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	2022-2023

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-program objectives served by the course:

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

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

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

	Course objectives		program objectives
oc 1	That the student knows the most important rulings related to advanced course in C++ which will provide him with the fundamental knowledge and skills to become a C++ programmer.	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 2	That the student understands how transpose the physical problem domain into a hierarchy of objects.	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
oc 3	That the student understands and knows Objects, their behaviors, and their relationships will be modeled and these models will be programmed into a functional application that the student will compile, modify, enhance and run.	OP5	Teach students to use experimental and data analysis techniques for electrical power engineering applications
oc 4	That the student gets used to write Program in a structured style whereby reinforcing the concepts of software quality, reliability and maintainability.	OP7	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.

5- Learning outcomes of the course (LOs)

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

CR2.1	Identify OOPs concepts
CR2.2	Apply functions and pointers in your C++ program
CR2.3	Communicate effectively with expressions, and control structures
CR(2.4, 3.1)	Explain arrays and strings and create programs using them
CR(2.4, 3.2)	Describe and use constructors and destructors

6- Program competencies served by the course:

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

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

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

	Course (LOs)		program competencies
CR(2.1)	Describe OOPs concepts	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.2)	Apply functions and pointers in your C++ program	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design

CR(2.3)	Generate tokens, expressions, and control structures	CR2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.4, 3.1)	Explain arrays and strings and create programs using them	CR2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design CR3 Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
CR(2.4, 3.2)	Describe and use constructors and destructors	CR2 Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design CR3 Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.

8- 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	CR(2.1)
2	Variables	2	0	2	CR(2.1)
3	Working with Tokens, Expressions and Control Structures in C++	2	0	2	CR(2.1)
4	Managing Input and Output Data	2	0	2	CR(2.2)
5	Arranging the Same Data Systematically: Arrays	2	0	2	CR(2.3)
6	Revision and quiz	2	0	2	CR(2.3)
7	Decisions	2	0	2	CR(2.3)
8	Midterm		1.0		
9	Functions	2	0	2	CR(2.2)
10	Pointers + (Quiz)	2	0	2	CR(2.3)
11	Maximum power transfer.	2	0	2	CR(2.4, 3.2)
12	Quiz (2) + solved examples	2	0	2	CR(2.4, 3.1)
13	Classes and Objects in C++	2	0	2	CR(2.4, 3.2)
14	Implementing OOPs Concepts in C++	2	0	2	CR(2.4, 3.2)
15	General revision	2	0	2	CR(2.3)
16	Final Exam		2.0		
Total hours		28	0	28	--

9- 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
CR2.1	✓												
CR2.2	✓	✓		✓		✓	✓						
CR2.3	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	
CR(2.4, 3.1)	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	
CR(2.4, 3.2)	✓	✓	✓	✓	✓	✓	✓			✓	✓	✓	

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.

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
CR(2.1)											
CR(2.2)				✓		✓					
CR(2.3)	✓	✓	✓	✓		✓	✓	✓		✓	
CR(2.4, 3.1)	✓	✓	✓	✓		✓	✓	✓		✓	
CR(2.4, 3.2)	✓	✓	✓	✓		✓	✓	✓		✓	

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

D- Grading system

Quizzes	Quiz (1)	(5) marks	(60) marks
	Quiz (2)	(5) marks	
Discussions	50%	20 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

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

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	2022-2023

B- Basic Information

Course Name	Digital logic design I
Code	CECE 201
Course Level	Second level courses (Sophomore)- First semester (Fall)
Credit Hours	3Cr. Hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	CECE 101
Instructor name/Email	Dr. Mohamed Mahmoud Ahmed Mohamed El-Ghoboushi mohammed.ghaboushy@sva.edu.eg

C- Professional information

1-Course core

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

2- Course learning objectives:

oc 1	Explain the logic gates concepts
oc 2	Explain the boolean algebra and logic simplification.
oc 3	Explain karnaugh map
oc 4	Explain combinational logic analysis
oc 5	Describe the most important rulings related to understand functions of combinational logic

3- program objectives served by the course:

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

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

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

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

5- Learning outcomes of the course (LOs)

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

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

6- Program competencies served by the course:

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

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

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

Course (LOs)		program competencies	
CR(2.1)	Recognize logic gates: definition, function and practice.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.2, 3.1)	Recognize boolean algebra and logic simplification: definition, function and practice.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design

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

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

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

9- 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
CR(2.1)	✓												
CR(2.2, 3.1)	✓	✓											
CR(2.3)	✓	✓	✓	✓	✓		✓			✓			
CR(2.4)	✓	✓	✓	✓	✓		✓			✓	✓	✓	
CR(2.5)	✓	✓	✓	✓	✓		✓			✓	✓	✓	
CR(5.1)	✓	✓	✓	✓	✓		✓			✓	✓	✓	

Notes:

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

10- Student assessment method

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

Course ILOs	Tools of assessment									
	Mid -term exam	Final exam	sheets/ sketches	Projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
CR(2.1)										
CR(2.2, 3.1)										
CR(2.3)	✓	✓	✓	✓				✓		
CR(2.4)	✓	✓	✓	✓			✓	✓	✓	
CR(2.5)	✓	✓	✓	✓			✓	✓	✓	
CR(5.1)	✓	✓	✓	✓			✓	✓	✓	

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

c- Grading system

Quizzes	Quiz (1)	(5) marks	(40) marks
	Quiz (2)	(5) marks	
Discussions	50%	5 marks	

Sheets and Sketches	50%		
Attendance		(10) marks	
Mid-term exam		(15) marks	
final exam			(60) marks
Total			(100) marks

10- List of references:

a)	Course notes	Lecture notes and handouts
b)	Required books	1. Digital Fundamentals, 11th Edition by Thomas L, Floyd 2. Digital Design Principles and Practices- 5th Ed, John F. Wakerly, Prentice Hall, 2017
c)	Recommend books	Mentioned at time.
d)	Periodicals, Web sites, etc	No periodicals are needed.

11- Facilities required for teaching and learning:

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

12- Requirements for Disable facilities:

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

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

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	2022-2023

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- program objectives served by the course:

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

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

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

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

5- Learning outcomes of the course (LOs)

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

CR(2.1)	Recognize to apply basic laws to resistive circuits.
CR(2.2, 3.1)	Recognize to perform mesh and nodal analysis.
CR(2.3, 3.2)	Apply knowledge to apply circuit theorems.
CR(4.1, 5.1)	Apply knowledge to use phasors to analyze steady-state sinusoidal circuit analysis.
CR(2.4)	Apply knowledge to calculate the complex power.

6- Program competencies served by the course:

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

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

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

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

8- Course content and the relation between 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	CR(2.1)
2	Magnetic field quantities	2	2	0	CR(2.1)
3	Simple resistive circuits+ Solved examples+ Quiz (1).	2	2	0	CR(2.1)
4	Techniques for circuit analysis.	2	2	0	CR(2.2, 3.1)
5	Node voltage method.	2	2	0	CR(2.3, 3.2)
6	Mesh current method.	2	2	0	CR(2.3, 3.2)
7	Source transformation.	2	2	0	CR(2.3, 3.2)
8	Midterm		1.0		
9	Superposition.	2	2	0	CR(2.2, 3.1)
10	Thevenin and Norton equivalent circuits.	2	2	0	CR(2.3, 3.2)
11	Maximum power transfer.	2	2	0	CR(2.4)
12	Quiz (2) + solved examples	2	2	0	CR(4.1, 5.1)
13	Operational Amplifiers.	2	2	0	CR(2.4)
14	Introduction to inductance and capacitance.	2	2	0	CR(2.4)
15	Sinusoidal steady state analysis (a.c. circuits).	2	2	0	CR(2.3, 3.2)
16	Final Exam		2.0		
Total hours		28	28	0	--

9- 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												
CR(2.1)	✓												
CR(2.2, 3.1)	✓	✓											✓
CR(2.3, 3.2)	✓	✓		✓	✓		✓		✓	✓			✓
CR(4.1, 5.1)	✓	✓		✓	✓		✓		✓	✓	✓	✓	✓
CR(2.4)	✓	✓		✓	✓		✓		✓	✓	✓	✓	✓

Notes:

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

10- Student assessment method

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

Course ILOs	Tools of assessment										
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
CR(2.1)											
CR(2.2, 3.1)	✓	✓	✓	✓							✓
CR(2.3, 3.2)	✓	✓	✓	✓					✓		✓
CR(4.1, 5.1)	✓	✓	✓	✓				✓	✓	✓	✓
CR(2.4)	✓	✓	✓	✓				✓	✓	✓	✓

b- 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	
	Quiz (2)	(2.5) marks	
Discussions	15%		
Sheets and Sketches	15%	15 marks	(40) marks
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.

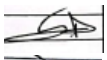
11- Facilities required for teaching and learning:

- 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:	2022/2023	

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

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- program objectives served by the course:

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

OP 1	Sequences and series (including power series).
OP 2	Vectors and planes.
OP 3	Partial differentiation.

OP 4	Introduction to double integrals (including double integrals in polar coordinates).
OP 5	Multiple integrals.
OP 6	Cylindrical and spherical coordinates Vector-valued functions, vector calculus: Green's Theorem, Gauss Theorem and Stokes' Theorem and their applications.
OP7	Complex numbers.

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

Course objectives		program objectives	
oc 1	Explain concepts of sequences and series.	OP1	Sequences and series (including power series).
oc 2	Recognize concepts of mathematical Vectors and planes.	OP2	Vectors and planes.
oc 3	Differentiate between knowledge of mathematics to solve Partial differentiation problems.	OP3	Partial differentiation.
oc 4	Differentiate between the concepts of double integrals	OP4	Introduction to double integrals (including double integrals in polar coordinates).
oc 5	identify how to search and analyze data, to Deal with design situations within solving design problems based on the analytical process for Multiple integrals	OP5	Multiple integrals.
oc 6	demonstrate methodologies of solving engineering problems with Green's Theorem.	OP6	Cylindrical and spherical coordinates Vector-valued functions, vector calculus: Green's Theorem, Gauss Theorem and Stokes' Theorem and their applications.
oc 7	Recognize the theory of equations, and Complex numbers to solve engineering problems.	OP7	Complex numbers.

5- Learning outcomes of the course (LOs)

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

C(1.1)	Explain concepts and theories of mathematics and sciences, appropriate to calculus III.
C(1.2)	Demonstrate methodologies of solving engineering problems, data collection and interpretation
C(1.3)	Produce appropriate solutions for engineering problems based on analytical thinking
C(1.4)	Apply knowledge of mathematics to solve engineering problems.
C(2.1)	Apply knowledge of linear algebraic equations, iterative methods, differential problems, and infinite series to solve engineering problems.
C(2.2)	Make a technical report about application of matrices to solve engineering problems.
C(2.3)	Communicate effectively in tutorial class room with the demonstrator.
C(2.4)	Organize and manages tasks, time, and resources, when solving mathematics problems, and in exams

6- Program competencies served by the course:

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

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

C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions

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

Course (LOs)		program competencies	
C(1.1)	Explain concepts and theories of mathematics and sciences, appropriate to calculus III.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics
C(1.2)	Demonstrate methodologies of solving engineering problems, data collection and interpretation	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics
C(1.3)	Produce appropriate solutions for engineering problems based on analytical thinking	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics
C(1.4)	Apply knowledge of mathematics to solve engineering problems.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics
C(2.1)	Apply knowledge of linear algebraic equations, iterative methods, differential problems, and infinite series to solve engineering problems.	C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions
C(2.2)	Make a technical report about application of matrices to solve engineering problems.	C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions
C(2.3)	Communicate effectively in tutorial class room with the demonstrator.	C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions
C(2.4)	Organize and manages tasks, time, and resources, when solving mathematics problems, and in exams	C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions

8- 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	C(1.1, 1.2)
2	Vectors and planes.	2	2	0	C(1.1, 1.3)
3	Partial differentiation	2	2	0	C(2.2, 2.3, 2.4)
4	Introduction to double integrals	2	2	0	C(1.2, 1.4)

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

9- 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(1.1)	✓	✓		✓	✓						✓	✓	
C(1.2)	✓	✓		✓	✓						✓	✓	
C(1.3)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(1.4)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(2.1)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(2.2)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(2.3)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(2.4)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(2.5)	✓	✓		✓	✓		✓		✓	✓	✓	✓	

Notes:

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

The Tutorials concerns the brain storming and the problem solving.

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

10- Student assessment method

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

Course ILOs	Tools of assessment

	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
C(1.1)	✓	✓	✓	✓				✓	✓	✓	
C(1.2)	✓	✓	✓	✓				✓	✓	✓	
C(1.3)	✓	✓	✓	✓				✓	✓	✓	
C(1.4)	✓	✓	✓	✓				✓	✓	✓	
C(2.1)	✓	✓	✓	✓				✓	✓	✓	
C(2.2)	✓	✓	✓	✓				✓	✓	✓	
C(2.3)	✓	✓	✓	✓				✓	✓	✓	
C(2.4)	✓	✓	✓	✓				✓	✓	✓	
C(2.5)	✓	✓	✓	✓				✓	✓	✓	

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:	2022/2023	

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

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	**2022-2023**

B- Basic Information

Course Name	Strength and Testing of Materials
Code	ENGR 206
Course Level	Second level courses (Sophomore)- First semester (Fall)
Credit 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- program objectives served by the course:

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

OP 1	Stress and strain in components

OP 2	Mechanical behavior of materials under tensile, compressive, and shear loads.
OP 3	Mechanical behavior of materials under hardness, impact loading, fracture and fatigue.
OP 4	Analysis of stresses and the corresponding deformations in components
OP 5	Axial loading, torsion, and bending
OP 6	Statically indeterminate problems.
OP 7	Transformation of plane stresses,
OP 8	Mohr's circle.
Op9	Transverse loading.

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

Course objectives		program objectives	
oc 1	Identify the fundamentals of stress and strain in components	OP1	Stress and strain in components
oc 2	Recognize how apply the mechanical behavior of materials under tensile, compressive, and shear loads.	OP2	Mechanical behavior of materials under tensile, compressive, and shear loads.
oc 3	identify and develop the appropriate experiment discussion of mechanical behavior of materials under hardness, impact loading, fracture and fatigue.	OP3	Mechanical behavior of materials under hardness, impact loading, fracture and fatigue.
oc 4	identify the application of stresses and the corresponding deformations in components	OP4	Analysis of stresses and the corresponding deformations in components
oc 5	Recognize how to search and analyze data, to deal with axial loading, torsion, and bending	OP5	Axial loading, torsion, and bending
oc 6	apply the analytics of statically indeterminate problems	OP6	Statically indeterminate problems.
oc 7	Apply the application of transformation of plane stresses	OP7	Transformation of plane stresses,
oc 8	solve problems on Mohr's circle.	OP8	Mohr's circle.
oc 9	identify the application of transverse loading	OP9	Transverse loading.

5- Learning outcomes of the course (LOs)

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

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

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

6- Program competencies served by the course:

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

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

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

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

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

Week 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	C(1.1, 1.2)
2	Mechanical behavior of materials under tensile	2	2	0	C(1.1, 1.3)
3	Compressive, and shear loads	2	2	0	C(5.1, 5.2)
4	Hardness, impact loading	2	2	0	C(1.2, 2.1)
5	Fracture and fatigue.	2	2	0	C(1.2, 2.1)

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

9- 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(1.1)	✓	✓		✓	✓				✓	✓	✓	✓	
C(1.2)	✓	✓		✓	✓				✓	✓	✓	✓	
C(1.2)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(2.1)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(5.1)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(5.2)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(5.3)	✓	✓		✓	✓		✓		✓	✓	✓	✓	

Notes:

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

The Tutorials concerns the brain storming and the problem solving.

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

10- 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(1.1)	✓	✓	✓	✓				✓			
C(1.2)	✓	✓	✓	✓				✓			
C(1.2)	✓	✓	✓	✓			✓	✓	✓		
C(2.1)	✓	✓	✓	✓			✓	✓	✓	✓	
C(5.1)	✓	✓	✓	✓			✓	✓	✓	✓	
C(5.2)	✓	✓	✓	✓			✓	✓	✓	✓	
C(5.3)	✓	✓	✓	✓			✓	✓	✓	✓	

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:

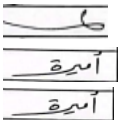
- Appropriate teaching design studios including presentation board, data show
- Google classroom
- E- learning

12- Requirements for Disable facilities:

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

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

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



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	2022-2023

B- Basic Information

Course Name	Lower Intermediate English
Code	ENGL 102
Course Level	Second level courses (Sophomore)- First semester (Fall)
Credit Hours	3Cr. Hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	ENGL 101
Instructor name/Email	Dr. Ahmed El-Husani ahmed.elhousiny@sva.edu.eg

C- Professional information

1-Course core

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

2- Course 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

1- program objectives served by the course:

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

OP 1	Identifies good reading skills enabling them to read faster, comprehend and identify required information.
OP 2	Modifies effective and appropriate skills to present information in a concise manner.
OP 3	Distinguishes between major grammatical structures and use them in writing and speaking.
OP 4	Identifies the meanings of word-roots and use such knowledge in recognizing and learning the meanings of other terms of importance.

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

Course objectives	program objectives

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

3- Learning outcomes of the course (LOs)

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

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

4- Program competencies served by the course:

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

C7	Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams
C8	Assume full responsibility for own learning and self-development, engage in lifelong learning, and demonstrate the capacity to engage in post-graduate and research studies.

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

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

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

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	C(7.1, 7.2)
2	Uunderstand that readers in different disciplines approach text with different expectations and preferences	2	2	0	C(7.1, 7.3)
3	Imagine meaningful shapes for ideas, so that a text's form is a natural manifestation of what one wants to say	2	2	0	C(7.3, 8.1)
4	Recognize identifiable genres and shape texts around different generic expectations where appropriate	2	2	0	C(7.2, 8.1)
5	Sequence thoughts effectively, articulating connections between a text's individual discussions	2	2	0	C(7.2, 8.1)
6	How to write CVs and official letters	2	2	0	C(7.2, 8.1)
7	How to write CVs and official letters	2	2	0	C(7.2, 8.1)
8	Midterm	1.0			
9	About erosion and weathering of the rocks.	2	2	0	C(7.2, 8.1)
10	The present condition & the past perfect	2	2	0	C(7.2, 8.1)
11	Dailogues	2	2	0	C(7.3, 8.1)
12	Revision	2	2	0	C(7.2, 8.1)
13	Revision	2	2	0	C(7.1,7.2 ,8.1)
14	Recognize identifiable genres and shape texts around different generic expectations where appropriate	2	2	0	C(7.2, 8.1)
15	Sequence thoughts effectively, articulating connections between a text's individual discussions	2	2	0	C(7.2, 8.1)
16	Final Exam	2.0			
Total hours		28	28	0	--

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

a- Teaching and Learning Methods

Course learning Outcomes (LOs)	On line / face to face lectures	Tutorials: sheets/ sketches	projects	Problem solving	Brain storming	Practical: lab	Discovering / self learning	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
C(7.1)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(7.2)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(7.3)	✓	✓		✓	✓		✓		✓	✓	✓	✓	
C(8.1)	✓	✓		✓	✓		✓		✓	✓	✓	✓	

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

8- Student assessment method

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(7.1)	✓	✓	✓	✓				✓	✓	✓	
C(7.2)	✓	✓	✓	✓				✓	✓	✓	
C(7.3)	✓	✓	✓	✓			✓	✓	✓	✓	
C(8.1)	✓	✓	✓	✓			✓	✓	✓	✓	

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)	(5) marks	(50) marks
	Quiz (2)	(5) marks	
Discussions	5%	10 marks	
Sheets and Sketches	45%		
Researches and reports	10%		
the Projects	10%		
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	▪ 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:	2022/2023

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	2022-2023

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- program objectives served by the course:

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

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

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

	Course objectives		program objectives
oc 1	Recognize the main topics and feature of human rights concerning the engineers and the clients.	OP1	Raising students' awareness of the importance of preserving the built environment in its social, economic and environmental aspects to achieve the goals of sustainable development 2030.
	identify on analyzing and presenting the international institutional framework to deal with human rights issues.	OP2	Developing students' professional skills and the ability to self- and continuous learning.
	Recognize the main topics and feature of human rights concerning the engineers and the clients.	OP3	Students gain experiences in effective communication with the surrounding community.
		OP4	Provide students with the skills to conduct scientific research
oc 2	identify on analyzing and presenting the international institutional framework to deal with human rights issues.	OP1	Raising students' awareness of the importance of preserving the built environment in its social, economic and environmental aspects to achieve the goals of sustainable development 2030.
	Recognize the main topics and feature of human rights concerning the engineers and the clients.	OP2	Developing students' professional skills and the ability to self- and continuous learning.
		OP3	Students gain experiences in effective communication with the surrounding community.
oc 3	identify on analyzing and presenting the international institutional framework to deal with human rights issues.	OP1	Raising students' awareness of the importance of preserving the built environment in its social, economic and environmental aspects to achieve the goals of sustainable development 2030.
		OP2	Developing students' professional skills and the ability to self- and continuous learning.
		OP3	Students gain experiences in effective communication with the surrounding community.

5- Learning outcomes of the course (LOs)

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

C(1.1, 5.1)	Apply the concept of the human rights and the international organizations and the non-governmental organizations in the field of human rights.
C(4.1, 7.1)	Present research issues and share teams while conducting research's
C(7.2)	Produce the frame work of the various organizations in protecting the human rights.
C(1.2)	develop the case studies concerning the self-learning.
C(10.1)	Apply the self-learning concept to in contact with the main issues related to the human rights.

6- Program competencies served by the course:

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

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

C7	Function efficiently as an individual and as a member of multi-disciplinary and multicultural teams.
C10	Acquire and apply new knowledge; and practice self, lifelong and other learning strategies.

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

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

8- Course content and the relation 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	C(7.2, 10.1)
2	Types of human rights as stated in the Egyptian constitution 1971.	0	2	0	C(7.2, 10.1)
3	Human rights in light of the provisions of Islamic law	0	2	0	C(7.2, 10.1)
4	Human rights as stated on both Holly Quran and in the prophet Mohamed Sunna. (Research as case studies)	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2, 10.1)
5	Egyptian human rights during the eras of modern Egypt (one hundred years).	0	2	0	C(7.2, 10.1)
6	The changes of human rights since early age of Egyptian kingdom till now. (Research as case studies)	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2, 10.1)
7	Human rights in Egyptian law.	0	2	0	C(7.2, 10.1)

8	Midterm		1.0		
9	Statements of human rights as specified in various countries in the world.	0	2	0	C(7.2, 10.1)
10	Case study of human rights in various countries in the world (Research)	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2, 10.1)
11	Human rights between the individual and society and between state sovereignty and international protection. (Research)	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2, 10.1)
12	The conflict between nations sovereignty and international society in relation to human rights concept. (Research)	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2, 10.1)
13	The loss of Egyptian human rights between inherited family traditions and some ugly society habits. (Research)	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2, 10.1)
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	C(1.1, 5.1, 4.1, 7.1,7.2,1.2, 10.1)
15	The sodden abrupt changes of western nations policy towards the mean and Arab countries, and relation to human rights. (Research)	0	2	0	C(1.1, 5.1, 4.1, 7.1,7.2,1.2, 10.1)
16	Final Exam		2.0		
Total hours		0	28	0	--

9- 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(1.1, 5.1)		✓							✓	✓			
C(4.1, 7.1)		✓									✓		
C(7.2)		✓								✓		✓	
C(1.2)		✓									✓		
C(7.2)		✓					✓					✓	

Notes:

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

10- Student assessment method

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

Course ILOs	Tools of assessment										
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	modelling
C(1.1, 5.1)									✓		
C(4.1, 7.1)										✓	
C(7.2)		✓	✓					✓	✓		
C(1.2)										✓	
C(7.2)		✓	✓					✓			

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		weekly
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:

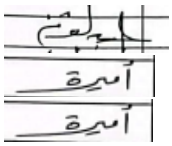
- Appropriate teaching design studios including presentation board, data show
- Google classroom

- 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:	2022/2023



Second level courses (Sophomore)

Second semester (Spring)

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

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	**2022-2023**

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- program objectives served by the course:

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

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

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

Course objectives		program objectives	
oc 1	Recognize the regarding of power calculations in ac circuits.	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 2	Recognize the condition of resonance circuits.	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
oc 3	classify the used AC electric circuits and systems with AC power concepts.	OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications
oc 4	Recognize analysis of the concepts of impedance, phase and frequency response.	OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.

5- Learning outcomes of the course (LOs)

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

CR(2.2, 4.1)	Recognize circuit analysis methods to solve electrical circuits problems that involve AC power sources and AC power
CR(2.3, 3.1)	Solve the transient states in the circuits, makes the comments of expected results and presents them in graphical forms.
CR(2.4, 5.1)	Uses different software tools for the analysis of AC circuits.

6- Program competencies served by the course:

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

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

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

Course (LOs)		program competencies	
CR(2.2, 4.1)	Recognize circuit analysis methods to solve electrical circuits problems that involve AC power sources and AC power	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
		CR 4	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application.

