Second level courses (Sophomore)

First semester (Fall)

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

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

Course specification

Course code:	Course name
CECE 102	Fundamental of structured programming

A- Affiliation

Relevant program:	Control and computer system engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	2023-2024

B- Basic Information

Course Name	Fundamental of structured programming
Code	CECE 102
Course Level	Second level courses (Sophomore)- First semester (Fall)
Credit Hours	3Cr. Hr
Lectures	2hr
Lab	3hr
Total	5hr
Prerequisite	CECE 101
Instructor name/Email	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi mohammed.ghaboushy@sva.edu.eg

C- Professional information

1-Course core

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

2- Course learning objectives:

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

3-Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

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

b. Psychomotor Domains (LOs):

LO4	Apply functions and pointers in your C++ program

c. Affective Domains (LOs):

LO5	Communicate effectively with expressions, and control structures
-	None

3- Program LOs served by the course:

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

Lo9	Identify the standard Software Engineering practices and strategies in real-time software project development using an open-source programming environment or commercial environment to deliver quality products for the organization's success
Lo27	Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics of varying complexity.
Lo37	Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems.

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

	Course (LOs)	program LOs	
LO1	Identify OOPs concepts	**Lo9**	Identify the standard Software Engineering practices and strategies in real-time software project development using an open-source programming environment or commercial environment to deliver quality products for the organization's success
LO2	Explain arrays and strings and create programs using them	**Lo9**	Identify the standard Software Engineering practices and strategies in real-time software project development using an open-source programming environment or commercial environment to deliver quality products for the organization's success
LO3	Describe and use constructors and destructors	**Lo9**	Identify the standard Software Engineering practices and strategies in real-time software project development using an open-source programming environment or commercial environment to deliver quality products for the organization's success
LO4	Apply functions and pointers in your C++ program	**Lo27**	Design and develop computer programs/computer-based systems in the areas related to algorithms, networking, web design, cloud computing, IoT and data analytics of varying complexity.
LO5	Communicate effectively with expressions, and control structures	**Lo37**	Acquaint with the contemporary trends in industrial/research settings and thereby innovate novel solutions to existing problems.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introducing C ++ Programming	2	0	2	LO1
2	Variables	2	0	2	LO1
3	Working with Tokens, Expressions and Control Structures in C++	2	0	2	LO1
4	Managing Input and Output Data	2	0	2	LO4
5	Arranging the Same Data Systematically: Arrays	2	0	2	LO5
6	Revision and quiz	2	0	2	LO5
7	Decisions	2	0	2	LO5
8	Midterm		1.0		
9	Functions	2	0	2	LO4
10	Pointers + (Quiz)	2	0	2	LO4
11	Maximum power transfer.	2	0	2	LO2
12	Quiz (2) + solved examples	2	0	2	LO2
13	Classes and Objects in C++	2	0	2	LO3
14	Implementing OOPs Concepts in C++	2	0	2	LO3
15	General revision	2	0	2	LO5
16	Final Exam		2.0		
Total hours		28	0	28	--

6- The Teaching and learning methods and their relation to the Los 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	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
	Teaching and Learning Methods												
LO1	✓												
LO4	✓	✓		✓		✓	✓						
LO5	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	
LO2	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	
LO3	✓	✓		✓	✓	✓	✓		✓	✓	✓	✓	

Notes:

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

The Tutorials concerns the brain storming and the problem solving.

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

Student assessment method

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

Tools of assessment

Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
LO1											
LO4				✓		✓					
LO5	✓	✓	✓	✓		✓	✓	✓		✓	
LO2	✓	✓	✓	✓		✓	✓	✓		✓	
LO3	✓	✓	✓	✓		✓	✓	✓		✓	

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		Weekly
Sheets and Sketches		Weekly
Attendance		Weekly
Mid-term exam		Week (8)
final exam		Week (16)

7- Grading system

Quizzes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	50%	20 marks	(60) marks
Sheets and Sketches	50%		
Attendance		(10) marks	
Mid-term exam		(20) marks	
final exam			(40) marks
Total			(100) marks

10- List of references:

a) Course notes	Lecture notes and handouts
b) Required books	Holly Moore, *Salt Lake Community College*. Pearson Education Inc, (2022). MATLAB for Engineers, 6th edition. ISBN: 9780137627981; Language: English.
c) Recommend books	Walter Savitch, Kenrick Mock.Problem-Solving C++, 10th edition
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

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

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:	2023/2024

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

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 education	27/1/2008
Date of course operation	202٣-202٤

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- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Recognize logic gates: definition, function and practice.
LO2	Recognize boolean algebra and logic simplification: definition, function and practice.
LO3	Recognize laws and rules of boolean algebra and demorgan's theorems.
LO4	Recognize boolean analysis of logic circuits and logic simplification using boolean algebra.

b. Psychomotor Domains (LOs):

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

c. Affective Domains (LOs):

- None

4- Program LOs served by the course:

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

Lo12.	Principles of operation and performance specifications of electrical and electromechanical engineering systems
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.

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

Course (LOs)		program LOs	
LO1	Recognize logic gates: definition, function and practice.	**Lo12.**	Principles of operation and performance specifications of electrical and electromechanical engineering systems
LO2	Recognize boolean algebra and logic simplification: definition, function and practice.	**Lo12.**	Principles of operation and performance specifications of electrical and electromechanical engineering systems
LO3	Recognize laws and rules of boolean algebra and demorgan's theorems.	**Lo12.**	Principles of operation and performance specifications of electrical and electromechanical engineering systems
LO4	Recognize boolean analysis of logic circuits and logic simplification using boolean algebra.	**Lo12.**	Principles of operation and performance specifications of electrical and electromechanical engineering systems
LO5	Solve standard forms of boolean expressions and boolean expressions and truth tables	**Lo19**.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
LO6	Apply knowledge the karnaugh map, combinational logic analysis and functions of combinational logic.	**Lo19**.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduction	2	2	0	LO1
2	Number systems	2	2	0	LO1
3	Logic Gates	2	2	0	LO1
4	Boolean algebra and logic simplification	2	2	0	LO2
5	Laws and rules of Boolean algebra	2	2	0	LO2
6	Demorgan's theorem	2	2	0	LO3
7	Demorgan's theorem	2	2	0	LO3
8	Midterm		1.0		
9	Boolean analysis of logic circuits	2	2	0	LO4
10	Logic simplification using Boolean algebra	2	2	0	LO4
11	Standard forms of Boolean expressions	2	2	0	LO5
12	Boolean expressions and truth tables	2	2	0	LO5
13	Karnaugh map	2	2	0	LO6
14	Combinational logic analysis	2	2	0	LO6

15	Combinational logic analysis	2	2	0	LO6
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

Course learning Outcomes (LOs)	Teaching and Learning Methods												
	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering/ Self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
LO1	✓												
LO2	✓	✓											
LO3	✓	✓		✓	✓		✓			✓			
LO4	✓	✓		✓	✓		✓			✓		✓	
LO5	✓	✓		✓	✓		✓			✓		✓	
LO6	✓	✓		✓	✓		✓			✓		✓	

Notes:
The research concerns the cooperative work, the discussion and the presentations.
The Tutorials concerns the brain storming and the problem solving.
Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

8- Student assessment method

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

Course ILOs	Tools of assessment										
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
LO1											
LO2											
LO3	✓	✓	✓	✓							
LO4	✓	✓	✓	✓				✓		✓	
LO5	✓	✓	✓	✓				✓		✓	
LO6	✓	✓	✓	✓				✓		✓	

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		Weekly
Sheets and Sketches		Weekly

Attendance		Weekly	
Mid-term exam		Week (8)	
final exam		Week (16)	

c- Grading system

Quizzes	Quiz (1) Quiz (2)	(5) marks (5) marks	
Discussions Sheets and Sketches	50% 50%	5 marks	(40) marks
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.

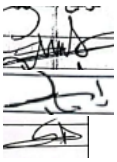
11- Facilities required for teaching and learning:

- 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:	2023/2024



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

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 education	27/1/2008
Date of course operation	٢٠٢٣-٢٠٢٤

B- Basic Information

Course Name	Electric circuits (I)
Code	CECE 202
Course Level	Second level courses (Sophomore)- First semester (Fall)
Credit Hours	3Cr.hr
Lectures	2hr
Tutorial	2hr
Total	4hr
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.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

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

b. Psychomotor Domains (LOs):

LO3	Apply knowledge to apply circuit theorems.
LO4	Apply knowledge to use phasors to analyze steady-state sinusoidal circuit analysis.
LO5	Apply knowledge to calculate the complex power.

c. Affective Domains (LOs):

-	None

4- Program LOs served by the course:

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

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

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

Course (LOs)		program Los	
LO1	Recognize to apply basic laws to resistive circuits.	**Lo11.**	Principles of for electrical equipment and systems.
LO2	Recognize to perform mesh and nodal analysis. .	**Lo12**	Principles of operation and performance specifications of electrical and electromechanical engineering systems .
LO3	Apply knowledge to apply circuit theorems.	**Lo19.**	solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
LO4	Apply knowledge to use phasors to analyze steady-state sinusoidal circuit analysis.	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO5	Apply knowledge to calculate the complex power.	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.

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

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

12	Quiz (2) + solved examples	2	2	0	LO4
13	Operational Amplifiers.	2	2	0	LO5
14	Introduction to inductance and capacitance.	2	2	0	LO5
15	Sinusoidal steady state analysis (a.c. circuits).	2	2	0	LO6
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

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
	Teaching and Learning Methods												
Lo1	✓												
Lo2	✓	✓											✓
Lo3	✓	✓		✓	✓		✓		✓	✓			✓
Lo4	✓	✓		✓	✓		✓		✓	✓	✓	✓	✓
Lo5	✓	✓		✓	✓		✓		✓	✓	✓	✓	✓

Notes:
The research concerns the cooperative work, the discussion and the presentations.
The Tutorials concerns the brain storming and the problem solving.
Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

8- Student assessment method

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

Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	Presentation	modelling
	Tools of assessment										
Lo1											
Lo2	✓	✓	✓	✓							✓
Lo3	✓	✓	✓	✓					✓		✓
Lo4	✓	✓	✓	✓				✓	✓	✓	✓
Lo5	✓	✓	✓	✓				✓	✓	✓	✓

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)

Discussions	Every week for any student
Presentations and Movies	Weekly
Sheets and Sketches	Weekly
Researches and reports	Week (2,3)
Practical modelling	Week (4,8)
Attendance	Weekly
Mid-term exam	Week (8)
final exam	Week (16)

c- Grading system

quizes	Quiz (1)	(2.5) marks	(40) marks
	Quiz (2)	(2.5) marks	
Discussions	15%	15 marks	
Sheets and Sketches	15%		
Researches and reports	35%		
Practical modelling	35%		
Attendance		(5) marks	
Mid-term exam		(15) marks	
final exam			(60) marks
Total			(100) marks

10- List of references:

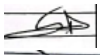
a) Course notes	Lecture notes and handouts
b) Required books	1. James W. Nilsson, and Susan A. Riedel ,Electric Circuits , 11th edition. 2. Charles K. Alexander & Mathew Sadiku, Fundamental of Electric Circuits, 7th edition.
c) Recommend books	Mentioned at time.
d) Periodicals, Web sites, etc	No periodicals 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 research in specific topic

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:	2023/2024	

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 education	27/1/2008
Date of course operation	**2022-2023**

B- Basic Information

Course Name	Calculus III
Code	Math201
Course Level	Second level courses (Sophomore)- First semester (Fall)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	Math102
Instructor name/Email	Dr. Gamal El Anani gamalanany@sva.edu.eg

c- Professional information

1- Course core

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

2- Course learning objectives:

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

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

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

b. Psychomotor Domains (LOs):

LO3	Produce appropriate solutions for engineering problems based on analytical thinking
LO4	Apply knowledge of mathematics to solve engineering problems.
LO5	Apply knowledge of linear algebraic equations, iterative methods, differential problems, and infinite series to solve engineering problems.
LO6	Make a technical report about application of matrices to solve engineering problems.

c. Affective Domains (LOs):

LO7	Communicate effectively in tutorial class room with the demonstrator.
LO8	Organize and manages tasks, time, and resources, when solving mathematics problems, and in exams

4- Program LOs served by the course:

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

Lo1.	Identify, formulate basic science and mathematics.
Lo2.	Simulate, analyze and interpret data.
Lo3.	Assess and evaluate findings.
Lo19.	Conduct and develop appropriate experimentation.
Lo30.	Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.

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

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

LO7	Organize and manages tasks, time, and resources, when solving mathematics problems, and in exams	**Lo30.**	Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Sequences and series (including power series	2	2	0	LO1,LO2
2	Vectors and planes.	2	2	0	LO1,LO3
3	Partial differentiation	2	2	0	LO6, LO7, LO8
4	Introduction to double integrals	2	2	0	LO2,LO4
5	Double integrals in polar coordinates	2	2	0	LO2,LO4
6	Multiple integrals.	2	2	0	LO2,LO4
7	Cylindrical and spherical coordinates	2	2	0	LO4
8	Midterm		1.0		
9	Vector-valued functions,	2	2	0	LO1,LO4
10	vector calculus	2	2	0	LO2,LO4
11	Green's Theorem	2	2	0	LO2,LO5,LO6
12	, Gauss Theorem	2	2	0	LO2,LO4
13	Stokes' Theorem and applications	2	2	0	LO2,LO4
14	Complex numbers.	2	2	0	LO2,LO4
15	Revision	2	2	0	LO2,LO4,LO5,LO6
16	Final Exam		2.0		
Total hours		28	28	0	--

7- The Teaching and learning methods and their relation to the Los 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	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
	Teaching and Learning Methods												
LO1	✓	✓		✓	✓						✓	✓	
LO2	✓	✓		✓	✓						✓	✓	
LO3	✓	✓		✓	✓		✓		✓	✓	✓	✓	
LO4	✓	✓		✓	✓		✓		✓	✓	✓	✓	
LO5	✓	✓		✓	✓		✓		✓	✓	✓	✓	
LO6	✓	✓		✓	✓		✓		✓	✓	✓	✓	
CLO7	✓	✓		✓	✓		✓		✓	✓	✓	✓	
LO8	✓	✓		✓	✓		✓		✓	✓	✓	✓	
LO9	✓	✓		✓	✓		✓		✓	✓	✓	✓	

Notes:

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

The Tutorials concerns the brain storming and the problem solving.

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

8- Student assessment method

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

Course ILOs	Tools of assessment										
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
LO1	✓	✓	✓	✓				✓	✓	✓	
LO2	✓	✓	✓	✓				✓	✓	✓	
LO3	✓	✓	✓	✓				✓	✓	✓	
LO4	✓	✓	✓	✓				✓	✓	✓	
LO5	✓	✓	✓	✓				✓	✓	✓	
LO6	✓	✓	✓	✓				✓	✓	✓	
LO7	✓	✓	✓	✓				✓	✓	✓	
LO8	✓	✓	✓	✓				✓	✓	✓	
LO9	✓	✓	✓	✓				✓	✓	✓	

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		weekly
Sheets and Sketches		weekly
Researches and reports		Week (2,3)
Attendance		weekly
Mid-term exam		Week (8)
final exam		Week (16)

c- Grading system

Quizzes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	25%		
Sheets and Sketches	50%	10 marks	(50) marks
Researches and reports	25%		
Attendance		(10) marks	
Mid-term exam		(20) marks	
final exam			(50) marks
Total			(100) marks

10- List of references:

a) Course notes — Lecture notes and handouts

b) Required books
1. Mary Attenborough, Engineering Mathematics, McGraw - HILL Book Company Europe.
2. Anthony croft, Robert Davison, Engineering Mathematics A modern Foundation for Electrical, Electronic & Control Engineering, Addison - Wesley - Publishing Company.

c) Recommend books — Stokowski, E, Olinick, M and Pence, D., Calculus, PWS Publishing Company - Boston, 1994

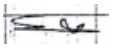
d) Periodicals, Web sites, etc	Web Sites related to Mathematics and Mathematical engineering as: www.math.hmc.edu, www.tutorial.math.lamar.edu, www.web.mit.edu

11- 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. Gamal El Anani	
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul	
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem	
Date:	2023/2024	

Course specification

Course code:	Course name
ENGR 206	Strength and Testing of Materials

A- Affiliation

Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Basic Science
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	**٢٠٢٣-٢٠٢٤**

B- Basic Information

Course Name	Strength and Testing of Materials
Code	ENGR 206
Course Level	Second level courses (Sophomore)- First semester (Fall)
Credit Hours	3Cr. Hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	ENGR 103
Instructor name/Email	Prof. Dr. Al -Desouki Ibrahim Saleh Eid eldesuki.eid@sva.edu.eg

C- Professional information

1- Course core

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

2- Course learning objectives:

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

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Identify the various physical, chemical, and mechanical properties of metals,
LO2	Explain the standard specifications of test specimens and test procedure,

b. Psychomotor Domains (LOs):

LO3	Use the theoretical basis of material tests.
LO4	prepare results of standard tests.
LO5	Produce the required data processing on test results.
LO6	prepare standard tests.
LO7	Use laboratory for testing to industrial school students

c. Affective Domains (LOs):

-	None

4- Program LOs served by the course:

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

Lo1.	Identify, formulate basic science and mathematics.
Lo2.	Simulate, analyze and interpret data.
Lo17.	Solve complex engineering problems.
Lo18..	Apply engineering fundamentals, basic science and mathematics.
Lo19.	conduct and Develop appropriate experimentation

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

	Course (LOs)		program LOs
LO1	Identify the various physical, chemical, and mechanical properties of metals,	**Lo1.**	Identify, formulate basic science and mathematics.
LO2	Explain the standard specifications of test specimens and test procedure,	**Lo2.**	Simulate, analyze and interpret data.
LO3	Use the theoretical basis of material tests.	**Lo17.**	Solve complex engineering problems.
LO4	prepare results of standard tests.	**Lo18..**	Apply engineering fundamentals, basic science and mathematics.
LO5	Produce the required data processing on test results.	**Lo19.**	conduct and Develop appropriate experimentation
LO6	prepare standard tests.	**Lo19.**	conduct and Develop appropriate experimentation
LO7	Use laboratory for testing to industrial school students	**Lo19.**	conduct and Develop appropriate experimentation

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Analysis of the different problems of stress and strain in components	2	2	0	LO1,LO2
2	Mechanical behavior of materials under tensile	2	2	0	LO1,LO3
3	Compressive, and shear loads	2	2	0	LO5,LO6

4	Hardness, impact loading	2	2	0	LO2,LO4
5	Fracture and fatigue.	2	2	0	LO2,LO4
6	Analysis of stresses and the corresponding deformations in components	2	2	0	LO2,LO4
7	Axial loading	2	2	0	LO4
8	Midterm	1.0			
9	Torsion	2	2	0	LO2,LO4
10	Bending	2	2	0	LO2,LO4
11	Transverse loading	2	2	0	LO2,LO5
12	Statically indeterminate problems.	2	2	0	LO2,LO4
13	Transformation of plane stresses.	2	2	0	LO2,LO4
14	Mohr's circle.	2	2	0	LO2,LO4
15	Revision	2	2	0	LO2,LO4,LO5
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

Course learning Outcomes (LOs)	Teaching and Learning Methods												
	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering/ Self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
LO1	✓	✓		✓	✓				✓	✓	✓	✓	
LO2	✓	✓		✓	✓				✓	✓	✓	✓	
LO3	✓	✓		✓	✓		✓		✓	✓	✓	✓	
LO4	✓	✓		✓	✓		✓		✓	✓	✓	✓	
LO5	✓	✓		✓	✓		✓		✓	✓	✓	✓	
LO6	✓	✓		✓	✓		✓		✓	✓	✓	✓	
LO7	✓	✓		✓	✓		✓		✓	✓	✓	✓	

Notes:
The research concerns the cooperative work, the discussion and the presentations.
The Tutorials concerns the brain storming and the problem solving.
Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

8- Student assessment method

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

Course ILOs	Tools of assessment										
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling

LO1	✓	✓	✓	✓				✓				
LO2	✓	✓	✓	✓				✓				
LO3	✓	✓	✓	✓			✓	✓	✓			
LO4	✓	✓	✓	✓			✓	✓	✓	✓		
LO5	✓	✓	✓	✓			✓	✓	✓	✓		
LO6	✓	✓	✓	✓			✓	✓	✓	✓		
LO7	✓	✓	✓	✓			✓	✓	✓	✓		

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		weekly
Sheets and Sketches		weekly
Attendance		weekly
Mid-term exam		Week (8)
final exam		Week (16)

c- Grading system

quizes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	20%		
Sheets and Sketches	40%	10 marks	(50) 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	Lecture notes and handouts
b)	Required books	Material Engineering, Elsabbagh A.S, Cairo,2021
c)	Recommend books	Engineering Materials, A. ATA & El-Erian A., London,1976.
d)	Periodicals, Web sites, etc	No periodicals are needed.

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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

Course coordinator:	Prof. Dr. Al -Desouki Ibrahim Saleh Eid
program Coordinator	Dr. Amera Marey
Head of the Department	Dr. Amera Marey
Date:	2023/2024

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

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	202٣-202٤

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 learning objectives:

oc 1	Recognize to read and understand passages about the field of management and accounting
oc 2	Recognize to write CVs and official letters
oc 3	Recognize how to use this knowledge in open market environments
oc 4	Recognize how acquiring business terminologies and abbreviations

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

Lo1	Select the academic formulates, paraphrase, quotation, attribution, and bibliographical forms.

b. Psychomotor Domains (LOs):

Lo2	Prepare and present thoughtfully to competing claims
Lo3	use appropriate texts for citation.

c. Affective Domains (LOs):

Lo4	Express the style, using one's reading as a resource for theoretical models.

4- Program LOs served by the course:

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

Lo1.	Identify, formulate basic science and mathematics.
Lo24.	Conduct techniques and methods of investigation as researches and reports.
Lo32.	Work efficiently as an individual and share in team works.
Lo33.	Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.

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

	Course (LOs)		program LOs
Lo1	Select the academic formulates, paraphrase, quotation, attribution, and bibliographical forms.	**Lo1.**	Identify, formulate basic science and mathematics.
Lo2	Prepare and present thoughtfully to competing claims	**Lo24.**	Conduct techniques and methods of investigation as researches and reports.
Lo3	use appropriate texts for citation.	**Lo24.**	Conduct techniques and methods of investigation as researches and reports.
	Express the style, using one's reading as a resource for theoretical models.	**Lo32.**	Work efficiently as an individual and share in team works.
Lo4		**Lo33.**	Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.

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

Week No.	Topic	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	LO2,LO 3
2	Uunderstand that readers in different disciplines approach text with different expectations and preferences	2	2	0	LO1,LO 2
3	Imagine meaningful shapes for ideas, so that a text's form is a natural manifestation of what one wants to say	2	2	0	LO1,LO 4
4	Recognize identifiable genres and shape texts around different generic expectations where appropriate	2	2	0	LO3,LO 4
5	Sequence thoughts effectively, articulating connections between a text's individual discussions	2	2	0	LO3,LO 4
6	How to write CVs and official letters	2	2	0	LO3,LO 4
7	How to write CVs and official letters	2	2	0	LO3,LO 4
8	Midterm	1.0			
9	About erosion and weathering of the rocks.	2	2	0	LO3,LO 4
10	The present condition & the past perfect	2	2	0	LO3,LO 4

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

Notes: *The research concerns the cooperative work, the discussion and the presentations.*
The Tutorials concerns the brain storming and the problem solving.
Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

8- Student assessment method

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

Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/	presentation	modelling
LO1	✓	✓	✓	✓				✓	✓	✓	
LO2	✓	✓	✓	✓				✓	✓	✓	
LO3	✓	✓	✓	✓			✓	✓	✓	✓	
LO4	✓	✓	✓	✓			✓	✓	✓	✓	

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)

Discussions	Every week for any student
Presentations and Movies	weekly
Sheets and Sketches	weekly
Researches and reports	Week (2,3)
Attendance	weekly
Mid-term exam	Week (8)
final exam	Week (16)

c- Grading system

quizes	Quiz (1) Quiz (2)	(5) marks (5) marks	
Discussions	5%		
Sheets and Sketches	45%	10 marks	(50) marks
Researches and reports	50%		
Attendance		(10) marks	
Mid-term exam		(20) marks	
final exam			(50) marks
Total			(100) marks

10- List of references:

a) Course notes — Lecture notes and handouts

b) Required books
- The English Language department implements two learning management systems, namely:
- 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/

c) Recommend books
- Dutch Journal of Applied Linguistics
- ELT Journal, Oxford University Press
- International Journal of Applied linguistics
- International Journal of Research and Practice in Interpreting
- Journal of English Language Teaching- 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

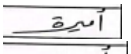
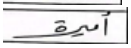
11- Facilities required for teaching and learning:

- 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:	Dr. Ahmed El-Husani	
program Coordinator	Dr. Amera Marey	
Head of the Department	Dr. Amera Marey	
Date:	2023/2024	

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

Course specification

Course code:	Course name
BASE 309	Human Rights

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	202٣-202٤

B- Basic Information

Course Name	Human Rights
Code	BASE 309
Course Level	Second level courses (Sophomore)- First semester (Fall)
Credit Hours	0 Cr. hr
Lectures	0 hr
Tutorial	1hr
Total	1hr
Prerequisite	-
Instructor name/Email	Dr. Abd El-Aziz Ramadan abdelaziz.Ramadan@sva.edu.eg

C- Professional information

1- 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 the engineers and the clients.
oc 2	identify on analyzing and presenting the international institutional framework to deal with human rights issues.
oc 3	Utilize the role of the non-governmental organizations in the field of protecting human rights.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

-	None

b. Psychomotor Domains (LOs):

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

LO4	develop the case studies concerning the self-learning.
LO5	Apply the self-learning concept to in contact with the main issues related to the human rights.

c. Affective Domains (LOs):

-	None

4- Program LOs served by the course:

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

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

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

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

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introducing to the concept of human rights (from its inception to the present time.)	0	2	0	LO3,LO5
2	Types of human rights as stated in the Egyptian constitution 1971.	0	2	0	LO3,LO5
3	Human rights in light of the provisions of Islamic law	0	2	0	LO3,LO5
4	Human rights as stated on both Holly Quran and in the prophet Mohamed Sunna. (Research as case studies)	0	2	0	LO1:LO5
5	Egyptian human rights during the eras of modern Egypt (one hundred years).	0	2	0	LO3,LO5
6	The changes of human rights since early age of Egyptian kingdom till now. (Research as case studies)	0	2	0	LO1:LO5
7	Human rights in Egyptian law.	0	2	0	LO3,LO5
8	Midterm		1.0		
9	Statements of human rights as specified in various countries in the world.	0	2	0	LO3,LO5
10	Case study of human rights in various countries in the world (Research)	0	2	0	LO1:LO5
11	Human rights between the individual and society and between state sovereignty and international protection. (Research)	0	2	0	LO1:LO5
12	The conflict between nations sovereignty and international society in relation to human rights concept. (Research)	0	2	0	LO1:LO5
13	The loss of Egyptian human rights between inherited family traditions and some ugly society habits. (Research)	0	2	0	LO1:LO5
14	Factors influencing the loss of the Egyptian citizen human rights (family old beliefs, ignorance of environmental rules by society and hardship of competent authorities). (Research)	0	2	0	LO1:LO5
15	The sodden abrupt changes of western nations policy towards the mean and Arab countries, and relation to human rights. (Research)	0	2	0	LO1:LO5
16	Final Exam		2.0		
Total hours		0	28	0	--

