Fourth level courses (Senior-1) - First semester (Fall)

No.	Cod	Course Name	Instructor
1	CECE 317	Electric Machine I	Ass. Prof. Dr. Shady Abdel Aleem
2	CECE 431	Digital Control	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
3	CECE 319	Power Electronics I	Dr. Mostafa Hassan Mostafa Abdel-Gawad
4	CECE 309	Electrical Energy Conversions	Ass. Prof. Dr. Shady Abdel Aleem
5	BASE 306	Research Methods	Dr. Amera Marei
6	BASE 404	Negotiation Skills	Dr. Amera Marei

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

Course specification

Course code:	Course name
CECE 317	Electric Machine I

A- Affiliation

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

B- Basic Information

Course Name	Electric Machine I
Code	CECE 317
Course Level	Fourth level courses (Senior-1) - First semester (Fall)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Lab	2hr
Total	6hr
Prerequisite	CECE 203
Instructor name/Email	Ass. Prof. Dr. Shady Abdel Aleem Shady.Sebai@sva.edu.eg

C- Professional information

1- Course core

D.C. machines : Theory and design: The generation of e.m.f., Work, Power, Force torque, The magnetic circuit of the dc machine, Armature windings, Armature reaction, Inductance, Energy in magnetic field, Commutation, Methods of excitation, Load characteristics of dc generators and motors, Efficiency, Testing of dc machines, Special dc machines, Construction of dc machines, Mechanical details, Design, Main dimensions, The armature, Design of poles and inter-poles, Design of commutator, Calculation of efficiency, Examples on the design of dc motors and generators

2- Course learning objectives:

oc 1	Recognize the DC machines, Theory, design and types, DC Generators and DC Motor machines, Types of DC Generators and DC Motor machines, Starting a DC Motor.
oc 2	Analyze different types of DC generators their characteristics, industrial applications, effect of armature reaction and its assessment.
oc 3	Make the intrept the various losses in DC machines and there.

oc 4	explain the principle of DC motor, electrical characteristics and industrial application, purpose of starter and its design.
oc 5	analyze the purpose of parallel operation of DC generator.
oc6	able to understand features and their industrial applications.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Recognize the construction of D.C machine, different windings.
LO2	Recognize the features and their industrial applications.
LO3	explain the principle of DC motor, electrical characteristics and industrial application, purpose of starter and its design.

b. Psychomotor Domains (LOs):

LO4	Make the intrept the various losses in DC machines and their efficiency.

c. Affective Domains (LOs):

LO5	Express the different types of DC generators their characteristics, industrial applications, effect of armature reaction and its assessment.
LO6	Express the purpose of parallel operation of DC generator.

4- Program competencies served by the course:

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

Lo13.	Explain the basic electrical power system theory.
Lo14.	Merge theories and techniques for calculating short circuit, motor starting, and voltage drop in the projects.
Lo15.	Explain the diverse applications of electrical power equipment
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems
Lo39.	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.
Lo40.	Apply modern techniques, skills and engineering tools to electrical power engineering
Lo41.	Work professionally in multidisciplinary concepts by integrating Electrical power Engineering with Internet of Things, Green Energy and Smart cities concepts.

5- Program LOs served by the course:

Course (LOs)	program LOs

LO1	Recognize the construction of D.C machine, different windings.	**Lo12.**	Theories and techniques for calculating short circuit, motor starting, and voltage drop.
LO2	Recognize the features and their industrial applications.	**Lo13.**	Diverse applications of electrical equipment.
LO3	explain the principle of DC motor, electrical characteristics and industrial application, purpose of starter and its design.	**Lo12.**	Theories and techniques for calculating short circuit, motor starting, and voltage drop.
LO4	Make the intrept the various losses in DC machines and their efficiency.	**Lo26.**	Analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical power and machines
LO5	Express the different types of DC generators their characteristics, industrial applications, effect of armature reaction and its assessment.	**Lo35.**	Test and examine components, equipment and systems of electrical power and machines.
LO6	Express the purpose of parallel operation of DC generator.	**Lo35.**	Test and examine components, equipment and systems of electrical power and machines.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduction	2	2	2	LO1
2	DC Machinery Fundamentals	2	2	2	LO1
3	DC Generators (principle of operation)	2	2	2	LO1
4	DC shunt generator	2	2	2	LO5
5	DC series generator	2	2	2	LO5

6	DC compound generator	2	2	2	LO4
7	DC compound generator	2	2	2	LO4
8	Midterm		1.0		
9	DC Motors	2	2	2	LO3
10	DC motors (Types)	2	2	2	LO3
11	Solving problem in DC motors (Types)	2	2	2	LO6
12	Starting a DC Motor	2	2	2	LO6
13	End of DC Machines General	2	2	2	LO2
14	Revision	2	2	2	LO2
15	Revision	2	2	2	LO2
16	Final Exam		2.0		
Total hours		28	28	28	--

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

Teaching and Learning Methods

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

Notes:

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

The Tutorials concerns the brain storming and the problem solving.

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

8- Student assessment method

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

Tools of assessment

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

b- Time schedule of assessment

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

c- Grading system

quizes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	15%		
Sheets and Sketches	20%		
Researches and reports	20%	5 marks	(40) marks
the Projects	30%		
Practical modelling	20%		
Attendance		(10) marks	
Mid-term exam		(15) marks	
final exam			(60) marks
Total			(100) marks

10- List of references:

a) Course notes	Lecture notes and handouts
b) Required books	P.C.SEN," Principles of electrical machines and power electronics, second edition, John Wiley& Sons
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. Sabah Ibraheen Hahoud
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤

Course specification

Course code:	Course name
CECE 431	Digital Control

A- Affiliation

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

B- Basic Information

Course Name	Digital Control
Code	CECE 431
Course Level	Fourth level courses (Senior-1) - First semester (Fall)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	CECE 305
Instructor name/Email	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul ihab.nabil@sva.edu.eg

C- Professional information

1- Course core

D.C. machines : Theory and design: The generation of e.m.f., Work, Power, Force torque, The magnetic circuit of the dc machine, Armature windings, Armature reaction, Inductance, Energy in magnetic field, Commutation, Methods of excitation, Load characteristics of dc generators and motors, Efficiency, Testing of dc machines, Special dc machines, Construction of dc machines, Mechanical details, Design, Main dimensions, The armature, Design of poles and inter-poles, Design of commutator, Calculation of efficiency, Examples on the design of dc motors and generators

2- Course learning objectives:

oc 1	Recognize the practice in control systems design and analysis, almost all of which involves digital implementation.
oc 2	Recognize the sampling and quantization, z-transform, and other analysis tools used to analyze and design digital control systems.
oc 3	Recognize the state space and input/output representation, modelling and analysis of digital control systems.

oc 4	Recognize the modern control design methodologies for continuous-time and discrete-time systems that may include but are not limited to: state feedback control, state observer design, observer-based compensator design, LQ optimal control, Kalman filtering, LQG design, internal model-based design, Linear Matrix Inequality based designs, nonlinear observers, feedback linearization, model predictive control; understanding the issues regarding digital controller implementation.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Explain the conversion from a continuous-time system into a discrete-time system (frequency and time domain techniques) and compute the z-transform of elementary signals and difference equations.
LO2	identify the poles of a second-order system based on the system's transient response (both continuous time and discrete time systems) and determine the stability of a closed-loop system (both continuous time and discrete time systems).

b. Psychomotor Domains (LOs):

LO3	produce the root locus associated with a system's transfer function (both G[s] and G[z]) and Translate design specifications into allowable dominant pole locations in both the s-plane and the z-plane.
LO4	Apply knowledge for Designing the controllers using root locus techniques (both continuous time and discrete time) and incorporate time delay introduced by a zero-order hold and know how to accommodate this delay during a digital controller design.
LO5	Produce the discrete equivalents of analog transfer functions and apply full-state feedback to achieve acceptable closed-loop behaviour for discrete-time systems.
LO6	Apply knowledge for designing an estimator and use it to control a discrete-time system and design a digital PID controller based on an existing analog PID controller.
LO7	Apply knowledge for Transforming between difference equations, block diagrams, and transfer functions associated with discrete systems and compute closed-form expressions for output waveforms from discrete-time systems with inputs.
LO8	Apply knowledge for degerming the steady-state error in continuous time and discrete time systems and transform discrete-time systems between transfer function and state-space representations and state observer design, observer-based compensator design, LQ optimal control, Kalman filtering, LQG design, internal model-based design, Linear Matrix Inequality based designs, nonlinear observers, feedback linearization, model predictive control; understanding the issues regarding digital controller implementation.

c. Affective Domains (LOs):

- None

4- Program LOs served by the course:

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

Lo11.	Principles of for electrical equipment and systems.
Lo12.	Principles of operation and performance specifications of electrical and electromechanical engineering systems .
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
Lo30.	Integrate electrical, electronic, and mechanical components and equipment with transducers, actuators, and controllers in creatively computer-controlled systems.

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

	Course (LOs)	program competencies	
LO1	Explain the conversion from a continuous-time system into a discrete-time system (frequency and time domain techniques) and compute the z-transform of elementary signals and difference equations.	**Lo11.**	Principles of for electrical equipment and systems.
LO2	identify the poles of a second-order system based on the system's transient response (both continuous time and discrete time systems) and determine the stability of a closed-loop system (both continuous time and discrete time systems).	**Lo12.**	Principles of operation and performance specifications of electrical and electromechanical engineering systems .
LO3	produce the root locus associated with a system's transfer function (both G[s] and G[z]) and Translate design specifications into allowable dominant pole locations in both the s-plane and the z-plane.	**Lo19.**	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
LO4	Apply knowledge for Designing the controllers using root locus techniques (both continuous time and discrete time) and incorporate time delay introduced by a zero-order hold and know how to accommodate this delay during a digital controller design.	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.

