10) marks						
	N	/lid-term					(20) ma	ırks) 1		
		final exa Total	am						0) marks 0) marks		
\ ~						eferences:			,		
a) Course no b) Required						s and hand v Attenbo		ngineering	Mathematics	s, McGra	aw -
,					HIL	L Book C	ompany 1	Europe.			
									Engineering M , Electronic &		
									Publishing C		
c) Recomme	end boo	oks						ence, D., C	Calculus, PWS	S Publis	hing
d) Periodica	ls, Wel	b sites, etc	3					s and Mat	hematical ens	gineerin	g as:
Company - Boston, 1994 Web Sites related to Mathematics and Mathematical engineering a											_
www.math.hmc.edu, www.tutorial.math.lamar.edu,											
				ww		.math.lam	ar.edu,				

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 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: 2022/2023









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 educa	ation 27/1/2008						
Date of course operation	2022-2023						

B- Basic Information

Course Name Strength and Testing of Materials

Code ENGR 206

Course Level Second level courses (Sophomore)- First semester (Fall)

Credit Hours3Cr. HrLectures2hrTutorial2hrTotal4hrPropagationENGRAL

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	ng 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- program objectives served by the course:								

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

OP 1 Stress and strain in components





OP 2 OP 3		s under hardnes	s, impact loading, fracture and fatigue.							
OP 4	Analysis of stresses and the corresponding deformations in components									
OP 5	Axial loading, torsion, and bending									
OP 6	Statically indeterminate problem									
OP 7	Transformation of plane stresses	,								
OP 8	Mohr's circle.									
Op9	Transverse loading.									
4-	The relation between the cours	se objectives an	nd the program objectives							
Cour	rse objectives		program objectives							
oc 1	Identify the fundamentals of stress and strain in components	OP1	Stress and strain in components							
oc 2	Recognize how apply the mechanical behavior of materials under tensile, compressive, and shear loads.	OP2	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.	OP3	Mechanical behavior of materials under hardness, impact loading, fracture and fatigue.							
oc 4	identify the application of stresses and the corresponding deformations in components	OP4	Analysis 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	OP5	Axial loading, torsion, and bending							
oc 6	apply the analytics of statically indeterminate problems	OP6	Statically indeterminate problems.							
oc 7	Apply the application of transformation of plane stresses	OP7	Transformation of plane stresses,							
oc 8	solve problems on Mohr's circle.	OP8	Mohr's circle.							
oc 9	identify the application of transverse loading	OP9	Transverse loading.							

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

C(1.1)	Identify the various physical, chemical, and mechanical properties of metals,
C(1.2)	Explain the standard specifications of test specimens and test procedure,

5- Learning outcomes of the course (LOs)





C(1.3)	Use the theoretical basis of material tests.
C(2.1)	prepare results of standard tests.
C(5.1)	Produce the required data processing on test results.
C(5.2)	prepare standard tests.
C(5.3)	Use laboratory for testing to industrial school students
	6- Program competencies served by the course:

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

C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics
C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions and development.
C5	Practice research techniques and methods of investigation as an inherent part of learning

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

(Course (LOs)	program competencies				
C(1.1)	Identify the various physical, chemical, and mechanical properties of metals,	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics			
C(1.2)	Explain the standard specifications of test specimens and test procedure,	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics			
C(1.3)	Use the theoretical basis of material tests.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics			
C(2.1)	prepare results of standard tests.	C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions and development.			
C(5.1)	Produce the required data processing on test results.	C5	Practice research techniques and methods of investigation as an inherent part of learning.			
C(5.2)	prepare standard tests.	C5	Practice research techniques and methods of investigation as an inherent part of learning.			
C(5.3)	Use laboratory for testing to industrial school students	C5	Practice research techniques and methods of investigation as an inherent part of learning.			

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

Week	Торіс	Lecture hr.	Tutorial	Practical	course LOs
No.			hr.	hours	
1	Analysis of the different problems of stress and strain in components	2	2	0	C(1.1, 1.2)
2	Mechanical behavior of materials under tensile	2	2	0	C(1.1, 1.3)
3	Compressive, and shear loads	2	2	0	C(5.1, 5.2)
4	Hardness, impact loading	2	2	0	C(1.2, 2.1)
5	Fracture and fatigue.	2	2	0	C(1.2, 2.1)





6	Analysis of stresses and the corresponding deformations in components	2	2	0	C (1.2, 2.1)
7	Axial loading	2	2	0	C(2.1)
8	Midterm	1.0			
9	Torsion	2	2	0	C (1.2, 2.1)
10	Bending	2	2	0	C (1.2, 2.1)
11	Transverse loading	2	2	0	C(1.2, 5.1)
12	Statically indeterminate problems.	2	2	0	C (1.2, 2.1)
13	Transformation of plane stresses.	2	2	0	C (1.2, 2.1)
14	Mohr's circle.	2	2	0	C (1.2, 2.1)
15	Revision	2	2	0	C (1.2, 2.1, 5.1)
16	Final Exam	2.0			,
Total hou	rs	28	28	0	

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

					Teac	Learn	ing Me	thods				
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches projects	Problem solving	Brain storming	Practical: lab	Discovering/ Self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(1.1)	✓	✓	✓	\checkmark				✓	\checkmark	✓	\checkmark	
C(1.2)	✓	✓	✓	\checkmark				✓	\checkmark	\checkmark	\checkmark	
C(1.2)	✓	✓	✓	\checkmark		✓		✓	\checkmark	\checkmark	\checkmark	
C(2.1)	✓	✓	✓	\checkmark		✓		✓	\checkmark	\checkmark	\checkmark	
C(5.1)	✓	✓	✓	\checkmark		✓		✓	\checkmark	\checkmark	✓	
C(5.2)	✓	√	✓	✓		✓		✓	✓	\checkmark	✓	
C(5.3)	\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.





			10-	Stud	dent asses	ssment m	ethod				
a- Assessment method and its relation to the Los of the course											
					T	ools of as	sessme	nt			
Course ILOs	duizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
C(1.1) C(1.2) C(1.2) C(2.1) C(5.1) C(5.2) C(5.3)	<!--</th--><th><!--</th--><th>✓✓✓✓✓</th><th></th><th></th><th></th><th>✓ ✓ ✓ ✓</th><th>✓ ✓ ✓ ✓ ✓</th><th>✓ ✓ ✓ ✓</th><th>✓ ✓ ✓</th><th></th></th>	<!--</th--><th>✓✓✓✓✓</th><th></th><th></th><th></th><th>✓ ✓ ✓ ✓</th><th>✓ ✓ ✓ ✓ ✓</th><th>✓ ✓ ✓ ✓</th><th>✓ ✓ ✓</th><th></th>	✓✓✓✓✓				✓ ✓ ✓ ✓	✓ ✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓	
	b- Time schedule of assessment Quiz (1) Week (3)										
Quizzes				Quiz (1)			ek (10)				
Discussions Presentations and Movies Sheets and Sketches Attendance Mid-term exam Week (8) final exam Every week for any student weekly weekly Week (8) Week (16)											
				c-		rading sy	stem				
D	quize			Qui	z(1) z(2) 0%		(5) mar (5) mar				
Sheets and Sketches 40% 10 marks Researches and reports 40% Attendance (10) marks Mid-term exam (20) marks											
final exam (50) marks Total (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 Material Engineering, Elsabbagh A.S, Cairo,2021 Engineering Materials, A. ATA & El-Erian A., London,1976. No periodicals are needed.							976.				

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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





Course coordinator: program Coordinator Head of the Department Date: Prof. Dr. Al -Desouki Ibrahim Saleh Eid Dr. Amera Marey Dr. Amera Marey 2022/2023







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	2022-2023

B- Basic Information

Course Name Lower Intermediate English

Code ENGL 102

Course Level Second level courses (Sophomore)- First semester (Fall)

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-Course core

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 lea	rning 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						
1- program objectives served by the course:							
Upon the completion	on of the course the student should be able to:						
OP 1	Identifies good reading skills enabling them to read faster, comprehend and identify required information.						
OP 2	Modifies effective and appropriate skills to present information in a concise manner.						
OP 3	Distinguishes between major grammatical structures and use them in writing and speaking.						
OP 4	Identifies the meanings of word-roots and use such knowledge in recognizing and learning the meanings of other terms of importance.						

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

Course objectives program objectives





oc 1	Recognize to read and understand passages about the field of	OP1	Identifies good reading skills enabling them to read faster, comprehend and identify required information.						
	management and accounting								
oc 2	Recognize to write CVs and official letters	OP2	Modifies effective and appropriate skills to present information in a concise manner.						
oc 3	Recognize how to use this knowledge in open market environments	OP3	Distinguishes between major grammatical structures and use them in writing and speaking.						
oc 4	Recognize how acquiring business terminologies and abbreviations	OP4	Identifies the meanings of word-roots and use such knowledge in recognizing and learning the meanings of other terms of importance.						
	3- Learning outcomes of the course (LOs)								

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

C(7.1)	Prepare and present thoughtfully to competing claims
C(7.2)	use appropriate texts for citation.
C(7.3)	Select the academic formulates, paraphrase, quotation, attribution, and bibliographical forms.
C(8.1)	Express the style, using one's reading as a resource for thetorical models.

4- Program competencies served by the course:

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

opon the con	ipiction of the Flogram the student shot	and be able to.							
C7	Function efficiently as an individual teams	Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams							
C8	1 '	Assume full responsibility for own learning and self-development, engage in lifelong learning, and demonstrate the capacity to engage in post-graduate and research studies.							
;	5- The relation between the course learning outcomes and the program competencies								
	Course (LOs)	program competencies							
C(7.1)	Prepare and present thoughtfully to	C7 Function efficiently as an individual and as a							

	,		1 0 1
C(7.1)	Prepare and present thoughtfully to competing claims	C7	Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams
C(7.2)	use appropriate texts for citation.	C7	Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams
C(7.3)	Select the academic formulates, paraphrase, quotation, attribution, and bibliographical forms.	C7	Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams
C(8.1)	Express the style, using one's reading as a resource for thetorical models.	C8	Assume full responsibility for own learning and self-development, engage in lifelong





learning, and demonstrate the capacity to engage in post-graduate and research studies.

		enga	ge ın post-gra	duate and resear	ch studies.
6- Cou	rse content and the relation between the co	urse contents an	d the course l	_Os	
Week No.	Торіс	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Understand the differences between the kinds of writing academic writers are called upon to do abbreviations	2	2	0	C(7.1, 7.2)
2	Uunderstand that readers in different disciplines approach text with different expectations and preferences	2	2	0	C(7.1, 7.3)
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	C(7.3, 8.1)
4	Recognize identifiable genres and shape texts around different generic expectations where appropriate	2	2	0	C(7.2, 8.1)
5	Sequence thoughts effectively, articulating connections between a text's individual discussions	2	2	0	C(7.2, 8.1)
6	How to write CVs and official letters	2	2	0	C(7.2, 8.1)
7	How to write CVs and official letters	2	2	0	C(7.2, 8.1)
8	Midterm	1.0			,
9	About erosion and weathering of the rocks.	2	2	0	C(7.2, 8.1)
10	The present condition & the past perfect	2	2	0	C(7.2, 8.1)
11	Dailogues	2	2	0	C(7.3, 8.1)
12	Revision	2	2	0	C(7.2, 8.1)
13	Revision	2	2	0	C(7.1,7. 2,8.1)
14	Recognize identifiable genres and shape texts around different generic expectations where appropriate	2	2	0	C(7.2, 8.1)
15	Sequence thoughts effectively, articulating connections between a text's individual discussions	2	2	0	C(7.2, 8.1)
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 a- 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(7.1)	✓	✓	✓	✓		✓		\checkmark	\checkmark	\checkmark	\checkmark	
C(7.2)	✓	✓	✓	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	
C(7.3)	✓	✓	✓	\checkmark		✓		\checkmark	\checkmark	\checkmark	\checkmark	
C(8.1)	✓	✓	✓	\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.

be on line.											
			8-			ssment m					
a- Assessment method and its relation to the Los of the course											
Course ILOs						Tools of	assessment				
		_		ဟ							
		хап	Ε	che		lab	۶	SI	- Se	on	ත
	zes	E E	еха	ket	ects	<u></u>	exal	sio	orts	ıtati	Ë
	quizzes	-ter	Final exam	ts/s	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
	_	Mid -term exam	证	sheets/ sketches		Pra	0	흥	<u>.</u>	pre	₹
C(7.1)	,	_	✓	vs ✓				■ ✓	✓	✓	
C(7.1) C(7.2)	v	∨	∨	∨ ✓				\ \ \	∨ ✓	∨ ✓	
C(7.2) C(7.3)	✓	√	✓	↓			✓	• ·	, ✓	√	
C(8.1)	✓	✓	✓	✓			✓	✓	✓	✓	
b- Time schedule of assessment											
Quizzes				Quiz (1			Week (3)				
Discussions				Quiz (2)		Week (10)	C	4-14		
Presentations and Mo	viec						Every week veekly	for any s	student		
Sheets and Sketches	VICS						veekly				
Researches and report	S						Week (2,3)				
Attendance							veekly				
Mid-term exam							Week (8)				
final exam					Crea		Week (16)				
c- Grading system quizes Quiz (1) (5) marks (50) marks											
quizes				uiz (2)		(5) marks) IIIaIKS		
Discussions				5%	•	10 marks					
Sheets and Sketches					45%						
Researches and reports					10%						
the Projects				10%							
Practical mo			1		20%		(10)	1			
Attendance							(10) ma	arks			





Mid-term e	xam (20) marks
final exa	m (50) marks
Total	(100) marks
	10- List of references:
a) Course notesb) Required books	 Lecture notes and handouts The English Language department implements two learning management systems, namely:
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
d) Devie die als Walasiese	 International Journal of Research and Practice in Interpreting 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.
d) Periodicals, Web sites, etc	 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://www.oclc.org/woerldcat.en.html http://www.classzone.com/books/researchguide. http://dictionary.cambridge.org/dictionary/british/criterion?q=criteria http://www.merriam-webster.com/ http://oxforddictionaries.com/words/the-oxford-english-dictionary

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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

Course coordinator:

program Coordinator

Dr. Ahmed El-Husani

Dr. Amera Marey

Dr. Amera Marey

Dr. Amera Marey

Date:

2022/2023







Course specification

Course code:	Course name
BASE 309	Human Rights
A- 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	n 27/1/2008
Date of course operation	2022-2023

B- Basic Information

Code Human Rights
BASE 309

Course Level Second level courses (Sophomore)- First semester (Fall)

Credit Hours0 Cr. hrLectures0 hrTutorial1hrTotal1hrPrerequisite-

Instructor name/Email

Dr. Abd El-Aziz Ramadan
abdelaziz.Ramadan@sva.edu.eg

C- Professional information

1- Course core

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	g the engineers and the clients.

oc 2 identify on analyzing and presenting the international institutional framework to deal with human

oc 3 Utilize the role of the non-governmental organizations in the field of protecting human rights.

3- program objectives served by the course:

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

OP 1	Raising students' awareness of the importance of preserving the built environment in its social, economic and environmental aspects to achieve the goals of sustainable development 2030.	
OP 2	Developing students' professional skills and the ability to self- and continuous learning.	
OP 3	Students gain experiences in effective communication with the surrounding community.	
OP 4	Provide students with the skills to conduct scientific research	

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





	Course objectives		program objectives
oc 1	Recognize the main topics and feature of human rights concerning the engineers and the clients.	OP1	Raising students' awareness of the importance of preserving the built environment in its social, economic and environmental aspects to achieve the goals of sustainable development 2030.
	identify on analyzing and presenting the international	OP2	Developing students' professional skills and the ability to self- and continuous learning.
	institutional framework to deal with human rights issues.	OP3	Students gain experiences in effective communication with the surrounding community.
	Recognize the main topics and feature of human rights concerning the engineers and the clients.	OP4	Provide students with the skills to conduct scientific research
oc 2	identify on analyzing and presenting the international institutional framework to deal with human rights issues.	OP1	Raising students' awareness of the importance of preserving the built environment in its social, economic and environmental aspects to achieve the goals of sustainable development 2030.
	Recognize the main topics and feature of human rights	OP2	Developing students' professional skills and the ability to self- and continuous learning.
	concerning the engineers and the clients.	OP3	Students gain experiences in effective communication with the surrounding community.
oc 3	identify on analyzing and presenting the international institutional framework to deal with human rights issues.	OP1	Raising students' awareness of the importance of preserving the built environment in its social, economic and environmental aspects to achieve the goals of sustainable development 2030.
		OP2	Developing students' professional skills and the ability to self- and continuous learning.
		OP3	Students gain experiences in effective communication with the surrounding community.
	5- Learnir	ng outcomes	of the course (LOs)
Upon the co	ompletion of the course, the student she	ould be able	to:
C(1.1, 5.1)	Apply the concept of the human right organizations in the field of human right		nternational organizations and the non-governmental

C(1.1,	Apply the concept of the human rights and the international organizations and the non-governmental
5.1)	organizations in the field of human rights.

- C(4.1, Present research issues and share teams while conducting research's 7.1)
- C(7.2)Produce the frame work of the various organizations in protecting the human rights.
- C(1.2)develop the case studies concerning the self-learning.
- C(10.1)Apply the self-learning concept to in contact with the main issues related to the human rights.

6- Program competencies served by the course:

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

C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
C4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
C5	Practice research techniques and methods of investigation as an inherent part of learning.





C7	Function efficiently as an individual a	nd as a me	ember of multi-disciplinary and multicultural teams.							
C10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.									
7- The relation between the course learning outcomes and the program competencies										
Course (LOs) program competencies										
C(1.1,	Apply the concept of the human rights and the international organizations and the non-	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.							
5.1)	governmental organizations in the field of human rights.	C5	Practice research techniques and methods of investigation as an inherent part of learning.							
C(4.1, 7.1)	Present research issues and share teams while conducting research's	C4 C7	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles. Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.							
C(7.2)	Produce the frame work of the various organizations in protecting the human rights.	C7	Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.							
C(1.2)	develop the case studies concerning the self-learning.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.							
C(10.1)	Apply the self-learning concept to in contact with the main issues related to the human rights.	C10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.							

	8- Course content and the relation betwee	n the course	e contents a	nd the course	LOs
Wee k	Торіс	Lecture hr.	Tutoria l hr.	Practical hours	course LOs
No.					
1	Introducing to the concept of human rights (from its inception to the present time.)	0	2	0	C(7.2, 10.1)
2	Types of human rights as stated in the Egyptian constitution 1971.	0	2	0	C(7.2, 10.1)
3	Human rights in light of the provisions of Islamic law	0	2	0	C(7.2, 10.1)
4	Human rights as stated on both Holly Quran and in the prophet Mohamed Sunna. (Research as case studies)	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2, 10.1)
5	Egyptian human rights during the eras of modern Egypt (one hundred years).	0	2	0	C(7.2, 10.1)
6	The changes of human rights since early age of Egyptian kingdom till now. (Research as case studies)	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2, 10.1)
7	Human rights in Egyptian law.	0	2	0	C(7.2, 10.1)





0	N. 1.		1.0		
8	Midterm		1.0		
9	Statements of human rights as specified in various countries in the world.	0	2	0	C(7.2, 10.1)
10	Case study of human rights in various countries in the world (Research)	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2,
			_		10.1)
11	Human rights between the individual and society and between state sovereignty and international	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2,
	protection. (Research)		2	U	10.1)
12	The conflict between nations sovereignty and	0			C(1.1, 5.1, 4.1,
	international society in relation to human rights		2	0	7.1,7.2,1.2,
13	concept. (Research) The loss of Egyptian human rights between	0			10.1) C(1.1, 5.1, 4.1,
	inherited family traditions and some ugly society		2	0	7.1,7.2,1.2,
	habits. (Research)				10.1)
14	Factors influencing the loss of the Egyptian citizen	0			C(1.1, 5.1, 4.1,
	human rights (family old beliefs, ignorance of environmental rules by society and hardship of		2	0	7.1,7.2,1.2, 10.1)
	competent authorities). (Research)				10.1)
15	The sodden abrupt changes of western nations	0	2	0	C(1.1, 5.1, 4.1,
	policy towards the mean and Arab countries, and				7.1,7.2,1.2,
16	relation to human rights. (Research)		• •		10.1)
16	Final Exam		2.0		
Total	hours	0	28	0	

The Teaching and learning methods and their relation to the Los of the course **Teaching and Learning Methods** On line / face to face lectures Tutorials: sheets/ sketches Discovering/ self learning Cooperative work Problem solving Brain storming Course Practical: lab presentation Discussion Site visit modelling projects learning **Outcomes** (LOs) C(1.1, 5.1)C(4.1, 7.1)C(7.2)C(1.2)C(7.2)

Notes:

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

10- Student assessment method

a- Assessment method and its relation to the Los of the course





	Tools of assessment										
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
C(1.1, 5.1) C(4.1, 7.1)									✓	✓	
C(7.2)		✓	✓					✓	✓		
C(1.2)										✓	
C(7.2)		✓	✓					✓			
				b-		hedule o		ment			
	ns and Mand repart and repart and repart and repart and repart and resentations.	es ions d reports Atten Mid-ter	dance m exam	Qı Qı)	We Eve wee We We	ekly ek (4, 6, ekly ek (8) ek (16)	cs cs ks ks	(20) marks	30) marks	
final exam Total Total (50) marks (100) marks 10- List of references: 10- List of references: Lecture notes and handouts Lizabeth A. Stephan, David R. Bowman, William J. Park, Benjamin L. Sill, Matthew W. Ohland, "Thinking like an engineer", Published by Pearson 2018. Harris, C. E., Jr., Pritchard, M. S., & Rabins, M. J. Engineering Ethics. Second edition. Belmont, CA: Wadsworth, 2000. C) Recommend books d) Periodicals, Web sites, etc								d by			

- 11- Facilities required for teaching and learning:
 Appropriate teaching design studios including presentation board, data show
- Google classroom





• E- learning

12- Requirements for Disable facilities:

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

Course coordinator: Dr. Abd El-Aziz Ramadan

program CoordinatorDr. Amera MareyHead of the DepartmentDr. Amera Marey

Date: 2022/2023







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

Course code:	Course name
CECE 203	Electric circuits (II)
A	A- Affiliation
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry of educ	cation 27/1/2008
Date of course operation	2022-2023
Relevant program: Department offering the program: Department offering the course: Date of program operation: Date of approval from the higher ministry of educ	Electrical power engineering Electrical and communication engineering Electrical and communication engineering 2008-2009 27/1/2008

B- Basic Information

Course Name Electric circuits (II)

Code CECE 203

Course Level Second level courses (Sophomore) - Second semester (Spring)

Credit Hours3Cr. hrLectures2hrTutorial2hrTotal4hr

Prerequisite CECE 202

Instructor name/Email Dr. Ibrahim Ali Mahmoud Abdel Dayem

dr.ibrahim@sva.edu.eg

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- program objectives served by the course:

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

opon the complete	for of the course the student should be usic to.
() P 3	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
OP 6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
()P/	Teach students to use experimental and data analysis techniques for electrical power engineering applications
()PI/	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.





	4- The relation bety	veen the	course objectives and the program objectives
Cour	rse objectives	veen ene	program objectives
oc 1	-		Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 2	Recognize the condition of resonance circuits.	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
oc 3	classify the used AC electric circuits and systems with AC power concepts.	OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications
oc 4	Recognize analysis of the concepts of impedance, phase and frequency response.	OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
	5- I	_	outcomes of the course (LOs)
Upon the comple	tion of the course, the stud		
CR(2.2, 4.1)	Recognize circuit analys sources and AC power	sis metho	ods to solve electrical circuits problems that involve AC power
CR(2.3, 3.1)	Solve the transient states in graphical forms.	in the cir	rcuits, makes the comments of expected results and presents them
CR(2.4, 5.1)	Uses different software to	ools for t	he analysis of AC circuits.
	6- Pro	gram co	mpetencies served by the course:
Upon the comple	tion of the Program the stu	ident sho	ould be able to:
CR2			electrical/electronic/digital system or component for a specific required to optimize this design
CR 3	Design and implement: engineering using technology		, modules, sub-systems or systems in electrical/electronic/digital nd professional tools.
CR 4			nance of an electrical/electronic/digital system and circuit under uate its suitability for a specific application.
CR 5			ational standards and codes to: design, build, operate, inspect and tal equipment, systems and services.
7-	The relation between t	he cours	e learning outcomes and the program competencies
Course (LOs)			program competencies

Design, model and analyze an electrical/electronic/digital

tools required to optimize this design

Estimate and measure the performance of an

system or component for a specific application; and identify the

electrical/electronic/digital system and circuit under specific

input excitation, and evaluate its suitability for a specific

circuit^{CR2}

CR 4

application.

Recognize

AC power

CR(2.2, 4.1)

analysis methods to

solve electrical circuits

problems that involve

AC power sources and





CR(2.3, 3.1)	Solve the transientCR2 states in the circuits, makes the comments of expected results and presents them inCR 3 graphical forms. CR2 Uses different software tools for the analysis of AC circuits. CR 5	system or comport tools required to or Design and improvements of technological and Design, model and system or comport tools required to or Adopt suitable nare design, build, electrical/electrons	nent for a spoptimize thi lement: electrical/electrical/electrical professionad analyze ament for a spoptimize thi tional and in operatoric/digital economic	ements, modules, tronic/digital eng al tools. n electrical/electro pecific application; s design nternational standa e, inspect a quipment, systems	and identify the sub-systems or gineering using nic/digital and identify the ards and codes to: and maintain and services.
	8- Course content and the relati	ion between the cou	irse content	s and the course L	Os
Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
Î.	Capacitor and inductors	2	2	0	CR(2 2)

Week No.	Торіс	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Capacitor and inductors.	2	2	0	CR(2.2)
2	First order circuit.	2	2	0	
2		2	2	•	CR(2.2)
3	Second order circuit.	2	2	0	CR(2.2)
4	Sinusoidal steady state analysis & Quiz.	2	2	0	CR(2.2)
5	Sinusoidal steady state analysis				CR(2.2, 4.1)
	AC power calculation and analysis.	2	2	0	
6	Balanced three phase circuits.	2	2	0	CR(2.2, 4.1)
7	Mutual inductance.				CR(2.2, 4.1)
8	Midterm		1.0		
9	Frequency selective circuits.	2	2	0	CR(2.2)
10	Laplace transform in circuit analysis.	2	2	0	CR(2.2, 4.1)
11	Passive Filters	2	2	0	CR(2.4, 5.1)
12	Quiz (2) + solved examples	2	2	0	CR(2.3, 3.1)
13	Passive Filters	2	2	0	CR(2.4, 5.1)
14	Active Filters	2	2	0	CR(2.4, 5.1)
15	General Review				CR(2.2, 4.1)
16	Final Exam		2.0		
Total hours		28	28	0	





	9-	The Tea	ching a	and learr	ning m				to the Lo		e course
Course learning						Teac	hing and	d Learnii	ng Metho	ds	
Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / SELF LEARNING	Site visit	Reports/ researches	Cooperative work	presentation Discussion modelling
CR(2.2, 4.1)	✓	✓									
CR(2.3, 3.1)	✓	✓	√	✓	✓		✓		✓	✓	✓
CR(2.4, 5.1)	✓	✓	\checkmark	\checkmark	\checkmark		✓		✓	\checkmark	$\overline{\checkmark}$ \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.

on line.											
	10- Student assessment method										
	a- Assessment method and its relation to the Los of the course										
Course ILOs	Tools of assessment										
	duizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation modelling	
CR(2.2, 4.1) CR(2.3, 3.1) CR(2.4, 5.1)	√	✓ ✓	√	√	✓ ✓			✓	✓ ✓		✓ ✓
					b-	Time sc	hedule of as	sessment			
Quizzes Discussions Presentations and Sheets and Sketcl		es		Quiz (Quiz (Wee	•	any stude	ent		
Researches and re Attendance						Wee wee	ek (2,3) kly				
Mid-term exam							ek (8)				
final exam							ek (16)				
				_	c-	Grad	ing system	o mlea			
qui				Q	uiz (1) uiz (2)		(2.5) m (2.5) m				
Discus Sheets and	Sketcl				15% 55%		10 ma	ırks		(40) marks	
Researches	Researches and reports 35% Attendance (10) marks Mid-term exam (15) marks										





final exam (60) marks
Total (100) marks

	10- List of references:							
a)	Course notes	Lecture notes and handouts						
b)	Required books	James W. Nilsson, and Susan A. Riedel, Electric Circuits, 11 th edition.						
		 Charles K. Alexander & Mathew Sadiku, Fundamental of Electric Circuits, 6th edition 						
c)	Recommend books	Mentioned at time.						
d)	Periodicals, Web sites,	No periodicals are needed.						

11- Facilities required for teaching and learning:

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

etc

12- Requirements for Disable facilities:

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

Course coordinator:	Dr. Ibrahim Ali Mahmoud Abdel Dayem	5
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul	
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem	5
Date:	2022/2023	





Course 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 educ	cation 27/1/2008
Date of course operation	2022-2023

B- 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 0hr
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-Course core

Experiments illustrating material in CECE 203.

2-Course learning objectives:

- oc 1 Recognize different electrical terms and define them with examples
- oc 2 describe the basic principles, laws and theorems of electrical circuits
- oc 3 identify different types of basic electrical circuits
- oc 4 recognize circuits, analyze data and compare measured performance to theory and simulation.

1- program objectives served by the course:

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

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

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

Course objectives program objectives





oc 1	Recognize different electrical terms and define them with examples	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 2	describe the basic principles, laws and theorems of electrical circuits	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 3	identify different types of basic electrical circuits	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
oc 4	recognize circuits, analyze data and compare measured	OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications
	performance to theory and simulation.	OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.

2- Learning outcomes of the course (LOs)

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

- CR(5.1) Uses the proper concepts for analysis of relevant topics from the electrical circuit's domain
- CR(5.2) Use circuit analysis methods to solve electrical circuits problems that involve AC power sources and AC power
- CR(5.3) produce experiments concerning the electric circuits with the use of proper instrumentation and explain the results
- CR(5.4) Use laboratory to get the transient states in the circuits, makes the comments of expected results and presents them in graphical forms
- CR(5.5) Express the performance of AC circuits by using the software tools

3- Program competencies served by the course:

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

Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

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

•	Course (LOs)		program competencies
CR(5.1) to	Jses the proper concepts for analysis of relevant opics from the electrical circuit's domain	CR 5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment,
CR(5.2) n	Use circuit analysis methods to solve electrical circuits	CR 5	systems and services. Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain





	problems that involve AC power sources and AC				lectronic/digital equ d services.	ipment,
	power produce experiments concerning the electric circuits with the use of proper instrumentation and explain the results	CR 5	stand opera elect	lards a ate, ins rical/e	able national and intend codes to: design spect and maintain lectronic/digital equel d services.	, build,
CK(5.4)	Use laboratory to get the transient states in the circuits, makes the comments of expected results and presents them in graphical forms	CR 5	stand opera elect	lards a ate, ins rical/e	able national and intend codes to: design spect and maintain lectronic/digital equid services.	, build,
CR(5.5)	Express the performance of AC circuits by using the software tools	CR 5	stand opera elect	lards a ate, ins rical/e	able national and int and codes to: design spect and maintain lectronic/digital equal d services.	, build,
	5- Course content and th	ne relation between the o	_			
Week	Торіс				Practical hours	course LOs
No.			tur a	al hr.		
			e hr.			
	Resistors and the Color Code.			•		CR(5.1)
1	Resistors and the Color Code.		2	2	0	CK(3.1)
2	Ohm's Law.		2 2	2	0	CR(5.1)
						, ,
2 3 4	Ohm's Law. Series Resistance. Series dc Circuits.		2	2	0	CR(5.1) CR(5.1) CR(5.2)
2 3	Ohm's Law. Series Resistance.		2	2 2	0	CR(5.1) CR(5.1)
2 3 4 5	Ohm's Law. Series Resistance. Series dc Circuits.		2 2 2	2 2 2	0 0 0	CR(5.1) CR(5.1) CR(5.2)
2 3 4 5	Ohm's Law. Series Resistance. Series dc Circuits. Parallel Resistance		2 2 2 2	2 2 2 2	0 0 0	CR(5.1) CR(5.1) CR(5.2) CR(5.3)
2 3 4 5 6	Ohm's Law. Series Resistance. Series de Circuits. Parallel Resistance Parallel de Circuits.		2 2 2 2 2	2 2 2 2 2	0 0 0 0	CR(5.1) CR(5.1) CR(5.2) CR(5.3) CR(5.3)
2 3 4 5 6 7 8 9	Ohm's Law. Series Resistance. Series dc Circuits. Parallel Resistance Parallel dc Circuits. Series-Parallel dc Circuits. Midterm Thevenin's Theorem and Maximur		2 2 2 2 2 2 2	2 2 2 2 2 2 2	0 0 0 0 0 0	CR(5.1) CR(5.1) CR(5.2) CR(5.3) CR(5.3) CR(5.3)
2 3 4 5 6 7 8 9	Ohm's Law. Series Resistance. Series dc Circuits. Parallel Resistance Parallel dc Circuits. Series-Parallel dc Circuits. Midterm Thevenin's Theorem and Maximur Norton's Theorem and Current Sou		2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2	0 0 0 0 0 0	CR(5.1) CR(5.1) CR(5.2) CR(5.3) CR(5.3) CR(5.3) CR(5.3)
2 3 4 5 6 7 8 9 10 11	Ohm's Law. Series Resistance. Series de Circuits. Parallel Resistance Parallel de Circuits. Series-Parallel de Circuits. Midterm Thevenin's Theorem and Maximur Norton's Theorem and Current Sou Methods of Analysis.		2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2	0 0 0 0 0 0 1.0	CR(5.1) CR(5.1) CR(5.2) CR(5.3) CR(5.3) CR(5.3) CR(5.3)
2 3 4 5 6 7 8 9 10 11 12	Ohm's Law. Series Resistance. Series de Circuits. Parallel Resistance Parallel de Circuits. Series-Parallel de Circuits. Midterm Thevenin's Theorem and Maximur Norton's Theorem and Current Sou Methods of Analysis. Tests of circuits		2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2	0 0 0 0 0 0 1.0	CR(5.1) CR(5.1) CR(5.2) CR(5.3) CR(5.3) CR(5.3) CR(5.3) CR(5.5) CR(5.5) CR(5.4)
2 3 4 5 6 7 8 9 10 11 12 13	Ohm's Law. Series Resistance. Series de Circuits. Parallel Resistance Parallel de Circuits. Series-Parallel de Circuits. Midterm Thevenin's Theorem and Maximur Norton's Theorem and Current Sou Methods of Analysis.		2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2	0 0 0 0 0 0 1.0	CR(5.1) CR(5.1) CR(5.2) CR(5.3) CR(5.3) CR(5.3) CR(5.3)
2 3 4 5 6 7 8 9 10 11 12 13 14 15	Ohm's Law. Series Resistance. Series de Circuits. Parallel Resistance Parallel de Circuits. Series-Parallel de Circuits. Midterm Thevenin's Theorem and Maximur Norton's Theorem and Current Sou Methods of Analysis. Tests of circuits Capacitors. Active Filters R-L and R-L-C Circuits with a de States of Circ	urces.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 0 0 0 0 0 1.0	CR(5.1) CR(5.1) CR(5.2) CR(5.3) CR(5.3) CR(5.3) CR(5.3) CR(5.5) CR(5.5) CR(5.5) CR(5.4) CR(5.5)
2 3 4 5 6 7 8 9 10 11 12 13 14 15	Ohm's Law. Series Resistance. Series de Circuits. Parallel Resistance Parallel de Circuits. Series-Parallel de Circuits. Midterm Thevenin's Theorem and Maximur Norton's Theorem and Current Sou Methods of Analysis. Tests of circuits Capacitors. Active Filters R-L and R-L-C Circuits with a de Sinal Exam	urces.	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	0 0 0 0 0 0 1.0	CR(5.1) CR(5.1) CR(5.2) CR(5.3) CR(5.3) CR(5.3) CR(5.3) CR(5.4) CR(5.5) CR(5.5) CR(5.5)

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





Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / Self learning	Site visit	Reports/ researches	Cooperative work	presentation Discussion	modelling	
CR(5.1)	✓	\checkmark	\checkmark			✓	\checkmark			✓	✓ ✓		
	✓	\checkmark	\checkmark			✓	\checkmark			✓	\checkmark \checkmark		
CR(5.2) CR(5.3)	✓	\checkmark	\checkmark			✓	\checkmark			✓	\checkmark \checkmark		
CR(5.4)	✓	\checkmark	\checkmark			✓	\checkmark			\checkmark	✓ ✓		
CR(5.5)	✓	\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.

			7-	S	tudent as	sessment m	ethod				
			a- Asse	ssment		and its relation			e course		
					T	ools of asses	ssment				
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modeling
CR(5.1) CR(5.2) CR(5.3) CR(5.4) CR(5.5)		✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	<td>✓ ✓ ✓ ✓</td> <td></td> <td>✓ ✓ ✓ ✓</td> <td></td>	✓ ✓ ✓ ✓		✓ ✓ ✓ ✓	
				b-	Time s	chedule of a		nent			
Quizzes						Quiz (1)					
Discussion	18					Quiz (2)		erv week	for any stud	ent	
Presentation		Movies						ekly	ioi uiij stat		
Sheets and	l Sketche	es					we	ekly			
the Projec								ekly			
Attendanc								ekly			
Mid-term final exam								eek (8) eek (16)			
mai Call	ı				c-	Grading sys		CK (10)			
			:			Quiz (1)) marks			
		qu	izes			Quiz (2	2) (() marks	(60) marks	
	;		assions d Sketches	5		20% 60%	4	0 marks	(oo) marks	





the Projects
Attendance
Mid-term exam
final exam
Total

20%

(10) marks

(10) marks

(40) marks (100) marks

10- List of references:

a) Course notes

Lecture notes and handouts

b) Required books

- James W. Nilsson, and Susan A. Riedel, Electric Circuits, 11th edition
- Charles K. Alexander & Mathew Sadiku, Fundamental of Electric Circuits, 6th edition

c) Recommend books

Mentioned at time.

d) Periodicals, Web sites, etc

No periodicals are needed.

1- Facilities required for teaching and learning:

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

2- Requirements for Disable facilities:

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

Course coordinator:

Dr. Ibrahim Ali Mahmoud Abdel Dayem

program Coordinator

Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul

Head of the Department

Dr. Ibrahim Ali Mahmoud Abdel Dayem

Date:

2022/2023







Course specification

Course code:	Course name
CECE 209 D	Digital Logic Design II
\mathbf{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 educa	ation 27/1/2008
Date of course operation	2022-2023

B- Basic Information

Course Name Digital Logic Design II

Code CECE 209

Course Level Second level courses (Sophomore) - Second semester (Spring)

Credit Hours3Cr. HrLectures2hrTutorial2hrTotal4hrPrerequisiteCECE 201

Instructor name/Email Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi

mohammed.ghaboushy@sva.edu.eg

C- <u>Professional information</u>

1- Course core

Latches, flip-flops, design of sequential circuits, shift registers, counters, Exposure to logic design automation software.

2- Course learning objectives:

- oc 1 Recognize the basic philosophy underlying the various number systems, negative number 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.

1- program objectives served by the course:

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

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

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

Course objectives program objectives





oc 1	the various n	ne basic philosophy underlying number systems, negative esentation, binary.	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 2	_	ne arithmetic, binary codes and ng and correcting binary codes.	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 3		ne combinational logic design of and switching devices and their	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems. Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
oc 4		ne basic philosophy underlying number systems, negative	OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications
		esentation, binary.	OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
		3- Learning outc	omes of t	the course (LOs)
Upon the	completion of	the course, the student should be		
-	CR(2.1)	Recognize various types of num		ms and their conversions.
	CR(2.2)		-	pply the Boolean theorems through logical gates
(CR(2.3)	Prepare the variety of logical de	vices usir	ng combinational circuits concepts.
CR	(3.4, 4.1)	Prepare the construction of prog	rammable	e logic devices and different types of ROM
CR(3	3.5,4.2, 5.1)	Produce the sequential circuits li	ike regist	ers and counters using flip-flops.
		4- Program compete	encies se	rved by the course:
Upon the	completion of	the Program the student should b	e able to:	
CR2	<u> </u>	el and analyze an electrical/electrone tools required to optimize this o	_	al system or component for a specific application;
CR 3		implement: elements, modules, sing technological and professions		tems or systems in electrical/electronic/digital
CR 4		measure the performance of an elon, and evaluate its suitability for a		electronic/digital system and circuit under specific application
CR 5		measure the performance of an elon, and evaluate its suitability for a		electronic/digital system and circuit under specific application
	5- The	relation between the course lear	rning out	comes and the program competencies
	Co	ourse (LOs)		program competencies
CR(2.1)	and their cor	various types of number systems nversions.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design





CR(2.2)	the Deelson	ne Boolean expressions and apply theorems through logical gates	y CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.3)	combination Prepare the	variety of logical devices using al circuits concepts. construction of programmables and different types of ROM	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Design and implement: elements, modules, subsystems or systems in electrical/electronic/digital engineering using technological and professional tools.
CR(3.4, 4.1)	and counters Recognize v	sequential circuits like register using flip-flops. various types of number system nversions.	CR 3	Design and implement: elements, modules, subsystems or systems in electrical/electronic/digital engineering using technological and professional tools. Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application
		ne Boolean expressions and apply theorems through logical gates	CR 3	Design and implement: elements, modules, subsystems or systems in electrical/electronic/digital engineering using technological and professional tools.
CR(3.5,4.2 5.1)	2,		CR 4	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application
			CR 5	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application
				he course contents and the course Los
,	Week	Topic	1	Lecture hr. Tutorial Practical course LOs

	Week	Торіс	Lecture hr.	Tutorial	Practical	course LOs
	No.			hr.	hours	
	1	Half adder and full adder description	2	2	0	CR(2.1)
2	2	Ripple carry and look ahead adder description	2	2	0	CR(2.1)
	3	Look ahead carry adder + Solved examples+ Quiz (1).	2	2	0	CR(2.1)
4	4	Comparator description	2	2	0	CR(2.2)
	5	comparator+ solved examples.	2	2	0	CR(2.3)
(5	Decoder and Encoder	2	2	0	CR(2.3)
,	7	Multiplexer.				CR(2.3)
8	3	Midterm		1.0		
9	9	Design Exercises	2	2	0	CR(2.2)
	10	Sequential circuits and latches	2	2	0	CR(2.3)





11 12 13	Sequential circuits and latches Quiz (2) + solved examples Flip Flop Shift Registers	2 2 2	2 2 2	0 0 0	CR(3.5,4.2,5.1) CR(3.4, 4.1) CR(3.5,4.2,5.1) CR(3.5,4.2,5.1)
15 16	Memory Final Exam	2	2.0	0	CR(3.3,4.2,3.1) CR(2.3)
Total hours		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)	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
CR(2.1) CR(2.2)	✓	√								
CR(2.3)	√	√ ·	/ /	✓	✓		√	✓		✓
CR(3.4, 4.1)	✓	✓ 、	/ /	✓	✓		✓	✓	√	✓
CR(3.5,4.2, 5.1)	✓	✓ 、	/ /	✓	✓		√	✓	< ×	✓

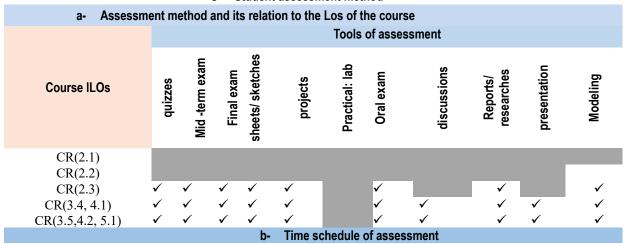
Notes:

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







Ouizzes	Quiz (1)	Week (3)
Quizzes	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		Weekly
Sheets and Sketches		Weekly
Researches and reports		Week (2,3)
the Projects		Week (4,8)
Practical modelling		Week (4,8)
Attendance		Weekly
Mid-term exam		Week (8)
final exam		Week (16)
	c- Grading	system
o :	Quiz (1)	(5) marks

	c-	Grading system		
Quizes		Quiz (1)	(5) marks	
Quizes		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 books
- Mentioned at time.
- Periodicals, Web sites, etc

No periodicals are needed.

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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

Course coordinator: Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi

program Coordinator Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul

Head of the Department Dr. Ibrahim Ali Mahmoud Abdel Dayem

Date: 2022/2023







Course specification

Course code:	Course name
CECE 211 Dig	gital Logic Design Lab
A-	<u>Affiliation</u>
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry of educa-	tion 27/1/2008
Date of course operation	2022-2023

B- Basic Information

Course Name Digital Logic Design Lab

Code CECE 211

Course Level Second level courses (Sophomore) - Second semester (Spring)

Credit Hours1Cr. HrLectures0hrTutorial3hrTotal3hr

Prerequisite Conc. with CECE 203

Instructor name/Email Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi

mohammed.ghaboushy@sva.edu.eg

C- Professional information

1- Course core

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- program objectives served by the course:

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

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

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

Course objectives program objectives





oc 1	Recognize the number representation and conversion between different representation in digital electronic circuits	OP 12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.				
oc 2	Recognize the logic processes and implement logical operations	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.				
	using combinational logic circuits. Recognize the characteristics of memory and their classification.	OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.				
oc 3	Recognize the theoretical concepts through laboratory and simulation experiments. Recognize the number representation and conversion between different representation in digital electronic circuits Recognize the logic processes	OP6 OP12 OP7	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems. Prepare engineers who can work on electrical power systems, including designing and realizing such systems. Teach students to use experimental and data analysis techniques for electrical power engineering applications				
	and implement logical operations using combinational logic circuits.		Prepare engineers who can work on electrical power systems, including designing and realizing such systems.				
	5- Learning	goutcomes	of the course (LOs)				
	Upon the completion of t	he course, t	he student should be able to:				
CR(3.1)	CR(3.1) Produce the Concept of Number Systems.						

CR(3.1)	Produce the Concept of Number Systems.
CR(3.2)	Make the Combinational Logic Circuits.
CR(4.1)	Make the Synchronous Sequential Circuits.
CR(4.2)	Produce the Asynchronous Sequential Circuits.
CR(5.1)	Express using laboratory how use the Programmable Logic Devices.

6- Program competencies served by the course:

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

Produce the Concept of Number

Systems.

CR(3.1)

CR3 Design and implement: elements, modules, sub-systems or systems in electrical/electronic/diengineering using technological and professional tools.							
CR 4	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application						
CR 5	CR 5 Adopt suitable national and international standards and codes to: design, build, operate, inspect a maintain electrical/electronic/digital equipment, systems and services.						
7- The relation between the course learning outcomes and the program competencies							
	Course (LOs)	program competencies					

CR3

Design and implement: elements, modules, sub-

systems or systems in electrical/electronic/digital





CR(3.2)	Make the Combinational Logic Circuits.	CR3	engineering using technological and professional tools. Design and implement: elements, modules, subsystems or systems in electrical/electronic/digital engineering using technological and professional tools. Estimate and measure the performance of an
CR(4.1)	Make the Synchronous Sequential Circuits.	CR 4	electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application
CR(4.2)	Produce the Asynchronous Sequential Circuits.	CR 4	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application
CR(5.1)	Express using laboratory how use the Programmable Logic Devices.	CR 5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

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

Week No.	Торіс	Lecture hr.	Tutorial hr.	Practical hours	course Los
1	Basic Electronic instruments and measurements, oscilloscope.	2	2	0	CR(3.1)
2	Lab report outline and results presentation.	2	2	0	CR(3.1)
3	Inverters.	2	2	0	CR(3.1)
4	AND gates.	2	2	0	CR(3.2)
5	OR gates.	2	2	0	CR(4.1)
6	NAND gates .	2	2	0	CR(4.1)
7	NOR gates.	2	2	0	CR(4.1)
8	Midterm		1.0		
9	XOR gates.	2	2	0	CR(3.2)
10	XNOR gates.	2	2	0	CR(4.1)
11	Combinational circuits.	2	2	0	CR(5.1)
12	Test circuits	2	2	0	CR(4.2)
13	Half adder and full adder description	2	2	0	CR(5.1)
14	Ripple carry and look ahead adder description	2	2	0	CR(5.1)





15	Look ahead carry adder	2	2	0	CR(4.1)
16	Final Exam		2.0		
Total ho	ure	28	28	Λ	

	9-	The Teach	ing and	learning	method Teaching				of the	course		
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / self learning	 Reports/ researches	Cooperative work	presentation	Discussion	Modeling
CR(3.1) CR(3.2) CR(4.1) CR(4.2) CR(5.1)	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓				\frac{}{}	<!--</td--><td></td><td>✓ ✓ ✓ ✓</td><td></td><td>✓ ✓ ✓ ✓</td><td></td>		✓ ✓ ✓ ✓		✓ ✓ ✓ ✓	

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.

10- Student assessment method											
a- Assessment method and its relation to the Los of the course											
		Tools of assessment									
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	Modeling
		_		0,							
CR(3.1)		_ √	✓	√	✓	\checkmark	✓	✓		✓	
CR(3.1) CR(3.2)			√		✓ ✓	✓ ✓	✓ ✓	✓ ✓		√	
, ,		✓		√	•	✓ ✓ ✓	✓ ✓ ✓	✓ ✓ ✓			
CR(3.2) CR(4.1) CR(4.2)		✓		√ √	•	<th>✓ ✓ ✓</th> <th>✓ ✓ ✓</th> <th></th> <th>✓</th> <th></th>	✓ ✓ ✓	✓ ✓ ✓		✓	
CR(3.2) CR(4.1)		✓		✓ ✓ ✓	✓✓	✓ ✓ ✓ ✓	✓✓✓	✓ ✓ ✓ ✓		✓ ✓	

Quiz (1) Quiz (2)

Discussions Every week for any student
Presentations and Movies Weekly
Sheets and Sketches Weekly
the Projects Weekly
Attendance Weekly
Mid-term exam Week (8)
final exam Week (16)





c- Grading system						
Discussions	20%					
Sheets and Sketches	70%	40 marks				
the Projects	10%		(60) marks			
Attendance		(10) marks				
Mid-term exam		(10) marks				
final exam		(4	0) marks			
Total		(10	00) marks			

	10- List of references:					
a)	Course notes	Lecture notes and handouts				
b)	Required books	uired books Digital fundamentals, 11th edition by Thomas I, Floyd				
	_	 Digital design principles and practices- 4th ed, john f. wakerly, prentice hall, 2005. 				
c)	Recommend books	Mentioned at time.				
ď)	Periodicals, Web sites, etc	No periodicals are needed.				