CR(2.3, 3.1)	Solve the transient states in the circuits, makes the comments of expected results and presents them in graphical forms.	CR2 CR 3	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
CR(2.4, 5.1)	Uses different software tools for the analysis of AC circuits.	CR2 CR 5	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

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

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

9- The 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
CR(2.2, 4.1)	✓	✓											
CR(2.3, 3.1)	✓	✓	✓	✓	✓		✓		✓	✓			✓
CR(2.4, 5.1)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓

Notes:

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

10- 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	
CR(2.2, 4.1)												
CR(2.3, 3.1)	✓	✓	✓	✓	✓				✓		✓	
CR(2.4, 5.1)	✓	✓	✓	✓	✓			✓	✓	✓	✓	

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:	2022/2023

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	**2022-2023**

B- Basic Information

Course Name	Electric circuits lab
Code	CECE 213
Course Level	Second level courses (Sophomore) - Second semester (Spring)
Credit Hours	1 Cr. hr
Lectures	0hr
lab	3hr
Total	3hr
Prerequisite	Conc. with CECE 203
Instructor name/Email	Dr. Ibrahim Ali Mahmoud Abdel Dayem, Eng. Aliaa Mosa Freej dr.ibrahim@sva.edu.eg, aliaa.mousa@sva.edu.eg

C- Professional information

1-Course core

Experiments illustrating material in CECE 203.

2-Course learning objectives:

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

1- program objectives served by the course:

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

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

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

Course objectives	program objectives

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

2- Learning outcomes of the course (LOs)

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

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

3- Program competencies served by the course:

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

CR5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

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

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

	problems that involve AC power sources and AC power		electrical/electronic/digital equipment, systems and services.
CR(5.3)	produce experiments concerning the electric circuits with the use of proper instrumentation and explain the results	CR 5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.
CR(5.4)	Use laboratory to get the transient states in the circuits, makes the comments of expected results and presents them in graphical forms	CR 5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.
CR(5.5)	Express the performance of AC circuits by using the software tools	CR 5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

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	Resistors and the Color Code.	2	2	0	CR(5.1)
2	Ohm's Law.	2	2	0	CR(5.1)
3	Series Resistance.	2	2	0	CR(5.1)
4	Series dc Circuits.	2	2	0	CR(5.2)
5	Parallel Resistance	2	2	0	CR(5.3)
6	Parallel dc Circuits.	2	2	0	CR(5.3)
7	Series-Parallel dc Circuits.	2	2	0	CR(5.3)
8	Midterm			1.0	
9	Thevenin's Theorem and Maximum Power Transfer.	2	2	0	CR(5.2)
10	Norton's Theorem and Current Sources.	2	2	0	CR(5.3)
11	Methods of Analysis.	2	2	0	CR(5.5)
12	Tests of circuits	2	2	0	CR(5.4)
13	Capacitors.	2	2	0	CR(5.5)
14	Active Filters	2	2	0	CR(5.5)
15	R-L and R-L-C Circuits with a dc Source Voltage	2	2	0	CR(5.3)
16	Final Exam			2.0	
Total hours		28	28	0	--

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

Teaching and Learning Methods

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

Notes:

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

7- 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
CR(5.1)		✓	✓	✓	✓	✓	✓	✓		✓	
CR(5.2)		✓	✓	✓	✓	✓	✓	✓		✓	
CR(5.3)		✓	✓	✓	✓	✓	✓	✓		✓	
CR(5.4)		✓	✓	✓	✓	✓	✓	✓		✓	
CR(5.5)		✓	✓	✓	✓	✓	✓	✓		✓	

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

quizes	Quiz (1) Quiz (2)	(0) marks (0) marks	(60) 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:	2022/2023

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	**2022-2023**

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.

1- program objectives served by the course:

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

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

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

Course objectives	program objectives

oc 1	Recognize the basic philosophy underlying the various number systems, negative number representation, binary.	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 2	Recognize the arithmetic, binary codes and error detecting and correcting binary codes.	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
oc 3	Recognize the combinational logic design of various logic and switching devices and their realization.	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
		OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
oc 4	Recognize the basic philosophy underlying the various number systems, negative number representation, binary.	OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications
		OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.

3- Learning outcomes of the course (LOs)

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

CR(2.1)	Recognize various types of number systems and their conversions.
CR(2.2)	Recognize the Boolean expressions and apply the Boolean theorems through logical gates
CR(2.3)	Prepare the variety of logical devices using combinational circuits concepts.
CR(3.4, 4.1)	Prepare the construction of programmable logic devices and different types of ROM
CR(3.5,4.2, 5.1)	Produce the sequential circuits like registers and counters using flip-flops.

4- Program competencies served by the course:

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

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

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

Course (LOs)		program competencies	
CR(2.1)	Recognize various types of number systems and their conversions.	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design

CR(2.2)	Recognize the Boolean expressions and apply the Boolean theorems through logical gates	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
CR(2.3)	Prepare the variety of logical devices using combinational circuits concepts. Prepare the construction of programmable logic devices and different types of ROM	CR2	Design, model and analyze an electrical/electronic/digital system or component for a specific application; and identify the tools required to optimize this design
		CR 3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
CR(3.4, 4.1)	Produce the sequential circuits like registers and counters using flip-flops. Recognize various types of number systems and their conversions.	CR 3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
		CR 4	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application
CR(3.5,4.2, 5.1)	Recognize the Boolean expressions and apply the Boolean theorems through logical gates	CR 3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
		CR 4	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application
		CR 5	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application

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	CR(2.1)
2	Ripple carry and look ahead adder description	2	2	0	CR(2.1)
3	Look ahead carry adder + Solved examples+ Quiz (1).	2	2	0	CR(2.1)
4	Comparator description	2	2	0	CR(2.2)
5	comparator+ solved examples.	2	2	0	CR(2.3)
6	Decoder and Encoder	2	2	0	CR(2.3)
7	Multiplexer.				CR(2.3)
8	Midterm		1.0		
9	Design Exercises	2	2	0	CR(2.2)
10	Sequential circuits and latches	2	2	0	CR(2.3)

11	Sequential circuits and latches	2	2	0	CR(3.5,4.2,5.1)
12	Quiz (2) + solved examples	2	2	0	CR(3.4, 4.1)
13	Flip Flop	2	2	0	CR(3.5,4.2,5.1)
14	Shift Registers	2	2	0	CR(3.5,4.2,5.1)
15	Memory				CR(2.3)
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												
CR(2.1)	✓												
CR(2.2)	✓	✓											
CR(2.3)	✓	✓	✓	✓	✓		✓		✓	✓			✓
CR(3.4, 4.1)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
CR(3.5,4.2, 5.1)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓

Notes:

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

The Tutorials concerns the brain storming and the problem solving.

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

8- Student assessment method

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										
CR(2.1)											
CR(2.2)											
CR(2.3)	✓	✓	✓	✓	✓		✓		✓		✓
CR(3.4, 4.1)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
CR(3.5,4.2, 5.1)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓

b- Time schedule of assessment

Quizzes	Quiz (1) Quiz (2)	Week (3) 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) Quiz (2)	(5) marks (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:	2022/2023

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	2022-2023

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- program objectives served by the course:

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

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

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

Course objectives	program objectives

oc 1	Recognize the number representation and conversion between different representation in digital electronic circuits	OP 12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
oc 2	Recognize the logic processes and implement logical operations using combinational logic circuits. Recognize the characteristics of memory and their classification.	OP5	Prepare students for engineering analyses and problem-solving using appropriate mathematical and computational methodologies.
		OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
oc 3	Recognize the theoretical concepts through laboratory and simulation experiments. Recognize the number representation and conversion between different representation in digital electronic circuits	OP6	Prepare undergraduate students who can create new ways to meet society's needs by applying fundamentals of engineering sciences to practical problems using design and syntheses of electrical components, circuits, and systems.
		OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.
oc 4	Recognize the logic processes and implement logical operations using combinational logic circuits.	OP7	Teach students to use experimental and data analysis techniques for electrical power engineering applications
		OP12	Prepare engineers who can work on electrical power systems, including designing and realizing such systems.

5- Learning outcomes of the course (LOs)

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

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

6- Program competencies served by the course:

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

CR3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital engineering using technological and professional tools.
CR 4	Estimate and measure the performance of an electrical/electronic/digital system and circuit under specific input excitation, and evaluate its suitability for a specific application
CR 5	Adopt suitable national and international standards and codes to: design, build, operate, inspect and maintain electrical/electronic/digital equipment, systems and services.

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

Course (LOs)		program competencies	
CR(3.1)	Produce the Concept of Number Systems.	CR3	Design and implement: elements, modules, sub-systems or systems in electrical/electronic/digital

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

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

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

15	Look ahead carry adder	2	2	0	CR(4.1)
16	Final Exam		2.0		
Total hours		28	28	0	--

9- 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
CR(3.1)	✓	✓	✓			✓	✓			✓	✓	✓	
CR(3.2)	✓	✓	✓			✓	✓			✓	✓	✓	
CR(4.1)	✓	✓	✓			✓	✓			✓	✓	✓	
CR(4.2)	✓	✓	✓			✓	✓			✓	✓	✓	
CR(5.1)	✓	✓	✓			✓	✓			✓	✓	✓	

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

10- Student assessment method

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

Course ILOs	Tools of assessment										
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation	Modeling
CR(3.1)		✓	✓	✓	✓	✓	✓	✓		✓	
CR(3.2)		✓	✓	✓	✓	✓	✓	✓		✓	
CR(4.1)		✓	✓	✓	✓	✓	✓	✓		✓	
CR(4.2)		✓	✓	✓	✓	✓	✓	✓		✓	
CR(5.1)		✓	✓	✓	✓	✓	✓	✓		✓	

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:

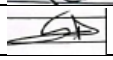
a)	Course notes	Lecture notes and handouts
b)	Required books	▪ Digital fundamentals, 11th edition by Thomas l, Floyd ▪ Digital design principles and practices- 4th ed, john f. wakerly, prentice hall, 2005.
c)	Recommend books	Mentioned at time.
d)	Periodicals, Web sites, etc	No periodicals are needed.

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:	2022/2023	

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	2022-2023

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- program objectives served by the course:

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

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

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

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

oc 2	Recognize how to solve problems of these physical principles.	OP 1	Understanding some of the basics of optics, waves, and modern physics as a background beneficial to electricity and electronics programs.
oc 3	Identify the developing an intuition (feeling) and knowledge of the physical world.	OP 1	Understanding some of the basics of optics, waves, and modern physics as a background beneficial to electricity and electronics programs.
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...	OP 1	Understanding some of the basics of optics, waves, and modern physics as a background beneficial to electricity and electronics programs.
oc 5	Describe the basic science (e.g. Physics) and technology (e.g. engineering) are two faces of the same coin.	OP 1	Understanding some of the basics of optics, waves, and modern physics as a background beneficial to electricity and electronics programs.

5- Learning outcomes of the course (LOs)

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

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

6- Program competencies served by the course:

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

C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions
C4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles

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

Course (LOs)		program competencies	
C(2.1)	Explain the ability to understand the basics of physics related to several branches in engineering.	C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions
C(2.2)	describe the ability to research a topic, develop an argument, and organize supporting details.	C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions
C(2.3)	Apply acknowledge effectively, recognizing the two as distinct activities and developing strategies for generating critical distance when rereading.	C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions
C(4.1)	Conduct and develop a claim that matters in the context of a continuing discussion,	C4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety

	writing with a sense of intellectual purpose and stake.	requirements, environmental issues and risk management principles
C(4.2)	Prepare and present engineering designs a process of thinking, not just deliveringC4 information	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles
C(4.3)	Explain the ability to understand the basics of physics related to several branches inC4 engineering.	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles

8- 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	C(2.1,2.2,2.3,4.1,4.2,4.3)
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	C(2.1,2.2,2.3,4.1,4.2,4.3)
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	C(2.1,2.2,2.3,4.1,4.2,4.3)
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	C(2.1,2.2,2.3,4.1,4.2,4.3)
5	Waves in interference, details of the Young's double slit interference. Conditions for constructive and distractive interference.	2	2	0	C(2.1,2.2,2.3,4.1,4.2,4.3)
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	C(2.1,2.2,2.3,4.1,4.2,4.3)
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	2	2	0	C(2.1,2.2,2.3,4.1,4.2,4.3)

	diffraction patterns. Diffraction pattern created by a ball, a penny, or a slit. Some daily life examples of diffraction. Nature of light and ray optics. Huygens's principle. Fresnel and Fraunhofer diffraction approximations. Diffraction patterns from Narrow slits.				
8	Midterm		1.0		
9	Intensity of single-slit diffraction patterns. Difference between interference and diffraction patterns. Relationship: Diffraction to Interference. Intensity of two-slit diffraction patterns. Multiple-slit interference pattern. Resolution of single-slit and circular apertures. Rayleigh resolution criteria. The diffraction grating.	2	2	0	C(2.1,2.2,2.3,4.1,4.2,4.3)
10	How a diffraction grating is made. Transmission and a reflection grating. Calculation of the wavelength of monochromatic light using a diffraction grating. The intensity maxima in a diffraction grating pattern.	2	2	0	C(2.1,2.2,2.3,4.1,4.2,4.3)
11	Classification of the material based on the atomic periodic system. Diffraction of X-rays by crystals. Macroscopic and microscopic crystal structures. Bragg's law.	2	2	0	C(2.1,2.2,2.3,4.1,4.2,4.3)
12	Polarization of light waves. Background: Electromagnetic wave nature of light. Polarization by selective absorption. Malus's law of the intensity of polarized light by selective absorption. Polarization by reflection.	2	2	0	C(2.1,2.2,2.3,4.1,4.2,4.3)
13	An application of polarization: optical stress analysis. Application of polarization in photography. Polarization by scattering.	2	2	0	C(2.1,2.2,2.3,4.1,4.2,4.3)
14	Ray optics (geometrical optics). Image formation by reflection (mirrors) and by refraction (lenses). Concave and convex (divergence) mirrors.	2	2	0	C(2.1,2.2,2.3,4.1,4.2,4.3)
15	The radius of curvature and cementer of curvature. Sign conventions of the radius of curvature for mirrors and lenses. Types of geometrical images: real and virtual images				C(2.1,2.2,2.3,4.1,4.2,4.3)
16	Final Exam	2.0			
Total hours		28	28	0	--

9- 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.

10- 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:	2022/2023

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

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	2022-2023

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- program objectives served by the course:

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

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

OP 7	Understand how to solve problem that focused on single and double slit.

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

	Course objectives		program objectives
oc 1	Recognize how to formulate the optics.	OP 1	Understand how to formulate the optics
oc 2	Identify the wave nature of light in the life science	OP 2	Understand how to operate with wave nature of light.
oc 3	Identify the developing and appropriate experiment discussion of models and theories of interferences of light.	OP 3	Understand about overview of interference of light with different surfaces and materials.
oc 4	Recognize the application of reflection and refraction of light in industrial application.	OP 4	Understand how to use the laws of reflection, refraction and diffraction of light.
oc 5	Recognize the laws of refraction of light.	OP 5	Understand how to solve problem that focused on rrefraction of light.
oc 6	Identify the application of diffraction of light in industrial application.	OP 6	Understand how to solve problem that focused on diffraction grating.
oc 7	Recognize the application of interference of light in the industrial application.	OP 7	Understand how to solve problem that focused on single and double slit.

5- Learning outcomes of the course (LOs)

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

C(2.1)	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.
C(2.2)	Use tools for evaluate the reaction of light to predict refractive index of a prism. Solve the different problem of combustion. Analyze application of interference of light. Identify various industrial processes such as the solar panels industry
C(2.3,4.1)	Prepare and present the flexible model recalling the final configuration of masses
C(4.2)	Express using the model, measuring instruments, and lab tools to determine the amount of salt

6- Program competencies served by the course:

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

C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
C4	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues and risk management principles.

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

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

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduction to optics.	0	0	2	C(2.1)
2	Wave nature of light.	0	0	2	C(2.1)
3	Photoelectric effect.	0	0	2	C(2.1)
4	Verification of inverse square law.	0	0	2	C(2.1)
5	Newtons rings.	0	0	2	C(2.1)

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

8- 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.

9- 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:	2022/2023

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

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	2022-2023

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- program objectives served by the course:

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

OP 1	Know the concept of ordinary differential equations.
OP 2	Learn how to use methods of solution and applications of first order differential equations
OP 3	Learn how to use methods of solution and applications of second order differential equations
OP 4	Learn how to solve power series solutions
OP 5	Demonstrate how to use Laplace transforms
OP 6	Learn how to solve the first order linear systems by Laplace transforms.
OP 7	Learn how to use theory of integration with applications including areas, volumes, lengths, moments, center of mass and work

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

	Course objectives		program objectives
oc 1	explaining the concepts of ordinary differential equations	OP 1	Know the concept of ordinary differential equations.
oc 2	explain concepts of mathematical of first order differential equations	OP 2	Learn how to use methods of solution and applications of first order differential equations
oc 3	Recognize how to apply knowledge of mathematics to solve of second order differential equation problems.	OP 3	Learn how to use methods of solution and applications of second order differential equations
oc 4	Explain Concepts of power series solutions.	OP 4	Learn how to solve 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.	OP 5	Demonstrate how to use Laplace transforms
oc 6	Recognize how to use to demonstrate methodologies of solving engineering problems with Laplace transforms	OP 6	Learn how to solve the first order linear systems by Laplace transforms.
oc 7	Recognize how to apply knowledge of Theory of equations, and areas, volumes, lengths, moments to solve engineering problems.	OP 7	Learn how to use theory of integration with applications including areas, volumes, lengths, moments, center of mass and work

5- Learning outcomes of the course (LOs)

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

C(1.1,2.1)	Explain concepts and theories of mathematics and sciences, appropriate to differential equations, function and practice.
C(1.2,2.2)	Demonstrate methodologies of solving engineering problems, data collection and interpretation.
C(1.3,2.3)	Produce the appropriate solutions for engineering problems based on analytical thinking
C(1.4)	Apply knowledge of mathematics to solve engineering problems.
C(1.5)	Apply knowledge of linear algebraic equations, iterative methods, and infinite series to solve engineering problems.
C(1.6,2.4)	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.
C(1.7)	Effectively manages tasks, time, and resources, when solving mathematics problems, and in exams.
C(1.8)	Apply knowledge of mathematics to solve differential problems

6- Program competencies served by the course:

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

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

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

Course (LOs)		program competencies	
C(1.1,2.1)	Explain concepts and theories of mathematics and sciences, appropriate to differential equations, function and practice. Demonstrate methodologies of solving engineering problems, data collection and interpretation.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
		C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
C(1.2,2.2)	Produce the appropriate solutions for engineering problems based on analytical thinking Apply knowledge of mathematics to solve engineering problems.	C1	Identify, formulate, and solve complex engineering problems by applying engineering fundamentals, basic science and mathematics.
		C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.