LO5	Produce the discrete equivalents of analog transfer functions and apply full-state feedback to achieve acceptable closed-loop behaviour for discrete-time systems.	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO6	Apply knowledge for designing an estimator and use it to control a discrete-time system and design a digital PID controller based on an existing analog PID controller.	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO7	Apply knowledge for Transforming between difference equations, block diagrams, and transfer functions associated with discrete systems and compute closed-form expressions for output waveforms from discrete-time systems with inputs.	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO8	Apply knowledge for determing the steady-state error in continuous time and discrete time systems and transform discrete-time systems between transfer function and state-space representations and state observer design, observer-based compensator design, LQ optimal control, Kalman filtering, LQG design, internal model-based design, Linear Matrix Inequality based designs, nonlinear observers, feedback linearization, model predictive control; understanding the issues regarding digital controller implementation.	**Lo30.**	Integrate electrical, electronic, and mechanical components and equipment with transducers, actuators, and controllers in creatively computer-controlled systems.

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	Introduction: Issues relating to digital control; Design process.	2	2	0	LO1
2	Focuses on sample Theory: Sampling Theory; Aliasing; Zero-Order Hold (ZOH); z-Transform and Difference Equations.	2	2	0	LO1
3	Focuses on difference Equation. Representation of Sample Data Systems: Pulse Transfer Function Representation; State Space Representation+ Quiz (1).	2	2	0	LO1
4	Quiz (1) +Focuses on analysis of Sampled Data Systems: Stability; Sensitivity and Robustness; Controllability/ Observability.	2	2	0	LO2
5	Focuses on Pole/Zero Cancellation. Design of Discrete-Time Controller, Input/Output Approach: Emulating Continuous-Time Controller.	2	2	0	LO2
6	Focuses on Invariant Methods; Direct Design. Design of Discrete-Time Controller.	2	2	0	LO3
7	Polynomial Approach: Problem Formulation.				LO3
8	Midterm		1.0		
9	Focuses on Pole Placement Design; Model Matching Problem. Design of Discrete-Time Controller.	2	2	0	LO4
10	State Space Approach: State Feedback.	2	2	0	LO4
11	Focuses on State Estimation (Observer).	2	2	0	LO5
12	Quiz (2) +Observer Based Compensator.	2	2	0	LO5
13	Focuses on LQ Optimal Control. LQG Control+	2	2	0	LO6
14	Focuses on Special Topics: LMI formulations of control, feedback linearization, nonlinear observers.	2	2	0	LO7
15	Focuses on model predictive control will be shown toward the end of the course.	2	2	0	LO8
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

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

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

Notes:

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

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	modelling
LO1											
LO2											✓
LO3	✓	✓	✓	✓	✓		✓		✓		✓
LO4	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
LO5	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
LO6	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
LO7	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
CS(1.8)	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		weekly
Sheets and Sketches		weekly
Researches and reports		Week (2,3)
the Projects		Week (4,8)
Practical modelling		Week (4,8)
Attendance		weekly
Mid-term exam		Week (8)

final exam		Week (16)	

c- Grading system

quizes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	15%		
Sheets and Sketches	20%		
Researches and reports	20%	5 marks	(40) marks
the Projects	30%		
Practical modelling	20%		
Attendance		(10) marks	
Mid-term exam		(15) marks	
final exam			(60) marks
Total			(100) marks

10- List of references:

a) Course notes	Lecture notes and handouts
b) Required books	M.SAM FADALI," Digital Control Engineering Analysis and Design".3rd edition.
c) Recommend books	Mentioned at time.
d) Periodicals, Web sites, etc	No periodicals are needed.

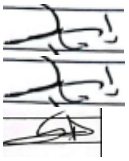
11- Facilities required for teaching and learning:

- 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. Ehab Mohamed Nabil Ismail Abdel Rasoul
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤



Course specification

Course code:	Course name
CECE 319	Power Electronics I
A- Affiliation	
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	202٣-202٤

B-Basic Information

Course Name	Power Electronics I
Code	CECE 319
Course Level	Fourth level courses (Senior-1) - First semester (Fall)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Lab	2hr
Total	6hr
Prerequisite	CECE 302
Instructor name/Email	Dr. Abalah Reda abdullah.reda@sva.edu.eg

C- Professional information

1- Course core

Introduction to power electronics, Power diodes, Thyristors: Construction, Characteristics -application in rectifier circuits (converters), Firing circuits, Power transistors as switches, Phase shift controls, Phase controlled rectifiers static switches

2- Course learning objectives:

oc 1	Recognize the power electronics, Power diodes, Thyristors.
oc 2	Recognize the Characteristics -application in rectifier circuits (converters).
oc 3	Recognize the circuits, Power transistors as switches, Phase shift controls.
oc 4	Recognize the Phase controlled rectifiers-static switches.

3- Learning outcomes of the course (LOs)

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

a. **Cognitive Domains (LOs):**

LO1	Identify students with the power electronics, Power diodes, Thyristors.
LO2	Recognize the Characteristics -application in rectifier circuits (converters).

b. Psychomotor Domains (LOs):

LO3	Prepare students for design the circuits, Power transistors as switches, Phase shift controls.
LO4	Obtain the characteristics-application in rectifier circuits (converters).
LO5	Apply knowledge for Firing the Phase controlled rectifiers-static switches

c. Affective Domains (LOs):

-	None

4- Program LOs served by the course:

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

Lo15.	Explain the diverse applications of electrical power equipment.
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems
Lo30.	Integrate electrical, electronic, and mechanical components and equipment with transducers, actuators, and controllers in creatively computer-controlled systems.

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

Course (LOs)		program competencies	
LO1	Identify students with the power electronics, Power diodes, Thyristors.	**Lo15.**	Explain the diverse applications of electrical power equipment.
LO2	Recognize the Characteristics - application in rectifier circuits (converters).	**Lo19.**	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
LO3	Prepare students for design the circuits, Power transistors as switches, Phase shift controls.	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems

LO4	Obtain the characteristics- application in rectifier circuits (converters).	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems
LO5	Apply knowledge for Firing the Phase controlled rectifiers- static switches	**Lo30.**	Integrate electrical, electronic, and mechanical components and equipment with transducers, actuators, and controllers in creatively computer-controlled systems.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduction: Power electronics component.	2	2	2	LO1,2
2	Focuses on half wave (uncontrolled) controlled rectifier with resistative (R) load.	2	2	2	LO2
3	Focuses on half wave (uncontrolled) controlled rectifier with resistative-inductance (RL) load.	2	2	2	LO2
4	Quiz (1) + Focuses on half wave (uncontrolled) controlled rectifier with resistative- inductance (RL) load with free whealing diode.	2	2	2	LO1
5	Focuses on full wave (uncontrolled) controlled rectifier with resistative (R) load.	2	2	2	LO1
6	Focuses on full wave (uncontrolled) controlled rectifier with resistative-inductance (RL) load.	2	2	2	LO3
7	Focuses on full wave (uncontrolled) controlled rectifier with resistative-inductance (RL) load with free whealing diode.	2	2	2	LO3
8	Midterm		1.0		
9	Focuses on full wave (uncontrolled) controlled rectifier with resistative (R) load.	2	2	2	LO4
10	Focuses on full wave (uncontrolled) controlled rectifier with resistative-inductance (RL) load.	2	2	2	LO4
11	Focuses on full wave (uncontrolled) controlled rectifier with resistative-inductance (RL) load with free whealing diode.	2	2	2	LO5
12	Focuses on full wave (controlled) controlled rectifier with resistative- inductance (RL) load	2	2	2	LO5

13	Review on full wave (controlled) controlled rectifier with resistative- inductance (RL) load	2	2	2	LO5
14	Focus on full wave (controlled) controlled rectifier with resistative- inductance (RL) load with free whealing diode.	2	2	2	LO5
15	Reviews on full wave (controlled) controlled rectifier with resistative- inductance (RL) load with free whealing diode.	2	2	2	LO5
16	Final Exam		2.0		
Total hours		20	20	20	--

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

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

Notes:

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

8- Student assessment method

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

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

b- Time schedule of assessment		
Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		weekly
Sheets and Sketches		weekly
Researches and reports		Week (2,3)
the Projects		Week (4,8)
Practical modelling		Week (4,8)
Attendance		weekly
Mid-term exam		Week (8)
final exam		Week (16)

c- Grading system			
quizes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	15%		
Sheets and Sketches	20%		
Researches and reports	20%	5 marks	(40) marks
the Projects	30%		
Practical modelling	20%		
Attendance		(10) marks	
Mid-term exam		(15) marks	
final exam			(60) marks
Total			(100) marks

10- List of references:

a) Course notes	Lecture notes and handouts
b) Required books	▪ Adel S. Sedra, Kenneth C. Smith, "Microelectronic Circuits", 8th Edition, Oxford University Press. ▪ Behazad Rzavi, "Fundamentals of Microelectronics", 3nd edition, John Wiley. ▪ Thomas L. Floyd, "Electronic Devices", Prentice Hall, 9th edition. ▪ Donald Neamen, "Microelectronics: Circuit Analysis & Design", 4th edition, Mcgraw Hill, 2009.
c) Recommend books	Mentioned at time.
d) Periodicals, Web sites, etc	No periodicals are needed.