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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

Course coordinator:	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi	
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul	1
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem	-61
Date:	2022/2023	





Course specification

Course code:	Course name			
PHYS 301	Optics, 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 e	ducation 27/1/2008			
Date of course operation	2022-2023			
Department offering the program: Department offering the course: Date of program operation: Date of approval from the higher ministry of e	Electrical and communication engineering Basic Science 2008-2009 ducation 27/1/2008			

B- Basic Information

Course Name Optics, waves, and introduction to modern physics

Code PHYS 301

Course Level Second level courses (Sophomore) - Second semester (Spring)

Credit Hours3Cr. hr.Lectures2hrTutorial2hrTotal4hrPrerequisitePHYS 102

Instructor name/Email Dr. Dr. Amal Elgawadi

dr.amal@sva.edu.eg

C- 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:

- 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...
- Describe the basic science (e.g. Physics) and technology (e.g. engineering) are two faces of the same coin.

3- program objectives served by the course:

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

OP 1 Understanding some of the basics of optics, waves, and modern physics as a background beneficial to electricity and electronics programs.

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

	· · · ·
Course objectives	program objectives
oc 1 Recognize some of the basic optics principles such as the nature of light, interference, diffraction, polarization, and geometric optics.	Understanding some of the basics of optics, waves, OP 1 and modern physics as a background beneficial to electricity and electronics programs.





oc 2	Recognize how to solve problems of these
	physical principles.

- 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...
- Describe the basic science (e.g. Physics) and technology (e.g. engineering) are two faces of the same coin.

- Understanding some of the basics of optics, waves, and modern physics as a background beneficial to electricity and electronics programs.
- Understanding some of the basics of optics, waves, OP 1 and modern physics as a background beneficial to electricity and electronics programs.
 - Understanding some of the basics of optics, waves, and modern physics as a background beneficial to electricity and electronics programs.
- Understanding some of the basics of optics, waves, OP 1 and modern physics as a background beneficial to electricity and electronics programs.

5- Learning outcomes of the course (LOs)

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

- C(2.1) Explain the ability to understand the basics of physics related to several branches in engineering.
- C(2.3)describe the ability to research a topic, develop an argument, and organize supporting details.
- Apply acknowledge effectively, recognizing the two as distinct activities and developing strategies for C(4.1)generating critical distance when rereading.
- Conduct and develop a claim that matters in the context of a continuing discussion, writing with a sense of C(4.2)intellectual purpose and stake.
- C(4.3) Prepare and present engineering designs a process of thinking, not just delivering information

6- Program competencies served by the course:

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

- Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and C2evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions
- Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety C4 requirements, environmental issues and risk management principles

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

Course (LOs) program competencies Explain the ability to understand the basics C(2.1) of physics related to several branches in C2

- engineering.
- describe the ability to research a topic, C(2.2) develop an argument, and organizeC2 supporting details.
 - Apply acknowledge effectively,
- C(2.3) recognizing the two as distinct activities C2 and developing strategies for generating critical distance when rereading.
- Conduct and develop a claim that matters C4 in the context of a continuing discussion,

Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety





	writing with a sense of intellectual purpose and stake.	requirements, e		tal issues	and risk
C(4.2)	Prepare and present engineering designs a process of thinking, not just deliveringC4 information	Utilize contempos and standards, que requirements, e management prince	uality guid nvironmen	elines, healt	th and safety
C(4.3)	Explain the ability to understand the basics of physics related to several branches inC4 engineering.	Utilize contempos and standards, que requirements, e management prince	uality guidenvironmen	elines, healt	th and safety
	8- Course content and the relation between		•	course LOs	
Week	Торіс	Lecture hr.		Practical hours	course LOs
No. 1	Introduction to the course, grading policy, etc. The of light. Introduction of the classical particle and models of light. Introduction of the modern models dual nature of light. Fizeau's measurement of the splight	wave of the2	hr. 2	0	C(2.1,2.2,2. 3,4.1,4.2,4.3
2	light. Introduction to ray optics approximation (or Geom Optics). Longitudinal versus transverse wave motion wavelength and the amplitude. Reflection of Refraction of light. Introduction to microscopic pictual light in a medium. Index of refraction. Snell's I refraction.	s. The light. ₂ are for	2	0	C(2.1,2.2,2. 3,4.1,4.2,4.3)
3	Prism and some definitions. Dispersion of lig wavelengths. Refraction in a Prism. Introduction electromagnetic spectrum. Introduction to the orig some electromagnetic waves (absorption and emis Total internal reflection. Critical angle of total in reflection. Fiber optics and Fiber Optics.	to the gin of ssion).2 nternal	2	0	C(2.1,2.2,2. 3,4.1,4.2,4.3)
4	applications for total internal reflection. Physical optics or wave optics. Revisions from physi Sinusoidal nature of Simple harmonic motion "S Constructing the trigonometric Functions. Superpoof waves. Brief introduction of the Young's doub experiment. Conditions for interference. Diffractilight. Relationship: Diffraction to Interference.	SHM." osition le slit	2	0	C(2.1,2.2,2. 3,4.1,4.2,4.3)
5	Waves in interference, details of the Young's doublinterference. Conditions for constructive and distrinterference.		2	0	C(2.1,2.2,2. 3,4.1,4.2,4.3
6	Intensity distribution of double slit interference p Revision from physics "1": particle in simple har motion. Introduction of the electromagnetic wave nat light. The average light intensity of double-slit interfeat a point. Multiple-slit interference patterns. Char phase due to reflection. Phase reversal. Interference	monic ture of erence2 nge of	2	0	C(2.1,2.2,2. 3,4.1,4.2,4.3
7	films. Effect of phase reversal. Newton's rings. Diffraction patterns and polarization. The f-number depth of field, and diffraction. Diffraction simple an Edga diffraction due to long enorty a Introduction.	alogy.	2	0	C(2.1,2.2,2. 3,4.1,4.2,4.3

Edge diffraction due to lens aperture. Introduction to





	diffraction patterns. Diffraction pattern created by a ball, a penny, or a slit. Some daily life 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	0	C(2.1,2.2,2. 3,4.1,4.2,4.3)
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	0	C(2.1,2.2,2. 3,4.1,4.2,4.3)
11	Classification of the material based on the atomic periodic system. Diffraction of X-rays by crystals. Macroscopic and2 microscopic crystal structures. Bragg's law.	2	0	C(2.1,2.2,2. 3,4.1,4.2,4.3
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	0	C(2.1,2.2,2. 3,4.1,4.2,4.3)
13	An application of polarization: optical stress analysis. Application of polarization in photography. Polarization by 2 scattering.	2	0	C(2.1,2.2,2. 3,4.1,4.2,4.3)
14	Ray optics (geometrical optics). Image formation by reflection (mirrors) and by refraction (lenses). Concave2 and convex (divergence) mirrors.	2	0	C(2.1,2.2,2. 3,4.1,4.2,4.3
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			C(2.1,2.2,2. 3,4.1,4.2,4.3)
16	Final Exam 2.0			
Total h	ours 28	28	0	



Lo6

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



	9	- The Tea	ching and		ng method				he Los	of the	course		
		Teaching and Learning Methods											
Course learning Outcome s (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	<u>- 0</u>	Discovering / seir learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	Modeling
Lo1	✓	✓	✓	✓	\checkmark	·	/		✓	✓	✓	✓	\checkmark
Lo2	✓	\checkmark	✓	\checkmark	\checkmark	~	/		✓	\checkmark	\checkmark	\checkmark	\checkmark
Lo3	✓	✓	\checkmark	\checkmark	\checkmark	·	/		✓	\checkmark	\checkmark	\checkmark	\checkmark
Lo4	✓	✓	\checkmark	\checkmark	\checkmark	·	/		✓	\checkmark	\checkmark	✓	\checkmark
Lo5	\checkmark	✓	\checkmark	\checkmark	\checkmark	V	/		✓	\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.

on line.	, ca, 00 aoc	ou uo nyonu	.camg,	<i>240 111 040</i>	o or totally	011 11110 101	arriirig ai	4004 1	outining and i	ourning into	arous viii bo
				10- Stu	ident asses	ssment n	nethod				
	a-	Assessmei	nt metho	d and its i	relation to	the Los c	f the co	urse			
	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	<td>✓✓✓✓</td> <td>✓ ✓ ✓ ✓</td> <td></td> <td>✓ ✓ ✓ ✓</td> <td></td> <td></td> <td>✓ ✓ ✓ ✓</td> <td>✓ ✓ ✓ ✓</td> <td></td> <td>✓ ✓ ✓ ✓</td>	✓✓✓✓	✓ ✓ ✓ ✓		✓ ✓ ✓ ✓			✓ ✓ ✓ ✓	✓ ✓ ✓ ✓		✓ ✓ ✓ ✓
				O.::- (1)	b- Tim			sessment			
Presentat Sheets ar Research the Project Practical i	Discussions Presentations and Movies Sheets and Sketches Researches and reports the Projects Practical modelling Attendance Discussions Discussions Every week (10) Every week for any student Weekly Weekly Weekly Week (2,3) Week (4,8) Week (4,8) Weekly										





final exam	Week (16)				
	c- Grading	ı system 🐪			
quizes	Quiz (1) Quiz (2)	(5) marks (5) marks			
Discussions Sheets and Sketches	15% 20%	,			
Researches and reports the Projects	20% 30%	10 marks	(50) marks		
Practical modelling Attendance	20%	(10) marks			
Mid-term exam final exam Total	(20) marks (50) marks (100) marks				
	10- List of	references:			
a) Course notesb) Required books	Lecture notes and John W. Jewett an Engineers 9th Edi	nd Raymond A. Serway, Ph	sysics for Scientists and		
c) Recommend booksd) Periodicals, Web sites, etc	Mentioned at time No periodicals are				

11- Facilities required for teaching and learning:

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

Date:

12- Requirements for Disable facilities:

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

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





Course specification

Course code:	Course name
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 e	ducation 27/1/2008
Date of course operation	2022-2023

B- Basic Information

Course NameOptics LabCodePHYS 311

Course Level Second level courses (Sophomore) - Second semester (Spring)

Credit Hours1Cr. HrLectures0hrlab3hrTotal3hr

Prerequisite Concurrent PHYS 301
Instructor name/Email Dr. Neven Gamal Rostom
neveen.kamal@sva.edu.eg

C- 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 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- program objectives served by the course:

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

OP 1	Understand how to formulate the optics
OP 2	Understand how to operate with wave nature of light.
OP 3	Understand about overview of interference of light with different surfaces and materials.
OP 4	Understand how to use the laws of reflection, refraction and diffraction of light.
OP 5	Understand how to solve problem that focused on refraction of light.
OP 6	Understand how to solve problem that focused on diffraction grating.





OP 7	Understand how to solve prob	lem that foc	used on single and double slit.					
	4- The relation betw	een the cou	rse objectives and the program objectives					
	Course objectives		program objectives					
oc 1	Recognize how to formulate the optics.	OP 1	Understand how to formulate the optics					
oc 2	Identify the wave nature of light in the life science	OP 2	Understand how to operate with wave nature of light.					
oc 3	Identify the developing and appropriate experiment discussion of models and theories of interferences of light.	OP 3	Understand about overview of interference of light with different surfaces and materials.					
oc 4	Recognize the application of reflection and refraction of light in industrial application.	OP 4	Understand how to use the laws of reflection, refraction and diffraction of light.					
oc 5	Recognize the laws of refraction of light.	OP 5	Understand how to solve problem that focused on rrefraction of light.					
oc 6	Identify the application of diffraction of light in industrial application.	OP 6	Understand how to solve problem that focused on diffraction grating.					
oc 7	Recognize the application of interference of light in the industrial application.	OP 7	Understand how to solve problem that focused on single and double slit.					
	5-	Learning out	comes of the course (LOs)					
Upon the cor	mpletion of the course, the stude							
C(2.1)	with different surfaces and mand solve complex engineering	aterials; intro g problems.	vave nature of light; an overview of interference of light oduction to reflection, refraction and diffraction of light)					
C(2.2)		lyze applica	to predict refractive index of a prism. Solve the different tion of interference of light. Identify various industrial					
C(2.3,4.1)	Prepare and present the flexib	le model rec	alling the final configuration of masses					
C(4.2)	•		ments, and lab tools to determine the amount of salt					
6- Program competencies served by the course:								

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





C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.									
C4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.									
	1- The relation between the course learning outco	mes and the program competencies								
	Course (LOs)	program competencies								
C(2.1)	Identify the basic fundamental in optics wave nature of light; an overview of interference of light with different surfaces and materials; c2 introduction to reflection, refraction and diffraction of light) and solve complex engineering problems.	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions								
C(2.2)	Use tools for evaluate the reaction of light to predict refractive index of a prism. Solve the different problem of combustion. Analyze application of interference of light. Identify various industrial processes such as the solar panels industry	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions								
C(2.3,4.1)	C2 Prepare and present the flexible model recalling the final configuration of masses C4	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management								
C(4.2)	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. 7- Course content and the relation between the	principles Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles								

7- 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	Introduction to optics.	0	0	2	C(2.1)
2	Wave nature of light.	0	0	2	C(2.1)
3	Photoelectric effect.	0	0	2	C(2.1)
4	Verification of inverse square law.	0	0	2	C(2.1)
5	Newtons rings.	0	0	2	C(2.1)





6	Single slit.	0	0	2	C(2.1)
7	Revision.	0	0	2	C(2.1)
8	Midterm		1.0		
9	Double slit.	0	0	2	C(2.2)
10	Refractive index of prism.	0	0	2	C(2.2)
11	Thin film interference	0	0	2	C(2.2)
12	Fresnel.	0	0	2	C(2.2)
13	Fraun hofer diffraction.	0	0	2	C(2.3,4.1,4.2)
14	Intensity distribution.	0	0	2	C(2.3,4.1,4.2)
15	Revision.	0	0	2	C(2.2,2.3,4.1,4.2)
16	Final Exam		2.0		
Total hours		0	0	28	

3- 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 Lazmina Site visit	Reports/ researches Cooperative work	presentation Discussion	modelling
C(2.1)	/ /	✓	✓	✓	✓	✓	✓ ✓	
C(2.2)	/ /	✓	\checkmark	\checkmark	✓	✓	✓ ✓	
C(2.3,4.1)	/ /	✓	\checkmark	\checkmark	✓	✓	✓ ✓	
C(4.2)	(✓	✓	\checkmark	✓	✓	✓ ✓	

Notes:

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

The Tutorials concerns the brain storming and the problem solving.

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





9- Student assessment method												
			a- A	ssessm	ent metho	d and its	relation	to the Los	of the cours	е		
					T	ools of a	ssessme	ent				
Course ILOs	duizzes	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)	•	v	•	v	b- Tim	e schedi	•	sessment		V		
Quizzes Discussions Presentations Sheets and Si Researches a the Projects Practical mod Attendance Mid-term exar final exam	ketches ind repo	S		luiz (1) luiz (2)		We Ev we We We we We	ekly ekky eek (2,3) eek (4,8) eek (4,8) ekly eek (8) eek (16)	for any stu	dent			
				C		ng systei	n (15) ma	arke				
Sheet	quizes Quiz (1) Quiz (2) Discussions Sheets and Sketches Researches and reports 10% 10%							arks rks	rs .			
	·	10% (10) marks (10) marks (40) marks (100) marks										
b) Rec			es, etc	SVA Ment	10- List on the second academic ioned at the correction of the cor	and hand book ime.	louts					

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

• On line teaching hours if it is needed





Extra examples and topic-specified research

Course coordinator: Dr. Neven Gamal Rostom

program Coordinator Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul

Head of the Department

Dr. Ibrahim Ali Mahmoud Abdel Dayem

Date: 2022/2023







Course specification

Course code:	Course name
MATH202	Differential 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	2022-2023

B- Basic Information

Busie III	OI III GUOII
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@sya edu eg

C- Professional information

1- Course core

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- program objectives served by the course:





Upon the completion of the course the student should be able to: OP 1 Know the concept of ordinary differential equations. OP 2 Learn how to use methods of solution and applications of first order differential equations OP 3 Learn how to use methods of solution and applications of second order differential equations OP 4 Learn how to solve power series solutions OP 5 Demonstrate how to use Laplace transforms OP 6 Learn how to solve the first order linear systems by Laplace transforms. OP 7 Learn how to use theory of integration with applications including areas, volumes, lengths, moments, center of mass and work 4- The relation between the course objectives and the program objectives **Course objectives** program objectives oc 1 explaining the concepts of ordinary differential OP 1 Know the concept of ordinary differential equations. equations oc 2 explain concepts of mathematical of first order OP 2 Learn how to use methods of solution differential equations applications of first differential equations Recognize how to apply knowledge of mathematics Learn how to use methods of solution oc 3 OP 3 to solve of second order differential equation and applications of second order problems. differential equations OP 4 oc 4 Explain Concepts of power series solutions. Learn how to solve power series solutions oc 5 Recognize how to search and analyze data, to Deal OP 5 Demonstrate how to use Laplace with design situations within solving design problems transforms based on the analytical process for Laplace transforms. Learn how to solve the first order linear oc 6 Recognize how to use to demonstrate methodologies OP 6 systems by Laplace transforms. of solving engineering problems with Laplace transforms oc 7 Recognize how to apply knowledge of Theory of Learn how to use theory of integration equations, and areas, volumes, lengths, moments to with applications including areas, solve engineering problems. volumes, lengths, moments, center of mass and work

5- Learning outcomes of the course (LOs)

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





C(1.1,2.1)	Explain concepts and theories of mathen	natics and	d sciences, appropriate to differential					
	equations, function and practice.							
C(1.2,2.2)	Demonstrate methodologies of solving interpretation.	Demonstrate methodologies of solving engineering problems, data collection interpretation.						
C(1.3,2.3)	Produce the appropriate solutions for engineer	ering prob	olems based on analytical thinking					
C(1.4)	Apply knowledge of mathematics to solve en	gineering	g problems.					
C(1.5)	Apply knowledge of linear algebraic equation engineering problems.	ns, iterativ	ve methods, and infinite series to solve					
C(1.6,2.4)	Prepare and present technical reports about a	pplication	of matrices to solve engineering					
	problems. Prepare and manages tasks, time, and resource exams.	ces, when	solving mathematics problems, and in					
C(1.7)	Effectively manages tasks, time, and resource	ees when	solving mathematics problems, and in					
S(1.7)	exams.	oes, when	sorving maniemanes precients, and in					
C(1.8)	Apply knowledge of mathematics to solve di	fferential	problems					
	6- Program competencies serve	ed by the	course:					
Upon the complet	ion of the Program the student should be able to:							
C1	Identify, formulate, and solve complex e fundamentals, basic science and mathematics	_	ng problems by applying engineering					
C2	Develop and conduct appropriate experimenta assess and evaluate findings, and use statistica draw conclusions.							
7 - T	The relation between the course learning outco	mes and	I the program competencies					
	Course (LOs)		program competencies					
	Course (203)							
C(1.1,2.1)	Explain concepts and theories of mathematics and sciences, appropriate to differential equations, function and practice. Demonstrate methodologies of solving engineering problems, data collection and interpretation.	C2	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering					
C(1.2,2.2)			judgment to draw conclusions.					





C(1.3,2.3)	Apply knowledge of linear algebraic equations, iterative methods, and infinite series to solve engineering problems. Prepare and present technical reports about application of matrices to solve engineering problems. Prepare and manages tasks, time, and resources, when solving mathematics problems, and in exams.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
C(1.4)	Apply knowledge of mathematics to solve engineering problems.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
C(1.5)	Apply knowledge of mathematics to solve differential problems	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
C(1.6,2.4)	Produce the appropriate solutions for engineering problems based on analytical thinking Explain concepts and theories of mathematics and sciences, appropriate to differential equations, function and practice.	C1 C2	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics. Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
C(1.7)	Demonstrate methodologies of solving engineering problems, data collection and interpretation.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
C(1.8)	Produce the appropriate solutions for engineering problems based on analytical thinking	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.