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

Course learning Outcomes (LOs)	Teaching and Learning Methods												
	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering/ self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
LO1		✓							✓	✓			
LO2		✓									✓		
LO3		✓								✓		✓	
LO4		✓									✓		
LO5		✓					✓					✓	

Notes:

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

8- Student assessment method

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

Course lLOs	Tools of assessment									
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
Lo1									✓		
Lo2										✓	
Lo3		✓	✓					✓	✓		
Lo4										✓	
Lo5		✓	✓					✓			

b- Time schedule of assessment

Quizzes	Quiz (1) Quiz (2)	Week (3) Week (10)
Discussions		Every week for any student
Presentations and Movies		Weekly
Researches and reports		Week (4, 6, 10, 12,13,14,15)
Attendance		Weekly
Mid-term exam		Week (8)
final exam		Week (16)

c- Grading system

Quizzes	Quiz (1)	5 marks	
	Quiz (2)	5 marks	
Presentations	50%	10 marks	(30) marks
Researches and reports	50%		
Attendance		10 marks	
Mid-term exam			(20) marks
final exam			(50) marks
Total			(100) marks

10- List of references:

a)	Course notes	Lecture notes and handouts
b)	Required books	▪ 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	Mentioned at time.
d)	Periodicals, Web sites, etc	No periodicals are needed.

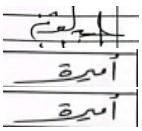
11- Facilities required for teaching and learning:

- 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. Amera Marey
Head of the Department	Dr. Amera Marey
Date:	2023/2024



Second level courses (Sophomore)

Second semester (Spring)

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

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

Course specification

Course code:	Course name
CECE 203	Electric circuits (II)

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 education	27/1/2008
Date of course operation	**٢٠٢٣-٢٠٢٤**

B- Basic Information

Course Name	Electric circuits (II)
Code	CECE 203
Course Level	Second level courses (Sophomore) - Second semester (Spring)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	CECE 202
Instructor name/Email	Dr. Ibrahim Ali 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- Learning outcomes of the course (LOs)

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

A- Cognitive Domains (LOs):

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

b- Psychomotor Domains (LOs):

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

c- Affective Domains (LOs):

- None

4- Program LOs served by the course: :

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

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

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

	Course (LOs)	program LOs	
LO1	Recognize circuit analysis methods to solve electrical circuits problems that involve AC power sources and AC power	**Lo11.**	Principles of for electrical equipment and systems.
		Lo12.	Principles of operation and performance specifications of electrical and electromechanical engineering systems .
LO2	Solve the transient states in the circuits, makes the comments of expected results and presents them in graphical forms.	**Lo19.**	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
		Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO3	Uses different software tools for the analysis of AC circuits.	**Lo19.**	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
		Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Capacitor and inductors.	2	2	0	LO2
2	First order circuit.	2	2	0	LO3
3	Second order circuit.	2	2	0	LO2
4	Sinusoidal steady state analysis & Quiz.	2	2	0	LO2
5	Sinusoidal steady state analysis AC power calculation and analysis.	2	2	0	LO3
6	Balanced three phase circuits.	2	2	0	LO3
7	Mutual inductance.				LO3
8	Midterm		1.0		

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

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

Course learning Outcomes (LOs)	Teaching and Learning Methods												
	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / SELF LEARNING	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
LO1	✓												
LO2	✓	✓											
LO3	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓

Notes:
The research concerns the cooperative work, the discussion and the presentations.
The Tutorials concerns the brain storming and the problem solving.
Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

8- Student assessment method

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

Course ILOs	Tools of assessment										
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
LO1											
LO2											
LO3	✓	✓	✓	✓	✓			✓	✓	✓	✓

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		weekly
Sheets and Sketches		weekly
Researches and reports		Week (2,3)
Attendance		weekly

Mid-term exam		Week (8)	
final exam		Week (16)	

c- Grading system

quizes	Quiz (1)	(2.5) marks	
	Quiz (2)	(2.5) marks	
Discussions	15%		
Sheets and Sketches	55%	10 marks	(40) marks
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, 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.

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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

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

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

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 education	27/1/2008
Date of course operation	**٢٠٢٣-٢٠٢٤**

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.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

-	None

b. Psychomotor Domains (LOs):

LO1	Uses the proper concepts for analysis of relevant topics from the electrical circuit's domain
LO2	Use circuit analysis methods to solve electrical circuits problems that involve AC power sources and AC power
LO3	produce experiments concerning the electric circuits with the use of proper instrumentation and explain the results
LO4	Use laboratory to get the transient states in the circuits, makes the comments of expected results and presents them in graphical forms

c. Affective Domains (LOs):

LO5	Express the performance of AC circuits by using the software tools

4- Program LOs served by the course:

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

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

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

	Course (LOs)	program competencies	
LO1	Uses the proper concepts for analysis of relevant topics from the electrical circuit's domain	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO2	Use circuit analysis methods to solve electrical circuits problems that involve AC power sources and AC power	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO3	produce experiments concerning the electric circuits with the use of proper instrumentation and explain the results	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO4	Use laboratory to get the transient states in the circuits, makes the comments of expected results and presents them in graphical forms	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO5	Express the performance of AC circuits by using the software tools	**Lo39.**	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Resistors and the Color Code.	2	2	0	LO1
2	Ohm's Law.	2	2	0	LO1
3	Series Resistance.	2	2	0	LO1
4	Series dc Circuits.	2	2	0	LO3

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

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

Course learning Outcomes (LOs)	Teaching and Learning Methods											
	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / Self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
LO1	✓	✓	✓			✓	✓			✓	✓	✓	
LO3	✓	✓	✓			✓	✓			✓	✓	✓	
LO4	✓	✓	✓			✓	✓			✓	✓	✓	
LO2	✓	✓	✓			✓	✓			✓	✓	✓	
LO5	✓	✓	✓			✓	✓			✓	✓	✓	

Notes:
The research concerns the cooperative work, the discussion and the presentations.
The Tutorials concerns on sheets and sketches
Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

8- Student assessment method

a- 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	modeling
LO1		✓	✓	✓	✓	✓	✓	✓		✓	

LO3		✓	✓	✓	✓	✓	✓	✓		✓	
LO4		✓	✓	✓	✓	✓	✓	✓		✓	
LO2		✓	✓	✓	✓	✓	✓	✓		✓	
LO5		✓	✓	✓	✓	✓	✓	✓		✓	

b- Time schedule of assessment

Quizzes	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

quizzes	Quiz (1)	(0) marks	(60) marks
	Quiz (2)	(0) marks	
Discussions	20%	40 marks	
Sheets and Sketches	60%		
the Projects	20%		
Attendance		(10) marks	
Mid-term exam		(10) marks	
final exam			(40) 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, 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.

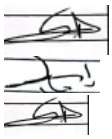
1- Facilities required for teaching and learning:

- 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:	2023/2024



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

Course specification

Course code:	Course name
CECE 209	Digital Logic Design II

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 education	27/1/2008
Date of course operation	**٢٠٢٣-٢٠٢٤**

B- Basic Information

Course Name	Digital Logic Design II
Code	CECE 209
Course Level	Second level courses (Sophomore) - Second semester (Spring)
Credit Hours	3Cr. Hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	CECE 201
Instructor name/Email	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi mohammed.ghaboushy@sva.edu.eg

C- Professional information

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.

3- Learning outcomes of the course (LOs):

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

a. Cognitive Domains (LOs):

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

b. Psychomotor Domains (LOs):

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

c. Affective Domains (LOs):

- None

4- Program LOs served by the course:

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

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

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

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

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Half adder and full adder description	2	2	0	LO1
2	Ripple carry and look ahead adder description	2	2	0	LO1
3	Look ahead carry adder + Solved examples+ Quiz (1).	2	2	0	LO1
4	Comparator description	2	2	0	LO2
5	comparator+ solved examples.	2	2	0	LO3
6	Decoder and Encoder	2	2	0	LO3
7	Multiplexer.				LO3
8	Midterm		1.0		
9	Design Exercises	2	2	0	LO2
10	Sequential circuits and latches	2	2	0	LO3
11	Sequential circuits and latches	2	2	0	LO5

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

7- The Teaching and learning methods and their relation to the Los 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	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	Modeling
	Teaching and Learning Methods												
LO1	✓												
LO2	✓	✓											
LO3	✓	✓	✓	✓	✓		✓		✓	✓			✓
LO4	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
LO5	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓

Notes:

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

The Tutorials concerns the brain storming and the problem solving.

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

8- Student assessment method

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

Course ILOs	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	Modeling
	Tools of assessment										
LO1											
LO2											
LO3	✓	✓	✓	✓	✓		✓		✓		✓
LO4	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
LO5	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	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

Quizes	Quiz (1)	(5) marks	
	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 l, 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:	2023/2024

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

Course specification

Course code:	Course name
CECE 211	Digital Logic Design Lab

A- Affiliation

Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	202٣-202٤

B- Basic Information

Course Name	Digital Logic Design Lab
Code	CECE 211
Course Level	Second level courses (Sophomore) - Second semester (Spring)
Credit Hours	1Cr. Hr
Lectures	0hr
Tutorial	3hr
Total	3hr
Prerequisite	Conc. with CECE 203
Instructor name/Email	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi mohammed.ghaboushy@sva.edu.eg

C- Professional information

1- 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- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

-	None

b. Psychomotor Domains (LOs):

LO1	Produce the Concept of Number Systems.
LO2	Make the Combinational Logic Circuits.
LO3	Make the Synchronous Sequential Circuits.
LO4	Produce the Asynchronous Sequential Circuits.

c. Affective Domains (LOs):

LO5	Express using laboratory how use the Programmable Logic Devices.

4- Program LOs served by the course:

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

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

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

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

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course Los
1	Basic Electronic instruments and measurements, oscilloscope.	2	2	0	LO1
2	Lab report outline and results presentation.	2	2	0	LO1
3	Inverters.	2	2	0	LO1
4	AND gates .	2	2	0	LO2

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

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

Course learning Outcomes (LOs)	Teaching and Learning Methods												
	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / self	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	Modeling
Lo1	✓	✓	✓			✓	✓			✓	✓	✓	
Lo2	✓	✓	✓			✓	✓			✓	✓	✓	
Lo3	✓	✓	✓			✓	✓			✓	✓	✓	
Lo4	✓	✓	✓			✓	✓			✓	✓	✓	
Lo5	✓	✓	✓			✓	✓			✓	✓	✓	

Notes:

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

The Tutorials concerns the sheets and sketches

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

8- Student assessment method

a- 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	Modeling
Lo1		✓	✓	✓	✓	✓	✓	✓		✓	

Lo2		✓	✓	✓		✓	✓		✓	✓			✓		
Lo3		✓	✓	✓		✓	✓		✓	✓			✓		
Lo4		✓	✓	✓		✓	✓		✓	✓			✓		
Lo5		✓	✓	✓		✓	✓		✓	✓			✓		

b- Time schedule of assessment

Quizzes	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			(40) marks
Total			(100) marks

10- List of references:

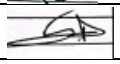
a) Course notes	Lecture notes and handouts
b) Required books	▪ Digital fundamentals, 11th edition by Thomas l, Floyd ▪ Digital design principles and practices- 4th ed, john f. wakerly, prentice hall, 2005.
c) Recommend books	Mentioned at time.
d) Periodicals, Web sites, etc	No periodicals are needed.

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. 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:	2023/2024	

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

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 education	27/1/2008
Date of course operation	٢٠٢٣-٢٠٢٤

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 Hours	3Cr. hr.
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	PHYS 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:

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

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

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

b. Psychomotor Domains (LOs):

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

LO6	Prepare and present engineering designs a process of thinking, not just delivering information

c. Affective Domains (LOs):

None

4- Program LOs served by the course:

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

Lo1.	Identify, formulate basic science and mathematics
Lo6.	Define standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
Lo20.	Apply engineering fundamentals, basic science and mathematics.
Lo23.	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.

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

	Course (LOs)	program LOs	
LO1	Explain the ability to understand the basics of physics related to several branches in engineering. describe the ability to research a topic, develop an argument, and organize supporting details.	**Lo1.**	Identify, formulate basic science and mathematics
		Lo6.	Define standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
LO3	Apply acknowledge effectively, recognizing the two as distinct activities and developing strategies for generating critical distance when rereading. Conduct and develop a claim that matters in the context of a continuing discussion, writing with a sense of intellectual purpose and stake.	**Lo1.**	Identify, formulate basic science and mathematics
		Lo6.	Define standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
		Lo20.	Apply engineering fundamentals, basic science and mathematics.
LO4	Prepare and present engineering designs a process of thinking, not just delivering information		
LO5	Explain the ability to understand the basics of physics related to several branches in engineering.	**Lo23.**	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.

LO6	describe the ability to research a topic, develop an argument, and organize supporting details.	**Lo21.**	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduction to the course, grading policy, etc. The nature of light. Introduction of the classical particle and wave models of light. Introduction of the modern models of the dual nature of light. Fizeau's measurement of the speed of light.	2	2	0	LO1:6
2	Introduction to ray optics approximation (or Geometrical Optics). Longitudinal versus transverse wave motions. The wavelength and the amplitude. Reflection of light. Refraction of light. Introduction to microscopic picture for a light in a medium. Index of refraction. Snell's law of refraction.	2	2	0	LO1:6
3	Prism and some definitions. Dispersion of light or wavelengths. Refraction in a Prism. Introduction to the electromagnetic spectrum. Introduction to the origin of some electromagnetic waves (absorption and emission). Total internal reflection. Critical angle of total internal reflection. Fiber optics and Fiber Optics. Some applications for total internal reflection.	2	2	0	LO1:6
4	Physical optics or wave optics. Revisions from physics (1): Sinusoidal nature of Simple harmonic motion "SHM." Constructing the trigonometric Functions. Superposition of waves. Brief introduction of the Young's double slit experiment. Conditions for interference. Diffraction of light. Relationship: Diffraction to Interference.	2	2	0	LO1:6
5	Waves in interference, details of the Young's double slit interference. Conditions for constructive and distractive interference.	2	2	0	LO1:6
6	Intensity distribution of double slit interference pattern. Revision from physics "1": particle in simple harmonic motion. Introduction of the electromagnetic wave nature of light. The average light intensity of double-slit interference at a point. Multiple-slit interference patterns. Change of phase due to reflection. Phase reversal. Interference in thin films. Effect of phase reversal. Newton's rings.	2	2	0	LO1:6
7	Diffraction patterns and polarization. The f-number, the depth of field, and diffraction. Diffraction simple analogy. Edge diffraction due to lens aperture. Introduction to diffraction patterns. Diffraction pattern created by a ball, a penny, or a slit. Some daily life	2	2	0	LO1:6

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

d. The Teaching and learning methods and their relation to the Los of the course

Course learning Outcomes (LOs)	Teaching and Learning Methods												
	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	Modeling
Lo1	✓	✓		✓	✓	✓		✓		✓	✓	✓	✓	✓
Lo2	✓	✓		✓	✓	✓		✓		✓	✓	✓	✓	✓
Lo3	✓		✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
Lo4	✓		✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
Lo5	✓		✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
Lo6	✓		✓	✓	✓	✓		✓		✓	✓	✓	✓	✓

Notes: *The research applied through the Arduino photonics projects. Arduino is an open-source electronics platform based on easy-to-use hardware and software. The brainstorming takes place during the lectures and through the projects and the homework*
The research concerns the cooperative work, the discussion, the site visit and the presentations.
The Tutorials concerns the brain storming and the problem solving.
Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

e. Student assessment method

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

Course ILOs	Tools of assessment										
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	Modeling
Lo1	✓	✓	✓		✓		✓	✓	✓		✓
Lo2	✓	✓	✓		✓		✓	✓	✓		✓
Lo3	✓	✓	✓		✓		✓	✓	✓		✓
Lo4	✓	✓	✓		✓		✓	✓	✓		✓
Lo5	✓	✓	✓		✓		✓	✓	✓		✓
Lo6	✓	✓	✓		✓		✓	✓	✓		✓

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	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

quizes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	15%		
Sheets and Sketches	20%		
Researches and reports	20%	10 marks	(50) marks
the Projects	30%		
Practical modelling	20%		
Attendance		(10) marks	
Mid-term exam		(20) marks	
final exam			(50) marks
Total			(100) marks

10- List of references:

a)	Course notes	Lecture notes and handouts
b)	Required books	John W. Jewett and Raymond A. Serway, Physics for Scientists and Engineers 9th 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. Amal Elgawadi
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤

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 education	27/1/2008
Date of course operation	202٣-202٤

B- Basic Information

Course Name	Optics Lab
Code	PHYS 311
Course Level	Second level courses (Sophomore) - Second semester (Spring)
Credit Hours	1Cr. Hr
Lectures	0hr
lab	3hr
Total	3hr
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- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

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

b. Psychomotor Domains (LOs):

LO2	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
LO3	Prepare and present the flexible model recalling the final configuration of masses

c. Affective Domains (LOs):

LO4	Express using the model, measuring instruments, and lab tools to determine the amount of salt

4- Program LOs served by the course:

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

Lo1.	Identify, formulate basic science and mathematics
Lo6.	Define standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
Lo20.	Apply engineering fundamentals, basic science and mathematics.
Lo23.	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.
Lo39.	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.

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

Course (LOs)		program LOs	
LO1	Identify the basic fundamental in optics wave nature of light; an overview of interference of light with different surfaces and materials; introduction to reflection, refraction and diffraction of light) and solve complex engineering problems.	**Lo1.**	Identify, formulate basic science and mathematics
		Lo6.	Define standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.
LO2	Evaluates the reaction of light to predict refractive index of a prism. Solve the different problem of combustion. Analyze application of interference of light. Identify various industrial processes such as the solar panels industry	**Lo20.**	Apply engineering fundamentals, basic science and mathematics.
LO3	Express his opinion by oral presentation and flexible model recalling the final configuration of masses	**Lo23.**	Use contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements.
LO4	Conduct models to Employ, measuring instruments, and lab tools to determine the amount of salt	**Lo39.**	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs

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

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

Course learning Outcomes (LOs)	Teaching and Learning Methods												
	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(2.1)	✓	✓		✓	✓	✓	✓			✓	✓	✓	
C(2.2)	✓	✓		✓	✓	✓	✓			✓	✓	✓	
C(2.3,4.1)	✓	✓		✓	✓	✓	✓			✓	✓	✓	
C(4.2)	✓	✓		✓	✓	✓	✓			✓	✓	✓	

Notes:

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

8- Student assessment method

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

Course ILOs	Tools of assessment										
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
C(2.1)	✓	✓	✓	✓		✓	✓	✓		✓	
C(2.2)	✓	✓	✓	✓		✓	✓	✓		✓	
C(2.3,4.1)	✓	✓	✓	✓		✓	✓	✓		✓	
C(4.2)	✓	✓	✓	✓		✓	✓	✓		✓	

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	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

quizes	Quiz (1)	(15) marks	
	Quiz (2)	(15) marks	
Discussions	5%		
Sheets and Sketches	45%	10 marks	(60) marks
Researches and reports	10%		
lab	10%		
Attendance		(10) marks	
Mid-term exam		(10) marks	
final exam			(40) marks
Total			(100) marks

10- List of references:

a)	Course notes	Lecture notes and handouts
b)	Required books	SVA academic book
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

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

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:	٢٠٢٣/٢٠٢٤

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 education	27/1/2008
Date of course operation	202٣-202٤

B- Basic Information

Course Name	Differential Equations
Code	MATH202
Course Level	Second level courses (Sophomore) - Second semester (Spring)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	MATH 201
Instructor name/Email	Dr. Gamal El-Anani gamalanany@sva.edu.eg

C- Professional information

1- 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- Learning outcomes of the course (LOs)

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

a- Cognitive Domains (LOs):

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

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

b- Psychomotor Domains (LOs):

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

c- Affective Domains (LOs):

- None

4- Program LOs served by the course:

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

Lo1.	Identify, formulate basic science and mathematics.
Lo2.	Simulate, analyze and interpret data.
Lo19.	Solve complex engineering problems.
Lo20.	Apply engineering fundamentals, basic science and mathematics

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

Course (LOs)		program LOs	
LO1	Explain concepts and theories of mathematics and sciences, appropriate to differential equations, function and practice.	**Lo1.**	Identify, formulate basic science and mathematics.
LO2	Demonstrate methodologies of solving engineering problems, data collection and interpretation.	**Lo2.**	Simulate, analyze and interpret data.
LO3	Produce the appropriate solutions for engineering problems based on analytical thinking	**Lo19.**	Solve complex engineering problems.
LO4	Apply knowledge of mathematics to solve engineering problems.	**Lo19.**	Solve complex engineering problems.
LO5	Apply knowledge of linear algebraic equations, iterative methods, and infinite series to solve engineering problems.	**Lo20.**	Apply engineering fundamentals, basic science and mathematics
LO6	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.	**Lo19.**	Solve complex engineering problems.
		Lo20.	Apply engineering fundamentals, basic science and mathematics
LO7	Apply knowledge of mathematics to solve differential problems	**Lo19.**	Solve complex engineering problems.
LO8	Produce the appropriate solutions for engineering problems based on analytical thinking	**Lo20.**	Apply engineering fundamentals, basic science and mathematics

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Covers mathematical formulation of ordinary differential equations	2	2	0	LO(1:6)
2	Methods of solution and applications of first order differential equations	2	2	0	LO(1:6)

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

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

Course learning Outcomes (LOs)	Teaching and Learning Methods												
	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering/ self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
LO1	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	
LO2	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	
LO3	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	
LO4	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	
LO5	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	
LO6	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	
LO7	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	
LO8	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	

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- 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
LO1	✓	✓	✓	✓			✓	✓	✓	
LO2	✓	✓	✓	✓			✓	✓	✓	
LO3	✓	✓	✓	✓			✓	✓	✓	
LO4	✓	✓	✓	✓			✓	✓	✓	
LO5	✓	✓	✓	✓			✓	✓	✓	
LO6	✓	✓	✓	✓			✓	✓	✓	
LO7	✓	✓	✓	✓			✓	✓	✓	
LO8	✓	✓	✓	✓			✓	✓	✓	

a- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		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)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	25%		
Sheets and Sketches	50%	10 marks	(50) marks
Researches and reports	25%		
Attendance		(10) marks	
Mid-term exam		(20) marks	
final exam			(50) marks
Total			(100) marks

10- List of references:

a) Course notes — Lecture notes and handouts

b) Required books
- Mary Attenborough, Engineering Mathematics, McGraw - HILL Book Company Europ.
- Anthony croft, Robert Davison, Engineering Mathematics A modern Foundation for Electrical, Electronic & Control Engineering, Addison - Wesley - Publishing Company.

c) Recommend books — Swokowski, E, Olinick ,M and Pence, D., Calculus, PWS Publishing Company - Boston, 1994

d)	Periodicals, Web sites, etc	Web Sites related to Mathematics and Mathematical engineering as: **www.math.hmc.edu**, **www.tutorial.math.lamar.edu**, **www.web.mit.edu**

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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

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

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

Course specification

Course code:	Course name
BASE 303	Engineering Economics

A- Affiliation

Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Basic Science
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	202٣-202٤

B- Basic Information

Course Name	Engineering Economics
Code	BASE 303
Course Level	Second level courses (Sophomore) - Second semester (Spring)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	Math 102
Instructor name/Email	Dr. Abd El-Aziz Ramadan abdelaziz.Ramadan@sva.edu.eg

C- Professional information

1-Course core

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

2- Course 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
oc6	Recognize how used to operate calculation of the internal rate of return.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

- None

b. Psychomotor Domains (LOs):

LO1	Conduct and develop cash flow engineering-economic models of costs and benefits of projects
LO2	Make the comparative between the costs and benefits of alternative and mutually exclusive projects using time value of money approaches, including present worth, annual worth, payback period, and Internal Rate of Return (IRR)
LO3	Produces the effect of inflation and taxation on costs and benefits of projects, as well as developing numerical methods to account for their impact
LO4	Prepare the assessment of the elements which may affect the decision-making process for public sector projects
LO5	Develop a strategy to account for uncertainty and risk through the use of sensitivity analysis and probability distribution

c- Affective Domains (LOs):

- None

4- Program competencies served by the course:

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

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

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

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

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Phases of engineering projects/operation.	2	2	0	LO1
2	Project activity versus time plan	2	2	0	LO2
3	Project total investment costs; fixed assets costs, current assets costs, pre operation costs.	2	2	0	LO2
4	Derivation of equation of cash future value	2	2	0	LO3
5	Derivation of equation of cash net present of expected future cash flow	2	2	0	LO3
6	Derivation of equation of cash net present of expected future cash flow	2	2	0	LO3
7	calculation of the internal rate of return.	2	2	0	LO3
8	Midterm		1.0		
9	The payback periods.	2	2	0	LO5
10	The payback periods.	2	2	0	LO5
11	The payback periods.	2	2	0	LO5
12	Factory break-even point (BEP).	2	2	0	LO4
13	Factory break-even point (BEP).	2	2	0	LO4
14	Factory break-even point (BEP).	2	2	0	LO4
15	Revision	2	2	0	LO5
16	Final Exam		2.0		
Total hours		28	28	0	--

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

Course learning Outcomes (LOs)	Teaching and Learning Methods												
	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
LO1	✓		✓	✓	✓		✓		✓	✓	✓	✓	
LO2	✓		✓	✓	✓		✓		✓	✓	✓	✓	
LO3	✓		✓	✓	✓		✓		✓	✓	✓	✓	
LO4	✓		✓	✓	✓		✓		✓	✓	✓	✓	
LO5	✓		✓	✓	✓		✓		✓	✓	✓	✓	

Notes: *The research concerns the cooperative work, the discussion and the presentations.*
The Tutorials concerns the brain storming and the problem solving.Online lectures used as hybrid learning, but in case of totally on-line learning all the used teaching and learning methods will be on line.

8- Student assessment method

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

Course ILOs	Tools of assessment										
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
LO1	✓	✓	✓					✓	✓	✓	
LO2	✓	✓	✓					✓	✓	✓	
LO3	✓	✓	✓					✓	✓	✓	
LO4	✓	✓	✓					✓	✓	✓	
LO5	✓	✓	✓					✓	✓	✓	

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		weekly
Researches and reports		Week (2,3)
Attendance		weekly
Mid-term exam		Week (8)
final exam		Week (16)

c- Grading system

quizes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	25%		
Sheets and Sketches	0%		
Researches and reports	75%	10 marks	(50) marks
the Projects	0%		
Practical modelling	0%		
Attendance		(10) marks	
Mid-term exam		(20) marks	
final exam			(50) marks
Total			(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
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Date:	2023/2024