11- Facilities required for teaching and learning:

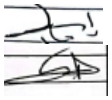
- Appropriate teaching design studios including presentation board, data show
- Google classroom

- E- learning

12- Requirements for Disable facilities:

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

Course coordinator:	Dr. Abdallah Reda
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤



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

Course specification

Course code:	Course name
CECE 309	Electrical Energy Conversions
A- Affiliation	
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	202٣-202٤

B-Basic Information

Course Name	Electrical Energy Conversions
Code	CECE 309
Course Level	Fourth level courses (Senior-1) - First semester (Fall)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	Electric Circuits II
Instructor name/Email	Dr. Abdallah Reda Abdukkah.reda@sva.edu.eg

C- Professional information

1- Course core

Covers magnetic circuits, single phase transformer and equivalent circuit, three phase transformers, basic concepts of electromechanical energy conversion, DC and AC machine

2- Course learning objectives:

oc 1	Recognize the magnetic circuit and its components.
oc 2	Recognize the Converting magnetic circuits.
oc 3	Recognize the basic concepts of electromechanical energy conversion, DC and AC.
oc 4	Recognize the single-phase transformer and equivalent circuit, three-phase transformers, and basic concepts of electromagnetic circuit, DC and AC machines.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Recognize the magnetic circuit and its components.
LO2	Recognize the basic concepts of electromagnetic energy conversion.

b. Psychomotor Domains (LOs):

LO3	Apply knowledge to Convert the magnetic circuits in simplest form.
LO4	Apply knowledge to Design single phase transformer and equivalent circuit, three-phase transformers, and basic concepts of electromagnetic circuit, DC and AC machines.
LO5	Apply knowledge to Obtain the parameters of single-phase transformer and equivalent circuit, three-phase transformers, and basic concepts of electromagnetic circuit, DC and AC machines.

c. Affective Domains (LOs):

None

4- Program LOs served by the course:

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

Lo13.	Explain the basic electrical power system theory.
Lo15.	Explain the diverse applications of electrical power equipment.
Lo16.	Explain the basic power system design concepts for underground, cable tray, grounding, and lighting systems.
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
Lo30.	Integrate electrical, electronic, and mechanical components and equipment with transducers, actuators, and controllers in creatively computer-controlled systems.
Lo31.	To design, simulate and practice the techniques of hardware and software tools in Power systems, Power Electronics and Renewable Energy systems.

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

Course (LOs)		program LOs	
LO1	Recognize the magnetic circuit and its components.	**Lo13.**	Explain the basic electrical power system theory.
		Lo15.	Explain the diverse applications of electrical power equipment.
LO2	Recognize the basic concepts of electromagnetic energy conversion.	**Lo16.**	Explain the basic power system design concepts for underground, cable tray, grounding, and lighting systems.
LO3	Apply knowledge to Convert the magnetic circuits in simplest form.	**Lo19.**	Solve complex engineering problems and solve problems in the field of

		electrical and electrical power engineering.
LO4		**Lo29.** Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
	Apply knowledge to Design single phase transformer and equivalent circuit, three-phase transformers, and basic concepts of electromagnetic circuit, DC and AC machines.	**Lo30.** Integrate electrical, electronic, and mechanical components and equipment with transducers, actuators, and controllers in creatively computer-controlled systems.
LO5		**Lo31.** To design, simulate and practice the techniques of hardware and software tools in Power systems, Power Electronics and Renewable Energy systems.
	Apply knowledge to Obtain the parameters of single-phase transformer and equivalent circuit, three-phase transformers, and basic concepts of electromagnetic circuit, DC and AC machines.	

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduction: Magnetic Fields	2	2	0	LO1
2	Magnetic field quantities	2	2	0	LO1
3	Focuses on Analogy between electric and magnetic circuits +Firing effect+ Solved examples+ Quiz (1).	2	2	0	LO1
4	Quiz (1) +Focuses on Eddy currents losses+ Inductance (self & matual).	2	2	0	LO2
5	Focuses on Inductance in case of two coupled coils + solved examples.	2	2	0	LO2
6	Focuses on Introduction in transformers and general types of transformers + Voltage relation (transformer at no load).	2	2	0	LO2
7	Practical Transformers and its equivalent circuits.				LO2
8	Midterm		1.0		
9	Focuses on Practical Transformers and its equivalent circuits and solved examples in voltage regulation.	2	2	0	LO3
10	Equivalent circuits of Practical Transformers and solved examples in voltage regulation.	2	2	0	LO2

11	Focuses on transformer tests.	2	2	0	LO5
12	Quiz (2) + solved examples in transformer tests.	2	2	0	LO4
13	Focuses on solved examples on practical transformer and voltage regulation	2	2	0	LO5
14	Focuses on Special Topics: transformer tests.	2	2	0	LO5
15	Focuses on solved examples in transformers.				LO2
16	Final Exam		2.0		
Total hours		28	28	0	--

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

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

Notes:

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

8- Student assessment method

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

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

b- Time schedule of assessment

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

Quizzes	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:

a) Course notes — Lecture notes and handouts

b) Required books
- R. Bailie Energy Conversion Engineering Addison, Wesley Publishing.
- G. W. Sutton. Direct Energy Conversion, McGraw-Hill.
- K.C. W eston,Energy Conversion, W est Publishing Company.

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. Abdallah Reda
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤

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

Course specification

Course code:	Course name
BASE306	Research Methods
A- Affiliation	
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Basic Science
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	202٣-202٤

B-Basic Information

Course Name	Research Methods
Code	BASE306
Course Level	Fourth level courses (Senior-1) - First semester (Fall)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	-
Instructor name/Email	Dr. Amera Marei amira.morai@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.

2- Course learning objectives:

oc 1	Recognize the science and its characteristics and science goals Methods of obtaining knowledge scientific research steps
oc 2	Recognize the Problem concept, Problem selection and identification, Research hypotheses and their formulation, Search Plan
oc 3	Recognize the ways to get knowledge
oc 4	Produce the research hypotheses and their applications
oc 5	Produce and prepare the research tool
oc 6	recognize the notes- questionnaire- the interview-the exams

oc 7	Utilize the study for different characteristics of research tools
oc 8	Recognize the experimental method -Anthropological method - Historical method and comparative research

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

-	None

b. Psychomotor Domains (LOs):

LO1	Apply a knowledge to produce effective persuasive writing with a focus on organization, content, analysis of readings, and critical thinking. Provides training in the use and integration of sources, library, and online research
LO2	Apply a knowledge of Scientific Research, Problem Meaning, how to choose a problem, a research plane
LO3	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles

c. Affective Domains (LOs):

LO4	express his opinion by oral presentation and flexible model recalling the final configuration of masses.
LO5	Communicate effectively with appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
LO6	express his opinion by oral presentation and flexible model recalling the final configuration of masses.

4- Program LOs served by the course:

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

Lo24.	Conduct techniques and methods of investigation as researches and reports.
Lo36.	Practice self-learning and other learning strategies

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

Course (LOs)		program LOs	
LO1	Apply a knowledge to produce effective persuasive writing with a focus on organization, content, analysis of readings, and critical thinking. Provides training in the	**Lo24.**	Conduct techniques and methods of investigation as researches and reports.

	use and integration of sources, library, and online research		
LO2	Apply a knowledge of Scientific Research, Problem Meaning, how to choose a problem, a research plane	**Lo24.**	Conduct techniques and methods of investigation as researches and reports.
LO3	Utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles	**Lo24.**	Conduct techniques and methods of investigation as researches and reports.
LO4	express his opinion by oral presentation and flexible model recalling the final configuration of masses.	**Lo36.**	Practice self-learning and other learning strategies
LO5	Communicate effectively with appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**Lo36.**	Practice self-learning and other learning strategies
LO6	express his opinion by oral presentation and flexible model recalling the final configuration of masses.	**Lo36.**	Practice self-learning and other learning strategies

4- 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	Science and Scientific Research	2	2	0	LO1
2	Fundamentals of scientific research	2	2	0	LO1
3	Ways to gain knowledge	2	2	0	LO5,LO6
4	Research hypotheses and their formulation	2	2	0	LO2
5	Scientific research tools	2	2	0	LO2
6	Steps to configure the research tool	2	2	0	LO2
7	characteristics of the research tool				LO4
8	Midterm		1.0		
9	Research Methods	2	2	0	LO2

10	Research Categories	2	2	0	LO2
11	The study Community and samples	2	2	0	LO2,4
12	Steps to prepare the research and write the report	2	2	0	LO2
13	Organizing the research and writing its report	2	2	0	LO2
14	Qualities of a good researcher	2	2	0	LO2
15	Revision	2	2	0	LO2
16	Final Exam		2.0		
Total hours		28	28	0	--

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

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

Notes:

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

8-Student assessment method

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

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

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)
the Projects		Week (4,8)
Practical modelling		Week (4,8)
Attendance		weekly
Mid-term exam		Week (8)
final exam		Week (16)

b- 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

a) Course notes	Lecture notes and handouts
b) Required books	Murdoch-Eaton, Deborah, et al. "What do medical students understand by research and research skills? Identifying research opportunities within undergraduate projects." Medical Teacher 32.3 (2010): e152-e160.
c) Recommend books	The Research Methods Knowledge Base, 5th Edition, by William M. K. Trochim (Author), James P. Donnelly
d) Periodicals, Web sites, etc	**Sites. https://www.educatorstechnology.com/2017/04/12-of-best-research-methodology.html**

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. Amera Marei
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤

Course specification

Course code:	Course name
BASE 404	Negotiation Skills
A- Affiliation	
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Basic science
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	**٢٠٢٣-٢٠٢٤**

B-Basic Information

Course Name	Negotiation Skills
Code	BASE 404
Course Level	Fourth level courses (Senior-1) - First semester (Fall)
Credit Hours	3Cr. hr
Lectures	3hr
Tutorial	0hr
Total	3hr
Prerequisite	-
Instructor name/Email	Dr. Amera Marei amira.morai@sva.edu.eg

C- Professional information

1- Course core

Negotiation styles and processes to help students conduct and review negotiations. Workshop format integrating intellectual and experiential learning. Exercises, live and field examples, individual and small group reviews.

2- Course learning objectives:

oc 1	explain how to get general overview, what are negotiations and why do we need them? What do business teams negotiate?
oc 2	Recognize how apply the following :- ▪ Preparation and planning. ▪ Definition of ground rules. ▪ Clarification and justification. ▪ Bargaining and problem-solving. ▪ Closure and implementation.
oc 3	Recognize the following points:-

	▪ The negotiating process is continual, not an individual event. ▪ Think positive, ▪ Prepare, Think about the best & worst outcome before the negotiations begin, ▪ Be articulate & build value. ▪ Give & take
oc 4	Recognize the concepts of the following:- ▪ Planning for conflict, Planning for cooperation, Negotiation steps. ▪ Model of the schematic structure. ▪ The most famous negotiation strategies. ▪ The main important things in the negotiation plan. ▪ Negotiating climate. ▪ Good preparation for negotiation. ▪ Tactics in the negotiation process. ▪ Elements of tactics
oc 5	Recognize how to apply :- ▪ Negotiation policies. ▪ Characteristics and specifications of a professional negotiator. ▪ Principles of negotiation
oc 6	Recognize the basic of :- ▪ Basic negotiation skills. ▪ Qualities of a successful negotiator, Positional characteristics. ▪ Personal characteristics, Effective negotiator behaviors. ▪ The cultural dimension in the negotiation process. ▪ The impact of the cultural dimension on the negotiation process.
oc 7	explain the basic of the following:- ▪ Collective bargaining is the process by which working people, through their unions, negotiate contracts with their employers to determine their terms of employment, including pay, benefits, hours, leave, job health and safety policies, ways to balance work and family, and more. ▪ Collective bargaining is a way to solve workplace problems. ▪ It is also the best means for raising wages in America. ▪ Indeed, through collective bargaining, working people in unions have higher wages, better benefits, and safer workplaces.
oc 8	differentiate between the four Dimensions of Culture to Consider in International Negotiations: ▪ Power Distance. ▪ Individualism/Collectivism, ▪ Masculinity/Femininity.

- Uncertainty Avoidance

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Identifies the basic skills to produce effective persuasive writing with a focus on organization, content, analysis of readings, and critical thinking. Provides training in the use and integration of sources, library, and online research.

b. Psychomotor Domains (LOs):

-	none

c. Affective Domains (LOs):

LO2	Communicate effectively with a systematic framework for understanding negotiation.
LO3	Express how to expand the size of the pie by creating value in negotiations, gain problem-solving techniques for distributing value and strengthening relationships.
LO4	Explain the heighten awareness of their strengths and weaknesses as a negotiator
LO5	Communicate effectively with experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
LO6	Express through an oral presentation and a flexible model recalling the final configuration of masses.

4- Program LOs served by the course:

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

Lo7.	State the factors affecting the engineering projects.
Lo33.	Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.
Lo34.	Use creative, innovative and flexible thinking.
Lo35.	Acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

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

Course (LOs)		program LOs	
LO1	Communicate effectively with a systematic framework for understanding negotiation.	**Lo7.**	State the factors affecting the engineering projects.
LO2	Express how to expand the size of the pie by creating value in negotiations, gain problem-solving techniques	**Lo33.**	Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.

	for distributing value and strengthening relationships.		
LO3	Explain the heighten awareness of their strengths and weaknesses as a negotiator	**Lo34.**	Use creative, innovative and flexible thinking.
LO4	Communicate effectively with experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.	**Lo35.**	Acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
LO5	Express through an oral presentation and a flexible model recalling the final configuration of masses.	**Lo35.**	Acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
LO6	Communicate effectively with a systematic framework for understanding negotiation.	**Lo35.**	Acquire entrepreneurial and leadership skills to anticipate and respond to new situations.

4- 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	Negotiation Skills	3	0	0	LO1,2
2	General overview	3	0	0	LO2,3
3	What do business teams negotiate?	3	0	0	LO5, 6
4	Stages of negotiation	3	0	0	LO2,4
5	Preparation and planning	3	0	0	LO2,4
6	Negotiation strategies	3	0	0	LO2,4
7	Planning the negotiation process	3	0	0	LO4
8	Midterm		1.0		
9	The importance of negotiation science	3	0	0	LO2,4
10	Characteristics and skills of a successful negotiator	3	0	0	LO2,4
11	Collective negotiations in the field of work	3	0	0	Lo2, Lo5
12	The impact of cultural differences on the negotiation process	3	0	0	LO2,4
13	Salary negotiation skills	3	0	0	LO2,4

14	Essential Salary Negotiation Tips	3	0	0	LO2,4
15	Revision	3	0	0	LO2,4
16	Final Exam		2.0		
Total hours		42	0	0	--

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

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

Notes:

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

6- Student assessment method

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

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

LO6	✓	✓		✓	✓			✓	✓	✓	✓	

b- Time schedule of assessment

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

c- Grading system

quizes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	30%		
Sheets and Sketches	35%	10 marks	(50) marks
Researches and reports	35%		
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	Gammie, Bob, Elizabeth Gammie, and Erica Cargill. "Personal skills development in the accounting curriculum." Accounting Education 11.1 (2002): 63-78.
c) Recommend books	Rebel Talent: Why It Pays to Break the Rules at Work and in Life, by Francesca Gino
d) Periodicals, Web sites, etc	**Sites: https://www.pon.harvard.edu/daily/negotiation-training-daily/negotiation-books-a-negotiation-reading-list/**

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. Amera Marei
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤

Fourth level courses (Senior-1)

Second semester (Spring)

No.	Cod	Course Name	Instructor
1	CECE 318	Electric Machine II	Ass. Prof. Dr. Shady Abdel Aleem
2	CECE 320	Power Electronics II	Dr. Mostafa Hassan Mostafa Abdel-Gawad
3	CECE 430	Transmission & Distribution of Electrical Energy	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
4	CECE 322	Power System Analysis I	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
5	ENGR 303	General Mechanical Engineering-Applied Thermodynamics	Prof. Dr. Al-Desouki Ibrahim Saleh Eid
6	BASE 401	Communication Skills	Dr. Amera Marei

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

Course specification

Course code:	Course name
CECE 318	Electric Machine 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	202٣-202٤

B-Basic Information

Course Name	Electric Machine II
Code	CECE 318
Course Level	Fourth level courses (Senior-1) - Second semester (Spring)
Credit Hours	3Cr. Hr
Lectures	2hr
Tutorial	2hr
Lab	2hr
Total	6hr
Prerequisite	CECE 317
Instructor name/Email	Dr. Sabah Mohamed Shabah.mohamedi@sva.edu.eg

C- Professional information

1- Course core

Transformers : Theory and design : Fundamental concepts, Mutual inductance, Electric and magnetic circuits, Power transformers, Phasor diagrams, Magnetizing current and core loss, Equivalent circuits, Transformers at load, Efficiency, Voltage regulation, Three phase transformers, Three phase transformer connections, Three phase to two phase connections, Auto transformer, Voltage regulation in auto transformers, Tap changers, On load tap changers, Harmonics, Transformers testing, Transformer design, Main dimensions, Magnetic cores, Transformer windings, Insulation, Cooling, Calculation of transformer characteristics, Examples on transformer design.

2- Course learning objectives:

oc 1	Recognize the Transformers: Conserving Energy Resources, Power factor correction, Theory and design, Transformer Construction, Core Type Transformer, Shell Type Transformer, and Core Shell Type Transformers.

oc 2	Recognize the transformer Principal operation, Turns and Voltage Ratio, Power and Current, Reflected Impedance, Step-Down Transformer, Step-Up Transformer.
oc 3	Recognize the Practical Transformers, Equivalent circuits, Power transformers, Transformer Taps, Phasor Diagram (Lag & Lead & Unit PF) Transformers at load, Examples of Per Unit System, Base value of transformers, Transforming to per unit, Efficiency, Voltage regulation.
oc 4	Recognize the autotransformer, Construction, Continuation, Types of Autotransformers, Principle of Operation, Comparing autotransformer with two winding transformer, Theory, VA rating of auto-transformers, Conversion of Two-Winding Transformer into Autotransformer.
oc 5	Recognize the parallel operation of a transformer, Reasons for Parallel Operation, Necessary Conditions for Parallel Operation, Load Share.
oc6	Recognize the three phase transformers, Power in Three-phase Transformers, Three phase transformer connections (Y-Y & Δ-Δ & Δ-Y & Y-Δ Connection), Three phases to two phase connections, Transformers testing, Calculation of transformer characteristics, and Examples on transformer design.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Recognize the Transformers: Conserving Energy Resources, Power factor correction, Theory and design, Transformer Construction, Core Type Transformer, Shell Type Transformer, and Core Shell Type Transformers.
LO2	Determine The Transformer Principle, Turns and Voltage Ratio, Power and Current, Reflected Impedance, Step-Down Transformer, Step-Up Transformer.

b. Psychomotor Domains (LOs):

LO3	Apply knowledge to Sketch the Practical Transformers, Equivalent circuits, Power transformers, Transformer Taps, Phasor Diagram (Lag & Lead & Unit PF) Transformers at load, Examples of Per Unit System, Base value of transformers, Transforming to per unit, Efficiency, Voltage regulation.
LO4	Apply knowledge to Calculate characteristics ‘of Autotransformer, Construction, Continuation, Types of Autotransformers, Principle of Operation, Comparing autotransformer with two winding transformer, Theory, VA rating of auto-transformers, Conversion of Two-Winding Transformer Into Autotransformer.
LO5	Apply knowledge to Obtain Parallel operation of a transformer, Reasons for Parallel Operation, Necessary Conditions For Parallel Operation, Load Share.

c. Affective Domains (LOs):

LO6	Express the Design Three phase transformers, Power in Three-phase Transformers, Three phase transformer connections (Y-Y & Δ-Δ & Δ-Y & Y-Δ Connection), Three phases to two phase connections, Transformers testing, Calculation of transformer characteristics, and Examples on transformer design.