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

8- 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	C(1.1,1.2,1.3,1.4, 1.5,1.6,1.7,1.8,2.1 ,2.2,2.3,2.4)
2	Methods of solution and applications of first order differential equations	2	2	0	C(1.1,1.2,1.3,1.4, 1.5,1.6,1.7,1.8,2.1 ,2.2,2.3,2.4)
3	Methods of solution and applications of second order differential equations	2	2	0	C(1.1,1.2,1.3,1.4, 1.5,1.6,1.7,1.8,2.1 ,2.2,2.3,2.4)
4	Laplace transforms	2	2	0	C(1.2,2.2)
5	Solutions of first order linear systems by Laplace transforms	2	2	0	C(1.2,2.2)
6	Functions and limits,	2	2	0	C(1.3,2.3)
7	Differentiation with applications including maxima and minima				C(1.3,2.3)
8	Midterm		1.0		
9	Maxima and minima	2	2	0	C(1.3,2.3)
10	Theory of integration with applications including areas.	2	2	0	C(1.5,1.6,2.4)
11	Volumes.	2	2	0	C(1.7,1.8)
12	Lengths.	2	2	0	C(1.7,1.8)
13	Moments.	2	2	0	C(1.7,1.8)
14	Center of mass and work	2	2	0	C(1.7,1.8)
15	Revision				C(1.7,1.8)
16	Final Exam		2.0		
Total hours		28	28	0	--

9- 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
C(1.1,2.1)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
C(1.2,2.2)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
C(1.3,2.3)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
C(1.4)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
C(1.5)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
C(1.6,2.4)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
C(1.7)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓
C(1.8)	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓

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

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

Course ILOs	Tools of assessment											
	quizzes	Mid -term exam	Final exam	sheets/ sketches	projects	Practical: lab	Oral exam	discussions	Reports/ researches	presentation		modelling
C(1.1,2.1)	✓	✓	✓	✓				✓	✓	✓		
C(1.2,2.2)	✓	✓	✓	✓				✓	✓	✓		
C(1.3,2.3)	✓	✓	✓	✓				✓	✓	✓		
C(1.4)	✓	✓	✓	✓				✓	✓	✓		
C(1.5)	✓	✓	✓	✓				✓	✓	✓		
C(1.6,2.4)	✓	✓	✓	✓				✓	✓	✓		
C(1.7)	✓	✓	✓	✓				✓	✓	✓		
C(1.8)	✓	✓	✓	✓				✓	✓	✓		

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

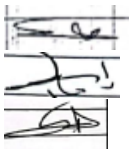
11- Facilities required for teaching and learning:

- 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:	2022/2023



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	2022-2023

B- Basic Information

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

C- 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- program objectives served by the course:

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

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

OP 3	Know about project total investment costs
OP 4	The student should focus on solving derivation of equation of cash future value
OP 5	Solve derivation of equation of cash net present of expected future cash flow
OP 6	Operate calculation of the internal rate of return.

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

Course objectives		program objectives	
oc 1	explain pre-investment phase, project investment phase and operation phase.	OP 1	Explain Phases of engineering projects/operation Know about project activity versus time plan
oc 2	Describe the Bar chart.	OP 2	Know about project total investment costs
oc 3	apply fixed assets costs, current assets costs, pre operation costs.	OP 3	The student should focus on solving derivation of equation of cash future value
oc 4	Recognize the solve derivation of equation of cash future value	OP 4	Solve derivation of equation of cash net present of expected future cash flow
oc 5	Recognize how to solve derivation of equation of cash net present of expected future cash flow	OP 5	Operate calculation of the internal rate of return.
oc6	Recognize how used to operate calculation of the internal rate of return.	OP 6	

5- Learning outcomes of the course (LOs)

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

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

C(3.1)	Make the comparative between the costs and benefits of alternative and mutually exclusive projects using time value of money approaches, including present worth, annual worth, payback period, and Internal Rate of Return (IRR)
C(3.2)	Produces the effect of inflation and taxation on costs and benefits of projects, as well as developing numerical methods to account for their impact
C(3.3)	Prepare the assessment of the elements which may affect the decision-making process for public sector projects
C(6.1)	Develop a strategy to account for uncertainty and risk through the use of sensitivity analysis and probability distribution

6- Program competencies served by the course:

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

C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions
C3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
C6	Plan, supervise and monitor implementation of engineering projects, taking into consideration other trades requirements.

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

	Course (LOs)		program competencies
C(2.1)	Conduct and develop cash flow engineering-economic models of costs and benefits of projects	C2	Develop and conduct appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions
C(3.1)	Make the comparative between the costs and benefits of alternative and mutually exclusive projects using time value of money approaches, including present worth, annual worth, payback period, and Internal Rate of Return (IRR)	C3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.
C(3.2)	Produces the effect of inflation and taxation on costs and benefits of projects, as well as developing numerical methods to account for their impact	C3	Apply engineering design processes to produce cost-effective solutions that meet specified needs with consideration for global, cultural, social, economic, environmental, ethical and other aspects as appropriate to the discipline and within the principles and contexts of sustainable design and development.

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

8- Course content and the relation between the 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	C(2.1)
2	Project activity versus time plan	2	2	0	C(3.1)
3	Project total investment costs; fixed assets costs, current assets costs, pre operation costs.	2	2	0	C(3.1)
4	Derivation of equation of cash future value	2	2	0	C(3.2)
5	Derivation of equation of cash net present of expected future cash flow	2	2	0	C(3.2)
6	Derivation of equation of cash net present of expected future cash flow	2	2	0	C(3.2)
7	calculation of the internal rate of return.	2	2	0	C(3.2)
8	Midterm		1.0		
9	The payback periods.	2	2	0	C(6.1)
10	The payback periods.	2	2	0	C(6.1)
11	The payback periods.	2	2	0	C(6.1)
12	Factory break-even point (BEP).	2	2	0	C(3.3)
13	Factory break-even point (BEP).	2	2	0	C(3.3)
14	Factory break-even point (BEP).	2	2	0	C(3.3)
15	Revision	2	2	0	C(6.1)
16	Final Exam		2.0		
Total hours		28	28	0	--

9- 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
C(2.1)	✓		✓	✓	✓		✓		✓	✓	✓	✓	
C(3.1)	✓		✓	✓	✓		✓		✓	✓	✓	✓	
C(3.2)	✓		✓	✓	✓		✓		✓	✓	✓	✓	
C(3.3)	✓		✓	✓	✓		✓		✓	✓	✓	✓	
C(6.1)	✓		✓	✓	✓		✓		✓	✓	✓	✓	

Notes:

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

10- 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(3.1)	✓	✓	✓					✓	✓	✓	
C(3.2)	✓	✓	✓					✓	✓	✓	
C(3.3)	✓	✓	✓					✓	✓	✓	
C(6.1)	✓	✓	✓					✓	✓	✓	

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 (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	(50) marks
Discussions	25%	10 marks	
Researches and reports	75%		

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