

COURSE PLAN

FIRST: BASIC INFORMATION

College					
College	: Faculty of Engineering Technology				
Department	: Mechanical Engineering				
Course					
Course Title	: Basics of Electricity and Electronics				
Course Code	: 020300101				
Credit Hours	: 2 (2 Theoretical, 0 Practical)				
Prerequisite	: 020000161				
Instructor					
Name	: Dr.				
Office No.	:				
Tel (Ext)	:				
E-mail	:				
Office Hours	:				
Class Times	Building	Day	Start Time	End Time	Room No.
	00	00	00	00	00
Text Book					
Title	: • Electricity and Electronics Fundamentals, Second Edition, Dale R. Patrick, Stephen W. Fardo. • Basic Electricity 2nd Edition.pdf Charles W Ryan – Google.				

References

Title :

SECOND: PROFESSIONAL INFORMATION

COURSE DESCRIPTION

This course covers the knowledge about theoretical basic principles of electric and electronic equipment in automobiles. It includes concepts of DC circuit, power measurements in DC/AC circuits, current and voltage measurements, simple electronic circuits, DC/AC machines, Single-phase transformers and Protection devices and circuits.

COURSE OBJECTIVES

The objective of this course is to enable the student to do the following:

1. Develop a working competence of using electric and electronic equipment.
2. Explain a basic knowledge of AC and DC circuits and Current and voltage measurements.

3. Explain a knowledge of electrical machines.
4. Explain a knowledge of control elements and protection devices.

COURSE LEARNING OUTCOMES

By the end of the course, the students will be able to:

- CLO1. Explain the **series** and parallel DC circuits
 CLO2. Explain the basics of AC circuits
 CLO3. Explain the basics of Transformers
 CLO4. Explain the basics of Electrical Machines
 CLO5. Explain the basics of Semiconductor devices
 CLO6. Explain the basics of Control and protection devices

COURSE SYLLABUS

Week	Unit	Content	Related LO and Reference (Chapter)	Proposed assignments
1	Series and parallel DC circuits-1	<ul style="list-style-type: none"> • Current measurements. - Definition of Voltage, Current and Resistance - Electrical Units - Battery - Digital Meters 	CLO1	
2	Series and parallel DC circuits-2	<ul style="list-style-type: none"> • Voltage Devices • Current devices. • Conservation of energy 	CLO1	
3	Series and parallel DC circuits-3	<ul style="list-style-type: none"> • Series and parallel connections of resistors • Power measurements. 	CLO1	
4	AC circuits-1	<ul style="list-style-type: none"> • Introduction to AC. • Sine wave voltage. • Main characteristics of sine-waves. 	CLO2	
5	AC circuits-2	<ul style="list-style-type: none"> • Single-phase AC circuits. • Basic calculations of series and parallel RLC circuits. Power factor. 	CLO2	
6	AC circuits-3	<ul style="list-style-type: none"> • Using of oscilloscope to determine and measure the main features of sine waves. 	CLO2	
7	Transformer	<ul style="list-style-type: none"> • Basic construction and principle operation of single-phase transformer. • Basic relationships between primary and secondary windings. 	CLO3	
8	Mid Exam			
9	Electrical Machines-1	<ul style="list-style-type: none"> • DC motors and generators. • Principle of operation. Construction. • Main characteristics. 	CLO4	



10	Electrical Machines-2	<ul style="list-style-type: none"> • Induction motors: single-phase and three-phase. • Construction and basic principle of operation. • Main characteristics. 	CLO4	
11	Semiconductor devices-1	<ul style="list-style-type: none"> • Diodes • Transistors. 	CLO5	
12	Semiconductor devices-2	<ul style="list-style-type: none"> • Main characteristics. • Symbols. 	CLO5	
13	Semiconductor devices-3	<ul style="list-style-type: none"> • Basic applications. 	CLO5	
14	Control and protection devices-1	<ul style="list-style-type: none"> • Switches, relays, circuit breakers, electromagnetic, thermal and bi-metallic contactors. 	CLO6	
15	Control and protection devices-2	<ul style="list-style-type: none"> • Ratings, applications, symbols, basic principle of operation. 	CLO6	
16	Final Exam			

COURSE LEARNING RESOURCES

The effectiveness of teaching in this course depends on making students familiar with the basic electrical and electronic systems, such as AC and DC devices, Electrical Machines, semiconductors, and protection devices.

Teaching methods:

- **Lectures and HomeWorks:** using PowerPoint for, example, by the teacher to provide the students with the all information that they need, and to give them a home work as a research method.
- **Online research skills,** watching related videos such as you tube, on topics related to course objectives and recent developments in the field of specific work.
- **Learning skills and adaptability:** Developed by transferring students and reconfiguring work teams to enable them to adapt to other individuals from time to time.

ONLINE RESOURCES

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ASSESSMANT TOOLS

(Write assessment tools that will be used to test students ability to understand the course material and gain the skills and competencies stated in learning outcomes

ASSESSMENT TOOLS	%
Quizzes	10
Researches and Reports	
Participation	
Oral Exams	
Activities/attendance	



Presentation	10
Mid Exam	30
Final Exam	50
TOTAL MARKS	100

THIRD: COURSE RULES

ATTENDANCE RULES

Attendance and participation are extremely important, and the usual University rules will apply. Attendance will be recorded for each class. Absence of 10% will result in a first written warning. Absence of 15% of the course will result in a second warning. Absence of 20% or more will result in forfeiting the course and the student will not be permitted to attend the final examination. Should a student encounter any special circumstances (i.e. medical or personal), he/she is encouraged to discuss this with the instructor and written proof will be required to delete any absences from his/her attendance records.

GRADING SYSTEM

Example:

0 – 49 Fail
50 – 100 Pass

REMARKS

{ The instructor can add any comments and directives such as the attendance policy and topics related to ethics }

COURSE COORDINATOR

Course Coordinator:
Signature:
Date:

Department Head:
Signature:
Date: