

Course Description

Course Description

This course description provides a brief summary of the most important characteristics of the course and the learning outcomes expected of the student to achieve, demonstrating whether he/she has made the most of the available learning opportunities. They must be match to the description of the programe.

1. Educational Institution	Shatt Al-Arab University College			
2. Scientific Department / Center	Computer Technology Engineering			
3. Course name/code	Electric fundamental			
4. Available forms of attendance	Weekly			
5. Semester/Year	2021/2020			
6. Number of study hours (total)	180 hours	Number of hours per week		
		theoretical	practical	Total
		2	2	4
7. Date of preparation of this description	2 – 10 - 2022			
8. Course Objectives: <ul style="list-style-type: none">• Understand the basics of electronic engineering with knowledge of how electronic circuits work• Electrolysis and the ability to determine the entire work and its application in practice.				

9. Course Outcomes and Teaching Methods, Learning and Evaluation

A- Cognitive goals

A1- Knowing the basics of electronic circuits, distinguishing all the physical components and their work, and knowing the basic principles.

A2- Solving complex electronic engineering problems through the use of technology and deduction of alternative parts

A3- Understand the engineering principles of the interconnection process, such as parallel and series with the power transmission process

A4- Calculation of voltage, current and power in all electrical circuits

A5- Distinguish the types of pieces and indicate how to draw them and know the capacity of each piece such as resistors, capacitors, etc.

A6- Calculates the power consumed in the circuit, the power derived from the source, and the maximum power transferred to the load

B . Course Skill Objectives: If the student successfully completes this course, he or she will be able to:

B1 - Identify complex problems in electronic circuits and determine how to solve them.

B2 - Applying engineering analysis and knowing the appropriate voltage and current for each electronic part

B3 - Knowledge of measuring devices and training in them, with knowledge of electronic parts and the differences between them

B 4- Linking the theoretical aspect with discussions and how to use tools to extract electronic circuits that are not available and cannot be obtained in the labor market

Teaching and learning methods

Study lectures

Discussions between different student groups on the application of theories and basics of electricity and the use of various electrical devices available to understand the components of materials

Establishing workshops and theoretical presentation on how to use the basics of engineering to build simple and complex electrical and electronic circuits

The use of multiple means to increase understanding and clarification through engineering analysis and to prove it through the devices available in the laboratory

Extra-curricular discussions and assignments to increase understanding in

applications and electronic circuits

Evaluation Methods

Semester exams and periodic process

Quizzes

Other extra-curricular exams

C. Sentimental and Valuable Objectives: If the student successfully completes this course, he will be able to:

C1- Enhancing thinking and planting the responsibility of the engineering profession

C2 - Using the basics of engineering and computers to support the country's economy and infrastructure development.

C 3- Respect for self and others through discussions aimed at improving engineering and technical skills with full knowledge of the latest various programs

C4 - Developing modern engineering techniques and skills and the tools necessary to practice the engineering profession, while thinking about using available technologies to produce electronic circuits that are not available or alternative.

Teaching and learning methods

- ♣ Theoretical presentation of the curriculum vocabulary, its importance and use, with realistic examples.
- ♣ Theoretical application in the laboratory with a full explanation of the set of tools used and the measurements.
- ♣ Classroom group discussions for practical and practical examples.

Evaluation Methods

The results are presented in a classroom to be discussed and the rest of the learners participate in the discussion.

d. General and qualifying skills transferred (other skills related to employability and personal development).

- D1. Build ideas and communicate them effectively orally and in writing.
- D2. Time management and work within deadlines.
- D3. Participate constructively in groups.
- D4. Search for information and use of information technology.

Teaching and learning methods

A practical programming problem in the field of specialization is addressed and groups of students (the number of students in each group ranges from 3 to 4 students) for the purpose of finding a solution to that problem, where each group writes and presents a report of the results of its work within a specified period of time.

Evaluation Methods

The results are presented in a row to be discussed and the rest of the totals participate in the discussion.

10. Course Structure

Al, Wee k	Hours	Required Learning Outcomes	Name of the unit and/or subject	Method of education	Evaluation Method
1	2 theoretical + 2 practical	Symbols And Abbreviations, Units, Electric Circuit & It's Element.	Symbols And Abbreviations, Units, Electric Circuit & It's Element.	Theoretical presentation With the help of With Charts Illustrative + practical lectures	Achievement test + Discussion and question
2	2 theoretical + 2 practical	The Direct Current Network. Kirchoff's Laws & Their Use In Network Analysis.	The Direct Current Network. Kirchoff's Laws & Their Use.	Theoretical presentation With the help of With Charts Illustrative + practical lectures	Achievement test + Discussion and question
3	2 theoretical + 2 practical	Series Circuits, Parallel Circuits, Series-Parallel Circuits , Open and Short Circuits, Source Transformation	Series Circuits, Parallel Circuits, Series-Parallel Circuits , Open and Short Circuits, Source Transformation.	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
4	2 theoretical + 2 practical	Conversion Of Delta To Star Connection And Vice Versa.	Conversion Of Delta To Star Connection And Vice Versa.	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
5	2 theoretical + 2 practical	Nodal Voltage Method	Nodal Voltage Method	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
6	2 theoretical + 2 practical	Loop (mesh)Current Method.	Loop (mesh) Current Method.	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
7	2 theoretical + 2 practical	Superposition Method	Superposition Method.	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class

8	2 theoretical + 2 practical	Thevenin's Theorem	Thevenin's Theorem	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
9	2 theoretical + 2 practical	Norton's Theorem	Norton theorem	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
10	2 theoretical + 2 practical	Maximum Power Transfer Theorem	Maximum Power Transfer Theorem	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
11	2 theoretical + 2 practical	Reciprocity Theorem	Reciprocity Theorem	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
12	2 theoretical + 2 practical	The Alternating Current Network Types of Alternating Waveforms, Generation of Alternating Current, and Definitions related to Alternating Waveforms.	The Alternating Current Network 'Types of Alternating Waveforms, Generation of Alternating Current, and Definitions related to Alternating Waveforms.	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
13	2 theoretical + 2 practical	The Mean Values of Current and Voltage	The Mean Values of Current and Voltage.	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class

14	2 theoretical + 2 practical	The Effective Vales of Current and Voltage	The Effective Vales of Current and Voltage	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
15	2 theoretical + 2 practical	Circuit Elements in the Phasor Domain	Circuit Elements in the Phasor Domain	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
16	2 theoretical + 2 practical	The Vector Diagram	The Vector Diagram	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
17	2 theoretical + 2 practical	Reviews for Complex Numbers and there mathematical operations th	Reviews for Complex Numbers and there mathematical operations	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
18	2 theoretical + 2 practical	Series and Parallel Ac Circuits	Series and Parallel Ac Circuits	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
19	2 theoretical + 2 practical	The Instantaneous Power and Mean Power of AC, Reactive and Apparent Power	The Instantaneous Power and Mean Power of AC, Reactive and Apparent Power	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
20	2 theoretical + 2 practical	Using Kirchhoff's law's to solve AC circuits	Using Kirchhoff's law's to solve AC circuits	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class

21	2 theoretical + 2 practical	Using Loop's method to solve AC circuits	Using Loops method to solve AC circuits	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
22	2 theoretical + 2 practical	Using Superposition's method to solve AC circuits	Using Superposition's method to solve AC circuits	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
23	2 theoretical + 2 practical	Using Thevenin's theorem to solve AC circuits	Using Thevenin's theorem to solve AC circuits	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
24	2 theoretical + 2 practical	Using Norton's theorem to solve AC circuits	Using Norton's theorem to solve AC circuits	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
25	2 theoretical + 2 practical	3- Phase Current, 3- Phase System, Y- Connection Delta Connection.	3- Phase Current, 3- Phase System, Y- Connection Delta Connection.	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
26	2 theoretical + 2 practical	Solving 3-phase networks with balanced loads, Solving 3-phase networks with unbalanced loads	Solving 3-phase networks with balanced loads, Solving 3-phase networks with unbalanced loads	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
27	2 theoretical + 2 practical	Electromagnetism , Permanent and artificial Magnets, The Magnetic Field, The flux density , The magnetic reluctance , The permeability , The mmf , The magnetic force , The electromagnetic circuits.	Electromagnetism, Permanent and artificial Magnets, The Magnetic Field, The flux density , The magnetic reluctance , The permeability , The mmf , The magnetic force , The electromagnetic circuits,	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class

28	2 theoretical + 2 practical	The implementation of B-H curves for solving electromagnetic circuits	The implementation of B-II curves for solving electromagnetic circuits	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
29	2 theoretical + 2 practical	Transformers , The hysteresis losses , The eddy current losses	Transformers, The hysteresis losses: The eddy current losses	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class
30	2 theoretical + 2 practical	Direct Current Machines, Direct Current Generators, Asynchronous And Synchronous Machines.	Direct Current Machines, Direct Current Generators, Asynchronous And Synchronous Machines.	Theoretical presentation With the help of With Charts Illustrative + Practical Lectures + Panel Discussions	Achievement test + Discussion and question + and answer my class

12. Infrastructure	
1 Required textbooks	*Boylestad, R. L. " Introductory Circuit Analysis", 4th Edition, Charles E. Merill Publishers.
Recommended books and references (scientific journals, reports,....)	Alexander C. K. and Sadiku M. N. "Fundamentals of Electric Circuits", McGraw- Hill Companies. *Alexander C. K. and Sadiku M. N. " Circuit Analysis, Theory and Practice", 2nd Edition, Robbins & Miller. *B.L Theraja, " A Text Book of Electrical Technology" 4.th Edition.

13-Course improvement Plan
Increasing the number of hours of the theoretical lecture to three hours instead of the current two hours, where the extra hour is devoted to discussing additional methods and programming examples while expanding the establishment of panel discussions leading to a better understanding of the vocabulary of the course.