Course content and the relation between the course contents and the course LOs Week **Topic** Lecture **Tutor Practical** course LOs hours hr. ial hr. No. Covers mathematical formulation of 2 2 0 1 C(1.1,1.2,1.3,1.4, ordinary differential equations 1.5, 1.6, 1.7, 1.8, 2.1 ,2.2,2.3,2.4) 2 Methods of solution and applications of 2 0 C(1.1,1.2,1.3,1.4, first order differential equations 1.5, 1.6, 1.7, 1.8, 2.1 ,2.2,2.3,2.4)2 0 3 Methods of solution and applications of 2 C(1.1,1.2,1.3,1.4, second order differential equations 1.5,1.6,1.7,1.8,2.1 ,2.2,2.3,2.4)4 Laplace transforms 2 2 0 C(1.2,2.2)5 Solutions of first order linear systems by 2 2 0 C(1.2,2.2)Laplace transforms 2 2 Functions and limits, 0 6 C(1.3,2.3)7 Differentiation with applications including C(1.3,2.3)maxima and minima 8 1.0 Midterm 9 Maxima and minima 2 2 0 C(1.3,2.3)10 Theory of integration with applications 2 2 0 C(1.5,1.6,2.4) including areas. 2 2 11 Volumes. 0 C(1.7,1.8)2 2 12 Lengths. 0 C(1.7,1.8)2 13 Moments. 2 0 C(1.7,1.8)2 14 Center of mass and work 2 0 C(1.7,1.8)15 Revision C(1.7,1.8)2.0 16 Final Exam **Total hours** 28 28 0





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

Course learning					Teaching an	d 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
C(1.1,2.1)	✓	✓	✓	\checkmark	\checkmark		✓		✓	✓ ✓	✓
C(1.2,2.2)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	✓ ✓	✓
C(1.3,2.3)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark \checkmark	✓
C(1.4)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		✓	✓ ✓	✓
C(1.5)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		\checkmark	\checkmark \checkmark	✓
C(1.6,2.4)	✓	✓	✓	\checkmark	✓		✓		✓	✓ ✓	✓
C(1.7)	✓	✓	✓	✓	✓		✓		✓	✓ ✓	√
C(1.8)	\checkmark	\checkmark	\checkmark	\checkmark	\checkmark		✓		✓	✓ ✓	✓

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

ne 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.

10- Assessment method and its relation to the Los of the course												
						Tools	of assessm	ent				
Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam		discussions	Reports/ researches	presentation	modelling
C(1.1,2.1)	✓	\checkmark	\checkmark	\checkmark				~	/	✓	\checkmark	
	✓		\checkmark	\checkmark				~		\checkmark	\checkmark	
C(1.3,2.3)	\checkmark	\checkmark	√	\checkmark				~		\checkmark	\checkmark	
	✓	\checkmark	\checkmark	\checkmark				~		\checkmark	\checkmark	
C(1.5)	\checkmark	\checkmark	✓ ✓ ✓	\checkmark				~		\checkmark	\checkmark	
C(1.6,2.4)	\checkmark	\checkmark	\checkmark	\checkmark				~		\checkmark	\checkmark	
C(1.7)	\checkmark	\checkmark		\checkmark				~		\checkmark	\checkmark	
C(1.8)	✓	✓	✓	✓				~	/	✓	✓	
				a-	Time so	hedul	e of assessr	nent				
Quizzes			Quiz (Week (3)					
			Quiz (2)			Week (10)					
Discussions							Every week	for an	ıy stu	dent		
Presentations and Movie	es						weekly					
Sheets and Sketches							weekly					
Researches and reports							Week (2,3)				
Attendance							weekly					





Mid-term exam		Week (8)						
final exam		Week (16)						
b- Grading system								
quizes	Quiz (1) Quiz (2)	(5) marks (5) marks						
Discussions	25%	(3) marks						
Sheets and Sketches	50%	10 marks	(50) marks					
Researches and report			,					
	Attendance	(10) marks						
Mic	d-term exam	(20) marks						
f	inal exam		(50) marks					
	Total		(100) marks					
	10- List of refer	ences:						
a) Course notes	Lecture notes and hando	outs						
b) Required books		Engineering Mathemat	ics, McGraw - HILL Book					
	Company Europ.							
	•		ing Mathematics A modern					
		l, Electronic & Control	Engineering, Addison - Wesley					
	- Publishing Company.							
c) Recommend books		M and Pence, D., Calcu	ılus, PWS Publishing Company					
	- Boston, 1994							
d) Periodicals, Web	Web Sites related to Mathematics an	Veb Sites related to Mathematics and Mathematical engineering as:						
sites, etc	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

12- Requirements for Disable facilities:

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

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Course coordinator:Dr. Gamal El-Ananiprogram CoordinatorDr. Ehab Mohamed Nabil Ismail Abdel Rasoul

Head of the Department Dr. Ibrahim Ali Mahmoud Abdel Dayem

Date: 2022/2023







Course specification

Course code:	Course name
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 minis	stry of education 27/1/2008
Date of course operation	2022-2023

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- <u>Professional information</u>

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 learning 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- program objectives served by the course:

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

OP 1	Explain Phases of engineering projects/operation
OP 2	Know about project activity versus time plan





OP	3	Know about project total investment	nent cos	ts				
OP -				ng derivation of equation of cash future value				
	OP 5 Solve derivation of equation of cash net present of expected future cash flow							
OP	6	Operate calculation of the intern						
		4- The relation between the	course o	bjectives and the program objectives				
	C	ourse objectives		program objectives				
oc 1		n pre-investment phase, project	OP 1	Explain Phases of engineering projects/operation				
	invest	ment phase and operation phase.		Know about project activity versus time plan				
				Titlew deout project detrytey versus tille plan				
oc 2	Descr	ibe the Bar chart.	OP 2					
				Know about project total investment costs				
	annly	fixed assets costs, current						
oc 3		costs, pre operation costs.	OP 3					
				The student should focus on solving derivation of				
				equation of cash future value				
	D							
oc 4		gnize the solve derivation of on of cash future value	OP 4					
	equati	on or cash ratare variation						
				Solve derivation of equation of cash net present of				
	Recog	gnize how to solve derivation of		expected future cash flow				
oc 5	equati	on of cash net present of	OP 5	-				
	expec	ted future cash flow						
				Operate calculation of the internal rate of return.				
	Recog	gnize how used to operate		operate calculation of the internal rate of fettill.				
oc6	calcul	ation of the internal rate of	OP 6					
	return							
		5. Learning	autaar:	on of the course (LOc)				

5- Learning outcomes of the course (LOs)

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

C(2.1) Conduct and develop cash flow engineering-economic models of costs and benefits of projects





C(3.1)	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)									
C(3.2)	Produces the effect of inflation and taxation on costs and benefits of projects, as well as developing numerical methods to account for their impact									
C(3.3)	Prepare the assessment of the elements which may affect the decision-making process for public sector projects									
C(6.1)	Develop a strategy to account for uncertainty and risk through the use of sensitivity analysis and probability distribution									
	6- Program	competenci	es served by the course:							
Upon the co	empletion of the Program the studer	nt should be	e able to:							
C2			tation and/or simulation, analyze and interpret data, ical analyses and objective engineering judgment to							
C3	with consideration for global, cul-	tural, social	nce cost-effective solutions that meet specified needs , economic, environmental, ethical and other aspects he principles and contexts of sustainable design and							
C6	Plan, supervise and monitor impother trades requirements.	lementation	n of engineering projects, taking into consideration							
7- The relation between the course learning outcomes and the program competencies										
·	7- The relation between the cou	rse learnin	g outcomes and the program competencies							
·	7- The relation between the cou Course (LOs)	<mark>rse learnin</mark>	g outcomes and the program competencies program competencies							
C(2.1)		<mark>rse learnin</mark> C2	program competencies Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to							
	Course (LOs) Conduct and develop cash flow engineering-economic models of		program competencies Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical							





C(3.3)	Prepare the assessment of the elements which may affect the decision-making process for public sector projects	C3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
C(6.1)	Develop a strategy to account for uncertainty and risk through the use of sensitivity analysis and probability distribution	C6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.

	8- Course content and the relation between the	e course con	tents and th	ne course Lo	Os
Week No.	Торіс	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Phases of engineering projects/operation.	2	2	0	C(2.1)
2	Project activity versus time plan	2	2	0	C(3.1)
3	Project total investment costs; fixed assets costs, current assets costs, pre operation costs.	2	2	0	C(3.1)
4	Derivation of equation of cash future value	2	2	0	C(3.2)
5	Derivation of equation of cash net present of expected future cash flow	2	2	0	C(3.2)
6	Derivation of equation of cash net present of expected future cash flow	2	2	0	C(3.2)
7	calculation of the internal rate of return.	2	2	0	C(3.2)
8	Midterm		1.0		
9	The payback periods.	2	2	0	C(6.1)
10	The payback periods.	2	2	0	C(6.1)
11	The payback periods.	2	2	0	C(6.1)
12	Factory break-even point (BEP).	2	2	0	C(3.3)
13	Factory break-even point (BEP).	2	2	0	C(3.3)
14	Factory break-even point (BEP).	2	2	0	C(3.3)
15	Revision	2	2	0	C(6.1)
16	Final Exam		2.0		
Total h	ours	28	28	0	





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

		Teaching and Learning Methods											
Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	discovering	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(2.1)	✓		✓	\checkmark	\checkmark		✓		✓	\checkmark	\checkmark	\checkmark	
C(3.1)	✓		✓	\checkmark	\checkmark		✓		✓	\checkmark	\checkmark	\checkmark	
C(3.2)	✓		✓	\checkmark	\checkmark		✓		✓	\checkmark	\checkmark	\checkmark	
C(3.3)	✓		✓	\checkmark	\checkmark		✓		✓	\checkmark	\checkmark	\checkmark	
C(6.1)	✓		✓	\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.

on me.												
10- Student assessment method												
	a- Assessment method and its relation to the Los of the course											
	Tools of assessment											
Course ILOs	duizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling	
C(2.1) C(3.1) C(3.2) C(3.3) C(6.1)	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓	✓ ✓ ✓ ✓					\frac{}{}	✓ ✓ ✓ ✓	<td></td>		
b- Time schedule of assessment									nt			
Presentat Research Attendand Mid-term	Quizzes Discussions Presentations and Movies Researches and reports Attendance Mid-term exam final exam			Quiz (1) Quiz (2)		Wee Eve Wee Wee Wee	ekly ek (2,3) ekly ek (8) ek (16)	or any stu	ident			
				_		iding syst						
Rese	quizes Discussions Researches and reports				z (1) iz (2) 25% 75%		(5) mar (5) mar 10 mark	ks		(50) marks		





 $\begin{array}{ll} \text{the Projects} & 0\% \\ \text{Practical modelling} & 0\% \end{array}$

Attendance Mid-term exam final exam Total (10) marks (20) marks

> (50) marks (100) marks

10- List of references:

a) Course notes

Lecture notes and handouts

b) Required books

Digital Park, Chan S. Contemporary Engineering Economics (3rd

Edition) 3rd Edition

c) Recommend books

Mentioned at time.

d) Periodicals, Web sites, etc

No periodicals are needed.

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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

Course coordinator: Dr. Abd El-Aziz Ramadan

program Coordinator Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul

Head of the Department Dr. Ibrahim Ali Mahmoud Abdel Dayem

Date: 2022/2023