4- Program LOs served by the course:

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

Lo13.	Explain the basic electrical power system theory.
Lo14.	Merge theories and techniques for calculating short circuit, motor starting, and voltage drop in the projects.
Lo15.	Explain the diverse applications of electrical power equipment.
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
Lo39.	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.
Lo40.	Apply modern techniques, skills and engineering tools to electrical power engineering
Lo41.	Work professionally in multidisciplinary concepts by integrating Electrical power Engineering

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

	Course (LOs)	**program LOs**	
LO1	Recognize the Transformers: Conserving Energy Resources, Power factor correction, Theory and design, Transformer Construction, Core Type Transformer, Shell Type Transformer, and Core Shell Type Transformers.	**Lo13.**	Explain the basic electrical power system theory.
LO2	Determine The Transformer Principle, Turns and Voltage Ratio, Power and Current, Reflected Impedance, Step-Down Transformer, Step-Up Transformer.	**Lo14.**	Merge theories and techniques for calculating short circuit, motor starting, and voltage drop in the projects.
LO3	Apply knowledge to Sketch the Practical Transformers, Equivalent circuits, Power transformers, Transformer Taps, Phasor Diagram (Lag & Lead & Unit PF) Transformers at load, Examples of Per Unit System, Base value of transformers, Transforming to per unit, Efficiency, Voltage regulation.	**Lo15.**	Explain the diverse applications of electrical power equipment.
		Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.

LO4	Apply knowledge to Calculate characteristics ‘of Autotransformer, Construction, Continuation, Types of Autotransformers, Principle of Operation, Comparing autotransformer with two winding transformer, Theory, VA rating of auto-transformers, Conversion of Two-Winding Transformer Into Autotransformer.	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO5	Apply knowledge to Obtain Parallel operation of a transformer, Reasons for Parallel Operation, Necessary Conditions For Parallel Operation, Load Share.	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO6	Express the Design Three phase transformers, Power in Three-phase Transformers, Three phase transformer connections (Y-Y & Δ-Δ & Δ-Y & Y-Δ Connection), Three phases to two phase connections, Transformers testing, Calculation of transformer characteristics, and Examples on transformer design.	**Lo39.**	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.
		Lo40.	Apply modern techniques, skills and engineering tools to electrical power engineering
		Lo41.	Work professionally in multidisciplinary concepts by integrating Electrical power Engineering

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course Los
1	Introduction: Conserving Energy Resources, Power factor correction, Theory and design, Transformer Construction, Core Type Transformer, Shell Type Transformer, Core Shell Type Transformers,	2	2	2	LO1
2	The Transformer Principle, Turns and Voltage Ratio, Power and Current, Reflected Impedance, Step-Down Transformer, Step-Up Transformer.	2	2	2	LO1
3	Practical Transformers, Equivalent circuits, Power transformers, Transformer Taps, Phasor Diagram (Lag & Lead & Unit PF) Transformers at load.	2	2	2	LO1
4	Quiz (1) + Examples of Per Unit System, Base value of transformers, Transforming to per unit.	2	2	2	LO2
5	Focuses on Transformer efficiency, Voltage regulation.	2	2	2	LO3
6	Focuses on Autotransformer, Construction, Continuation, Types of Autotransformers, Principle of Operation, Comparing autotransformer with two winding transformer, Theory, VA rating of auto-transformers, Conversion of Two-Winding Transformer into Autotransformer.	2	2	2	LO3
7	Parallel operation of a transformer, Reasons for Parallel Operation, Necessary Conditions for Parallel Operation, Load Share.	2	2	2	LO3
8	Midterm		1.0		
9	Focuses on Three phase transformers, Power in Three-phase Transformers, Three phase transformer connections (Y-Y & Δ-Δ & Δ-Y & Y-Δ Connection).	2	2	2	LO4
10	Three phases to two phase connections, Transformers testing.	2	2	2	LO4
11	Focuses on Calculation of transformer characteristics, Examples on transformer design.	2	2	2	LO5
12	Quiz (2) + Examples on transformer design.	2	2	2	LO6
13	Focuses on Examples of Per Unit System, Base value of transformers, Transforming to per unit.	2	2	2	LO6
14	Focuses on Solved examples Phasor Diagram (Lag & Lead & Unit PF) Transformers at load.	2	2	2	LO 3
15	Focuses on Applications of auto-transformer and transforming to per unit examples.	2	2	2	LO5
16	Final Exam		2.0		
Total hours		28	28	28	--

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

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

Notes:

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

8-Student assessment method

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

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

b- Time schedule of assessment

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

a) Course notes	Lecture notes and handouts
b) Required books	P.C.SEN," Principles of electrical machines and power electronics, second edition, John Wiley& Sons
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. sabah mohamed
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤

Course specification

Course code:	Course name
CECE 320	Power Electronics 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	202٣-202٤

B-Basic Information

Course Name	Power Electronics II
Code	CECE 320
Course Level	Fourth level courses (Senior-1) - Second semester (Spring)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Lab	2hr
Total	6hr
Prerequisite	CECE 319
Instructor name/Email	Dr. Abdallah Reda Abdallah.reda@sva.edu.eg

C- Professional information

1- Course learning objectives:

oc 1	identify students with the power electronics, Ac voltage controllers.
oc 2	Recognize the Characteristics The single-phase ac Thyristors controller (R-load & RL-load).
oc 3	Recognize the Three-phase controller, Phase control of ac controllers, Integral cycle control
oc 4	recognize the Thyristors commutation techniques: Natural commutation, Forced commutation, Main principles, Circuits, Dc choppers: The single Thyristors chopper, Two Thyristors chopper, Inverters: Single phase circuits, Bridge inverter circuits, Dc drives, Ac drives.

2- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Identify students with the power electronics, Ac voltage controllers.

LO2	Recognize the single-phase ac Thyristors controller (R-load & RL-load) characteristics.
b. Psychomotor Domains (LOs):	
LO3	Prepare students for design the Three phase controller, Phase control of ac controllers, Integral cycle control
LO4	Apply acknowledge to Obtain the Thyristors commutation techniques: Natural commutation, Forced commutation, Main principles, Circuits, Dc choppers.
c. Affective Domains (LOs):	
LO5	Communicate effectively with single Thyristors chopper, Two Thyristors chopper, Inverters: Single phase circuits, Bridge inverter circuits, Dc drives, Ac drives.

3- Program LOs served by the course: :

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

Lo15.	Explain the diverse applications of electrical power equipment.
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
Lo30.	Integrate electrical, electronic, and mechanical components and equipment with transducers, actuators, and controllers in creatively computer-controlled systems.
Lo31.	To design, simulate and practice the techniques of hardware and software tools in Power systems, Power Electronics and Renewable Energy systems.
Lo39.	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.
Lo40.	Apply modern techniques, skills and engineering tools to electrical power engineering
Lo41.	Work professionally in multidisciplinary concepts by integrating Electrical power Engineering with Internet of Things, Green Energy and Smart cities concepts.

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

Course (LOs)		program LOs	
LO1	Identify students with the power electronics, Ac voltage controllers.	**Lo15.**	Explain the diverse applications of electrical power equipment.
LO2	Recognize the single-phase ac Thyristors controller (R-load & RL-load) characteristics.	**Lo15.**	Explain the diverse applications of electrical power equipment.

LO3	Prepare students for design the Three phase controller, Phase control of ac controllers, Integral cycle control	**Lo19.**	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
		Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO4	Apply acknowledge to Obtain the Thyristors commutation techniques: Natural commutation, Forced commutation, Main principles, Circuits, Dc choppers.	**Lo30.**	Integrate electrical, electronic, and mechanical components and equipment with transducers, actuators, and controllers in creatively computer-controlled systems.
		Lo31.	To design, simulate and practice the techniques of hardware and software tools in Power systems, Power Electronics and Renewable Energy systems.
LO5	Communicate effectively with single Thyristors chopper, Two Thyristors chopper, Inverters: Single phase circuits, Bridge inverter circuits, Dc drives, Ac drives	**Lo39.**	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.
		Lo40.	Apply modern techniques, skills and engineering tools to electrical power engineering
		Lo41.	Work professionally in multidisciplinary concepts by integrating Electrical power Engineering with Internet of Things, Green Energy and Smart cities concepts.

