

University/Academy: Benha University
Faculty/Institute: Benha Faculty of Engineering
Department: Electrical Engineering

Form no. (12)
Course Specification

1- Course Data		
Course Code: E1103	Course Title: Electrical Engineering Applications (a)	Academic Year/Level: Second year
Specialization: Electrical Engineering	No. of Instructional Units: 4 Lecture 1 Practical 3	

2- Course Aim	<p>By the end of this course the, the student will be familiar with the following; Laboratory Safety (Personal safety procedures, Protection of components and devices against electrostatic discharges). Basic concepts (Hand tools, soldering basics, connectors and cables). Familiarization with electronic components (Resistors, capacitors, inductors, diodes, transistors, ICs, etc). Electrical drawing and diagrams (Symbols of electronic components, schematic diagram, block diagram, assembly diagram, layout diagram). Printed circuit board (Fabrication methods, manual, photo-etching, silkscreen, etc). Introduction to CAD (in electrical design, Orcad package). Familiarization with measuring instruments (Ammeter, voltmeter, multimeter, and oscilloscope). Simple projects (Using handmade PCB, dual polarity power, supply, 555-IC based timer, light dimmer, stable circuit using 555-IC, light switch). Assembly of complete project (using pre-made PCB). Electrical power circuit elements (Knife switches, fuses, load switches, contactors circuit breakers, relays, thermal overload, etc). Simple electrical power circuits examples (simple distribution board, verification of simple logic gates using contactors and relays, motor start stop, motor speed reversal, star-delta motor starter).</p>
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3- Intended Learning Outcome

a- Knowledge and Understanding	<ul style="list-style-type: none"> • Mention the laboratory safety and electronic components. • Draw electrical circuit and printed circuit board. • Mention the electronic elements, electrical power circuit elements and measuring instrument. • Describe the working with CAD. • Explain how to assemble a complete project. • Define and use the electrical power circuit elements.
b- Intellectual Skills	<ul style="list-style-type: none"> • Analyze the basic concepts of electrical applications. • Evaluate the drawing steps of electrical circuits. • Formulate Understand the design procedures of layout and PCB. • Analyze the basic concepts of electrical applications. • Evaluate procedures of complete project assembly.
c- Professional Skills	<ul style="list-style-type: none"> • Collect basic instruments that measure the electrical quantities. • Perform drawing steps for electrical circuits and PCB. • Perform simple lab projects. • Extract information from collected data in the lab.
d- General Skills	<ul style="list-style-type: none"> • By the end of this course, the student should be able to: • Work cooperatively and effectively in a group. • Find information independently.

4- Course Content	<ul style="list-style-type: none"> • Introduction • Laboratory Safety • Basic concepts • Familiarization with electronic components • Electrical drawing and diagrams • Printed circuit board • Introduction to CAD • Familiarization with measuring instruments • Simple projects • Assembly of complete project • Electrical power circuit elements
5- Teaching and Learning Methods	<ul style="list-style-type: none"> • Lectures. • Practice in Laboratories. • Internet collected information and Self-study projects.
6- Teaching and Learning Methods for Students with Special Needs
7- Student Assessment:	
a- Procedures used:	<p>Written exams (Midterm), assignments and quizzes to assess knowledge and understanding, and interpretation capabilities of physical phenomena.</p> <p>Oral exams to assess the abilities of discussing physical concepts.</p> <p>Practical exam to assess measuring and professional skills.</p>

b- Schedule:
c- Weighing of Assessment:
8- List of Textbooks and References:
a- Course Notes	Lecture notes.
b- Required Books (Textbooks)
c- Recommended Books	Electrical Engineering: Principles and Applications (Allan R. Hambley).
d- Periodicals, Web Sites, ..., etc.

Course Instructor: Dr. Wael A. Mohamed
Head of Department: Prof. Mahmoud Elbahy

Date:...../...../.....