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	Introduction: Ac voltage controllers.	2	2	2	LO1
2	Focuses on the single-phase ac Thyristors controller (R-load characteristics).	2	2	2	LO2

3	Focuses on the single-phase ac Thyristors controller (RL-load characteristics).	2	2	2	LO2
4	Quiz (1) + Focuses on design the Three phase controller, Phase control of ac controllers, Integral cycle control	2	2	2	LO1
5	Focuses on Thyristors commutation techniques: Natural commutation, Forced commutation.	2	2	2	LO1
6	Focuses on Main principles, Circuits, Dc choppers.	2	2	2	LO3
7	Focuses on single Thyristors chopper, Two Thyristors chopper.	2	2	2	LO3
8	Midterm		1.0		
9	Focuses on Two Thyristors chopper, Inverters.	2	2	2	LO4
10	Focuses on Single phase circuits.	2	2	2	LO4
11	Focuses on Single phase circuits, Bridge inverter circuits, Dc drives, Ac drives.	2	2	2	LO5
13	Quiz (2) + Focuses on design the Three phase controller, Phase control of ac controllers, Integral cycle control	2	2	2	LO1
14	Review on main principles, Circuits, Dc choppers.	2	2	2	LO3
15	Review on single Thyristors chopper, Two Thyristors chopper.	2	2	2	LO3
16	Final Exam		2.0		
Total hours		20	20	20	--

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

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

Notes:

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

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	modelling
LO1	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓
LO2	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓
LO3	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓
LO4	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓
LO5	✓	✓		✓	✓	✓		✓	✓	✓	✓	✓

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		weekly
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	(40) marks
	Quiz (2)	(5) marks	
Discussions	15%		
Sheets and Sketches	20%		
Researches and reports	20%	5 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:

a) Course notes
b) Required books

Lecture notes and handouts

- Adel S. Sedra, Kenneth C. Smith, “Microelectronic Circuits”, 6th Edition, Oxford University Press, 2011.
- Behazad Rzavi, “Fundamentals of Microelectronics”, 2nd edition, John Wiley, 2013.

c) Recommend books d) Periodicals, Web sites, etc	▪ Thomas L. Floyd, "Electronic Devices", Prentice Hall, 9th edition, 2011. ▪ Donald Neamen, "Microelectronics: Circuit Analysis & Design", 4th edition, Mcgraw Hill, 2009. Mentioned at time. 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. Abdallah Reda
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤

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

Course specification

Course code:	Course name
CECE 430	Transmission & Distribution of Electrical Energy
A- Affiliation	
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	٢٠٢٣-٢٠٢٤

B-Basic Information

Course Name	Transmission & Distribution of Electrical Energy
Code	CECE 430
Course Level	Fourth level courses (Senior-1) - Second semester (Spring)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	CECE 309
Instructor name/Email	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul ihab.nabil@sva.edu.eg

C- Professional information

1- Course core

Introduction, Representation of power systems, Parameters of transmission lines, Models of transmission lines, Series impedance, Electrical capacitance, Representation of capacitance in parallel with transmission lines, Voltage and current relationships in transmission lines, Operation characteristics, Symmetrical components, Unsymmetrical faults on transmission lines, Introduction to underground cables, Design of transmission lines, Mechanical design, High- voltage dc overhead transmission lines, Insulated electrical cables, Determination of faults in underground cables, Design of electrical distribution systems, Substations, Introduction to power system planning.

2- Course learning objectives:

oc 1	recognize the knowledge of the main elements of power systems
oc 2	explain the definition of the parameters of the transmission lines such as series impedance, electrical capacitance.
oc 3	describe the models of transmission lines based on the line length and how can they be calculated.
oc 4	recognize the representation of capacitance in parallel with transmission lines.

oc 5	Describe the voltage and current relationships in transmission lines and operation characteristics.
oc6	recognize the Extra High Voltage Transmission lines.
oc7	recognize the A.C distribution System

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Identify the different types of transmission systems
LO2	recognize the electrical characteristics of transmission lines
LO3	recognize the different models that can be used with transmission lines

b. Psychomotor Domains (LOs):

LO4	Apply knowledge for Identifying the relation between the electrical quantities at the sending and receiving ends of a transmission line
LO5	Apply knowledge for calculating the power loss and voltage drop in distribution networks

c- Affective Domains (LOs):

LO6	communicate effectively with the different types of transmission systems

4- Program LOs served by the course:

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

Lo13.	Explain the basic electrical power system theory.
Lo15.	Explain the diverse applications of electrical power equipment.
Lo16.	Explain the basic power system design concepts for underground, cable tray, grounding, and lighting systems.
Lo17.	define the Basics of low voltage power systems
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
Lo30.	Integrate electrical, electronic, and mechanical components and equipment with transducers, actuators, and controllers in creatively computer-controlled systems.
Lo31.	To design, simulate and practice the techniques of hardware and software tools in Power systems, Power Electronics and Renewable Energy systems.
Lo39.	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.
Lo40.	Apply modern techniques, skills and engineering tools to electrical power engineering

Lo41.	Work professionally in multidisciplinary concepts by integrating Electrical power Engineering with Internet of Things, Green Energy and Smart cities concepts.

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

Course (LOs)		program competencies	
LO1	Identify the different types of transmission systems	**Lo13.**	Explain the basic electrical power system theory.
		Lo15.	Explain the diverse applications of electrical power equipment.
LO2	recognize the electrical characteristics of transmission lines	**Lo16.**	Explain the basic power system design concepts for underground, cable tray, grounding, and lighting systems.
		Lo17.	define the Basics of low voltage power systems
LO3	recognize the different models that can be used with transmission lines	**Lo16.**	Explain the basic power system design concepts for underground, cable tray, grounding, and lighting systems.
		Lo17.	define the Basics of low voltage power systems
LO4	Apply knowledge for Identifying the relation between the electrical quantities at the sending and receiving ends of a transmission line	**Lo19.**	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
		Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO5	Apply knowledge for calculating the power loss and voltage drop in distribution networks	**Lo30.**	Integrate electrical, electronic, and mechanical components and equipment with transducers, actuators, and controllers in creatively computer-controlled systems.
		Lo31.	To design, simulate and practice the techniques of hardware and software tools in Power systems, Power Electronics and Renewable Energy systems.

LO6	communicate effectively with the different types of transmission systems	**Lo39.**	Show accuracy while Designing experiments, as well as analyzing and interpreting experimental results related to electrical and electrical power systems.
		Lo40.	Apply modern techniques, skills and engineering tools to electrical power engineering
		Lo41.	Work professionally in multidisciplinary concepts by integrating Electrical power Engineering with Internet of Things, Green Energy and Smart cities concepts.

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	Introduction: Introduction to a power system.	2	2	0	LO1
2	Focuses on Electrical transmission line parameters	2	2	0	LO1
3	Focuses on Inductance and inductive reactance.				LO1
	Capacitance and capacitive reactance. Equivalent circuits for transmission line such as short, medium, and long length.	2	2	0	
4	Quiz (1) + Surge Impedance Loading (SIL) of the transmission line.	2	2	0	LO2
5	Networks connected in series and parallel. Voltage, current, and power relations of the transmission line.	2	2	0	LO3
6	Focuses on Extra High Voltage Transmission.	2	2	0	LO3
7	Focuses on Mechanical design of an overhead transmission line.				LO4
8	Midterm		1.0		
9	Mechanical design factors affecting overhead Line Conductor motion caused by fault currents	2	2	0	LO5
10	Focuses on Design of electrical distribution system	2	2	0	LO6
11	Focuses on Distribution system planning and automation.	2	2	0	LO6
12	Design of Load characteristics. Application of distribution transformers.	2	2	0	LO6
13	Focuses on Focuses on Design of sub transmission lines and distribution substation.	2	2	0	LO6
14	Quiz (2) + Design consideration of primary and secondary substations.	2	2	0	LO6

15	Focuses on Application of capacitors to distribution systems. Distribution system voltage regulation and protection.	2	2	0	LO6
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

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

Notes:

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

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	modelling
LO1											
LO2											
LO3	✓	✓	✓	✓	✓		✓		✓		✓
LO4	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
LO5	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓
LO5	✓	✓	✓	✓	✓		✓	✓	✓	✓	✓

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)

	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		weekly
Sheets and Sketches		weekly
Researches and reports		Week (2,3)
the Projects		Week (4,8)
Practical modelling		Week (4,8)
Attendance		weekly
Mid-term exam		Week (8)
final exam		Week (16)

c- Grading system

quizes	Quiz (1) 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:

a) Course notes

Lecture notes and handouts

b) Required books

- Mohamed E. El-Hawary," Electrical Power Systems Design and Analysis - The Transmission Subsystem".
- William D. Stevenson, "Elements Of Power System Analysis" 4th Edition, Mc Graw Hill India, 2014 (Text Book)
- J. Duncan Glover, Mulukutla S. Sarma and Thomas Overbye, "Power Systems Analysis and Design, 5th Edition", CL Engineering, 2012
- Colin Bayliss and Brian Hardy, "Transmission and Distribution Electrical Engineering, Fourth Edition", Newnes, 2012
- John Grainger, William Stevenson Jr. "Power System Analysis", McGraw-Hill Education, 1994.

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. Ehab Mohamed Nabil Ismail Abdel Rasoul
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤

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

Course specification

Course code:	Course name
CECE 322	Power System Analysis I
A- Affiliation	
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Electrical and communication engineering
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	٢٠٢٣-٢٠٢٤

B-Basic Information

Course Name	Power System Analysis I
Code	CECE 322
Course Level	Fourth level courses (Senior-1) - Second semester (Spring)
Credit Hours	3Cr. Hr
Lectures	2hr
Tutorial	2hr
Lab	2hr
Total	4hr
Prerequisite	CECE 317
Instructor name/Email	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul ihab.nabil@sva.edu.eg

C- Professional information

1- Course core

Symmetrical components: Synthesis of unsymmetrical phasor diagrams from their symmetrical components, The symmetrical components of unsymmetrical systems, Power in terms of symmetrical components, Positive, negative and zero phase sequence networks, Unsymmetrical faults : Shunt faults, Series faults, Network matrices: Network topology, System admittance and system impedance matrices, Load flow solutions and control: Load flow equations, The Gauss- Seidel method, Newton-Raphson method and approximations, De-coupled methods, Regulating transformers

2- Course learning objectives:

oc 1	Recognize the power system operation under both normal and abnormal conditions.
oc 2	analyze power systems under normal operation and fault conditions.
oc 3	explain commercial software packages to study the normal operation of power systems.

oc 4	Recognize the experiments behaviour by using the power system simulator.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Describe power flow equations in both rectangular and polar forms.
LO2	Explain the transformation from phase domain to symmetrical components domain and vice versa.
LO3	Identify the power system parameters from normal units to per unit and vice versa.

b. Psychomotor Domains (LOs):

LO4	Solve power flow equations using Gauss-Seidel, Newton-Raphson and Fast-Decoupled methods.
LO5	Apply symmetrical components' method to analyze unsymmetrical three-phase circuits.
LO6	Solve the power systems under symmetrical and unsymmetrical faults.
LO7	Use power system simulator, collect, analyze and interpret results.
LO8	Apply modern techniques, skills and numerical modelling methods to power system analysis

c. Affective Domains (LOs):

-	none

4- Program LOs served by the course:

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

Lo13.	Explain the basic electrical power system theory.
Lo14.	Merge theories and techniques for calculating short circuit, motor starting, and voltage drop in the projects.
Lo15.	Explain the diverse applications of electrical power equipment.
Lo16.	Explain the basic power system design concepts for underground, cable tray, grounding, and lighting systems.
Lo17.	define the Basics of low voltage power systems.
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
Lo29.	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
Lo31.	To design, simulate and practice the techniques of hardware and software tools in Power systems, Power Electronics and Renewable Energy systems.

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

Course (LOs)		program LOs	
LO1	Describe power flow equations in both rectangular and polar forms.	**Lo13.**	Explain the basic electrical power system theory.
		Lo14.	Merge theories and techniques for calculating short circuit, motor starting, and voltage drop in the projects.
LO2	Explain the transformation from phase domain to symmetrical components domain and vice versa.	**Lo15.**	Explain the diverse applications of electrical power equipment.
		Lo16.	Explain the basic power system design concepts for underground, cable tray, grounding, and lighting systems.
LO3	Convert power system parameters from normal units to per unit and vice versa.	**Lo16.**	Explain the basic power system design concepts for underground, cable tray, grounding, and lighting systems.
		Lo17.	define the Basics of low voltage power systems.
LO4	Solve power flow equations using Gauss-Seidel, Newton-Raphson and Fast-Decoupled methods.	**Lo19.**	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
LO5	Apply symmetrical components' method to analyze unsymmetrical three-phase circuits.	**Lo29.**	Utilize computer program to analyze design problems and interpret numerical data and test and examine components, equipment and systems of electrical and electric power generation, control, and distribution systems.
LO6	Analyze power systems under symmetrical and unsymmetrical faults.	**Lo31.**	To design, simulate and practice the techniques of hardware and software tools in Power systems, Power Electronics and Renewable Energy systems.
LO7	Use measuring instruments, and laboratory equipment to practice power system simulator experiments, collect, analyze and interpret results.	**Lo31.**	To design, simulate and practice the techniques of hardware and software tools in Power systems, Power Electronics and Renewable Energy systems.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course Los
1	Introduction: Modern Power System Overview.	2	2	2	LO1
2	Characteristics of power system faults. Nature of faults. Types of faults. Causes of faults	2	2	2	LO2
3	Theory of symmetrical components and connection of phase sequence networks during faults.	2	2	2	LO3
4	Symmetrical components of a three-phase power system. Balanced three-phase voltage and current phasors. Symmetrical components of unbalanced voltage or current phasors.	2	2	2	LO3
5	Apparent power in symmetrical component terms. Sequence components of unbalanced three-phase impedances. Sequence components of balanced three-phase.	2	2	2	LO4
6	Analysis of balanced and unbalanced faults in the sequence reference frame + Quiz (1).	2	2	2	LO5
7	Balanced three-phase to earth short-circuit faults Unbalanced one-phase to earth short-circuit faults	2	2	2	LO5
8	Midterm		1.0		
9	Unbalanced phase-to-phase or two-phase short-circuit faults. Unbalanced two-phase to earth short-circuit faults	2	2	2	LO5
10	The admittance model and network calculation. Branch and node admittances. Mutually coupled branches in Ybus.	2	2	2	LO6
11	An equivalent admittance networks. Modification of Ybus.	2	2	2	LO6
12	The impedance Model and network calculations. The bus admittance and impedance matrices Thevenin s theorem and Zbus.	2	2	2	LO5
13	Modification of an existing Zbus. Direct determination of Zbus. Calculation of Zbus element from Ybus.	2	2	2	LO7
14	Power-flow solution. The power-flow problem. The Gauss-Seidel method	2	2	2	LO7
15	The Newton-Raphson method. The Newton-Raphson power-flow solution.	2	2	2	LO7
16	Final Exam		2.0		
Total hours		28	28	28	--

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

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

Notes:

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

8- Student assessment method

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

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

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

Quizzes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	15%		
Sheets and Sketches	20%		
Researches and reports	20%	5 marks	(40) marks
the Projects	30%		
Practical modelling	20%		
Attendance		(10) marks	
Mid-term exam		(15) marks	
final exam			(60) marks
Total			(100) marks

10- List of references:

a) Course notes — Lecture notes and handouts

b) Required books
- John J. Grainger, William D. Stevenson, and Jr.,"POWER SYSTEM ANALYSIS".
- Nasser D. Tleis," Power Systems Modelling and Fault Analysis".

c) Recommend books
- Hadi Saadat, "Power System Analysis", PSA Publishing, Third Edition, 2010.
- J. D. Glover, M. S. Sarma and T. J. Overbye, "Power System Analysis and Design", Cengage Learning, Fifth Edition, 2012.

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. Ehab Mohamed Nabil Ismail Abdel Rasoul

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

program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤

Course specification

Course code:	Course name
ENGR 303	General Mechanical Engineering- Applied Thermodynamics
A- Affiliation	
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Basic Science
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	202٣-202٤

B-Basic Information

Course Name	General Mechanical Engineering- Applied Thermodynamics
Code	ENGR 303
Course Level	Fourth level courses (Senior-1) - Second semester (Spring)
Credit Hours	3Cr. hr
Lectures	2hr
Tutorial	2hr
Total	4hr
Prerequisite	PHYS102 -MATH 201
Instructor name/Email	Prof.Dr. Al -Desouki Ibrahim Saleh Eid eldesuki.eid@sva.edu.eg

C- Professional information

1- Course core

Working fluid, The ideal gas, The first law of thermodynamics, Reversible processes, Irreversible processes. The second law of thermodynamics, Thermal cycles, Steam cycles, Entropy, fuel and combustion. Heat transfer by conduction, Forced convection, Heat transfer by radiation, Heat exchangers. Power generation plants, Heat cycles, Analysis and presentation on charts for pure substances, Steam units, Boilers, Steam turbines, Condensers, Pumps. Gas and combined units and operation of the gas turbine, Air compressors, Compound cycles, Heat recovery boilers from turbine exhaust gases. Diesel engine units, Performance and operation of diesel engines. Hydro-electric energy generation plants, Performance and operation of hydro-turbines.

2- Course learning objectives:

oc 1	Recognize the Fundamentals of Working fluid, The ideal gas, The first law of thermodynamics
oc 2	apply the Reversible processes, Irreversible processes.
oc 3	Conduct, develop and appropriate experiment discussion of The second law of thermodynamics

oc 4	Recognize the application of Thermal cycles, Steam cycles, Entropy, fuel and combustion
oc 5	analyze data, to deal with center of Heat exchangers
oc6	used to apply the analytics of Power generation plants, Heat cycles.
oc7	Recognize the application of Steam units, Boilers, Steam turbines Condensers, Pumps.
oc8	Recognize the gas and combined units and operation of the gas turbine,
oc9	Recognize the application of Air compressors, Compound cycles, Heat recovery boilers from turbine exhaust gases.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

LO1	Recognize the thermodynamics basic definitions, and standard international units.
LO2	Recognize the thermal properties of pure substance
LO3	Identify the thermal properties of pure substance at various temperature and pressures
LO4	recognize the pressure and volume of ideal gas at different situation.

b. Psychomotor Domains (LOs):

LO5	Applying the first and second lows of thermodynamics to several application
LO6	Calculate the efficiency of the gas and steam power cycle
LO7	Draw the PV & TS diagrams for various gas and steam power cycle.

c. Affective Domains (LOs):

-	None

4- Program LOs served by the course:

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

Lo1.	Identify, formulate basic science and mathematics.
Lo2.	Simulate, analyze and interpret data.
Lo19.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.

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

Course (LOs)		program competencies	
LO1	Applying the first and second lows of thermodynamics to several application	**Lo1.**	Identify, formulate basic science and mathematics.

LO2	Calculate the efficiency of the gas and steam power cycle	**Lo1.**	Identify, formulate basic science and mathematics.
LO3	Draw the PV & TS diagrams for various gas and steam power cycle.	**Lo2**.	Simulate, analyze and interpret data.
LO4	Applying the first and second lows of thermodynamics to several application	**Lo2**.	Simulate, analyze and interpret data.
LO5	Calculate the efficiency of the gas and steam power cycle	**Lo19**.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
LO6	Draw the PV & TS diagrams for various gas and steam power cycle.	**Lo19**.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.
LO7	Applying the first and second lows of thermodynamics to several application	**Lo19**.	Solve complex engineering problems and solve problems in the field of electrical and electrical power engineering.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Working fluid, The ideal gas, The first law of thermodynamics,	2	2	0	LO1,2
2	Reversible processes, Irreversible processes.	2	2	0	LO1,3
3	The second law of thermodynamics,	2	2	0	LO5,6
4	Thermal cycles, Steam cycles, Entropy, fuel and combustion.	2	2	0	LO2,4
5	Heat transfer by conduction, Forced convection, Heat transfer by radiation, Heat exchangers.	2	2	0	LO2,4
6	Power generation plants, Heat cycles,	2	2	0	LO2,4
7	Analysis and presentation on charts for pure substances,				LO4
8	Midterm		1.0		
9	Steam units, Boilers, Steam turbines, Condensers, Pumps.	2	2	0	LO2,4
10	Gas and combined units and operation of the gas turbine,	2	2	0	LO2,4
11	Air compressors,	2	2	0	LO2,5
12	Compound cycles,	2	2	0	LO7
13	Heat recovery	2	2	0	LO6, 7
14	boilers from turbine exhaust gases	2	2	0	LO6
15	Revision				LO1:7
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	Site visit	Reports/ researches	Cooperative work	presentation	Discussion	modelling
	Teaching and Learning Methods												
LO1	✓												
LO2	✓	✓											
LO3	✓	✓	✓	✓	✓		✓		✓	✓			✓
LO4	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
LO5	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
LO6	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓
LO7	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	✓

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

8- Student assessment method

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

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

b- Time schedule of assessment

Quizzes	Quiz (1)	Week (3)
	Quiz (2)	Week (10)
Discussions		Every week for any student
Presentations and Movies		weekly
Sheets and Sketches		weekly
Researches and reports		Week (2,3)
the Projects		Week (4,8)
Practical modelling		Week (4,8)
Attendance		weekly
Mid-term exam		Week (٨)
final exam		Week (١٦)

c- Grading system

quizes	Quiz (1)	(5) marks	
	Quiz (2)	(5) marks	
Discussions	15%		
Sheets and Sketches	20%		
Researches and reports	20%	5 marks	(40) marks
the Projects	30%		
Practical modelling	20%		
Attendance		(10) marks	
Mid-term exam		(15) marks	
final exam			(60) marks
Total			(100) marks

10- List of references:

a) Course notes	Lecture notes and handouts
b) Required books	Holman, J. P., Thermodynamics, McGraw-Hill, New York. Streeter, Victor, L., Fluid Mechanics, 5th Edition, McGraw-Hill,

c) Recommend books	New York, ISBN 07-062191-9. Y. A. Cengel, "Thermodynamics" FIFTH EDITION, British,
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:	Prof.Dr. Al -Desouki Ibrahim Saleh Eid
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤

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

Course specification

Course code:	Course name
BASE 401	Communication Skills
A- Affiliation	
Relevant program:	Electrical power engineering
Department offering the program:	Electrical and communication engineering
Department offering the course:	Basic Science
Date of program operation:	2008-2009
Date of approval from the higher ministry of education	27/1/2008
Date of course operation	٢٠٢٣-٢٠٢٤

B-Basic Information

Course Name	Communication Skills
Code	BASE 401
Course Level	Fourth level courses (Senior-1) - Second semester (Spring)
Credit Hours	3Cr. Hr
Lectures	3hr
Tutorial	0hr
Total	3hr
Prerequisite	-
Instructor name/Email	Dr. Amera Marei amira.morai@sva.edu.eg

C- Professional information

1- Course core

Advanced technical communication skills, with emphasis on writing strategies for technical documents, oral presentations, and visual aids and Ethics of the engineering proficiency with emphasis on each departmental ethical and professional Licensure topics.

2- Course learning objectives:

oc 1	Recognize the meaning of communication, Its importance, and types of Communication
oc 2	declare self-concept, The concept of communication with oneself, ways of communicating with oneself and steps to communicate with oneself. focus
oc 3	used to reading attributes, reading methods, Factors affecting reading, Distractions in reading.
oc 4	Recognize the spoken verbal communication, Speaking and diction skills, and presentation skills.

oc 5	Recognize the Characteristics of nonverbal communication, The concept of non-verbal communication, Types of nonverbal communication
oc 6	Recognize the importance of discussion, styles of interlocutors, Attributes of the persuasive interviewer, and discussion skills
oc 7	able to succeed in the interview, how to write C.V, cover letter, and recommendation letter.

3- Learning outcomes of the course (LOs)

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

a. Cognitive Domains (LOs):

-	None

b. Psychomotor Domains (LOs):

-	None

c. Affective Domains (LOs):

LO1	Express using the basic skills to produce effective persuasive writing with a focus on organization, content, analysis of readings, and critical thinking. Provides training in the use and integration of sources, library, and online research.
LO2	Communicate effectively with the Basics of Scientific Research, Problem Meaning, how to choose a problem, and a research plane.
LO3	Express utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles
LO4	Eexpress his opinion through an oral presentation and flexible model recalling the final configuration through of masses.
LO5	Communicate effectively using appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses and objective engineering judgment to draw conclusions.
LO6	express his opinion through an oral presentation and a flexible model recalling the final configuration of masses.

4- Program LOs served by the course:

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

Lo33.	Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.
Lo34.	Use creative, innovative and flexible thinking.
Lo35.	Acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
Lo36.	Practice self-learning and other learning strategies.

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

Course (LOs)		program LOs	
LO1	Express using the basic skills to produce effective persuasive writing with a focus on organization, content, analysis of readings, and critical thinking. Provides training in the use and integration of sources, library, and online research.	**Lo33.**	Communicate to convey ideas verbally, numerically, graphically, and using symbols effectively with a range of audiences.
LO2	Communicate effectively with the Basics of Scientific Research, Problem Meaning, how to choose a problem, and a research plane.	**Lo34.**	Use creative, innovative and flexible thinking.
LO3	Express utilize contemporary technologies, codes of practice and standards, quality guidelines, health and safety requirements, environmental issues, and risk management principles	**Lo35.**	Acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
LO4	Eexpress his opinion through an oral presentation and flexible model recalling the final configuration through of masses.	**Lo35.**	Acquire entrepreneurial and leadership skills to anticipate and respond to new situations.
LO5	Communicate effectively using appropriate experimentation and/or simulation, analyze and interpret data, assess and evaluate findings, and use statistical analyses	**Lo36.**	Practice self-learning and other learning strategies.

LO6	and objective engineering judgment to draw conclusions. express his opinion through an oral presentation and a flexible model recalling the final configuration of masses.	**Lo36.**	Practice self-learning and other learning strategies.

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

Week No.	Topic	Lecture hr.	Tutorial hr.	Practical hours	course LOs
1	Introduction to Communication Skills	2	2	0	LO1,2
2	Communication with oneself	2	2	0	LO1,3
3	Methods of communication with oneself	2	2	0	LO6
4	Reception Skills	2	2	0	LO2,4
5	Reading Skills	2	2	0	LO2,4
6	Distractions in reading	2	2	0	LO2,4
7	Reading attributes				LO4
8	Midterm		1.0		
9	Transmitter skills	2	2	0	LO2,4
10	Writing Skills	2	2	0	LO2,4
11	Non-verbal communication	2	2	0	Lo2, Lo5
12	Discussion and persuasion skills	2	2	0	LO2,4
13	Distractions in discussion and persuasion skills	2	2	0	LO2,4
14	Communication in the work environment	2	2	0	LO2,4
15	Revision				LO2:5
16	Final Exam		2.0		
Total hours		28	28	0	--

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

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

LO3	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	
LO4	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	
LO5	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	
LO6	✓	✓	✓	✓	✓		✓		✓	✓	✓	✓	

Notes:*The research concerns the cooperative work, the discussion and the presentations.*
The Tutorials concerns the brain storming and the problem solving.
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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) Quiz (2)	(5) marks (5) marks	(50) marks
Discussions	50%		
Sheets and Sketches	25%		
Researches and reports	25%	10 marks	
the Projects	0%		
Practical modelling	0%		
Attendance		(10) marks	

Mid-term exam	(20) marks
final exam	(50) marks
Total	(100) marks

10- List of references:

a) Course notes	Lecture notes and handouts
b) Required books	Hargie, Owen, Ed. The handbook of communication skills. Psychology Press, 1997.
c) Recommend books	Crucial Conversations: Tools for Talking When Stakes Are High by Kerry Patterson, Joseph Grenny, Ron McMillan, and Al Switzler. Communication Skills Training: A Practical Guide to Improving Your Social Intelligence, Presentation, Persuasion, and Public Speaking by Ian Tuhovsky.
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 amples and topic-specified research

Course coordinator:	Dr. Amera Marei
program Coordinator	Dr. Ehab Mohamed Nabil Ismail Abdel Rasoul
Head of the Department	Dr. Ibrahim Ali Mahmoud Abdel Dayem
Date:	٢٠٢٣/٢٠٢٤