Course Specifications

University: Benha University  
Faculty: Benha Faculty of Engineering

Programme(s) on which the course is given: Electrical Engineering technology.
Major or minor element of programmes: Major
Department offering the programme: Electrical Engineering technology Dep.
Department offering the course: Electrical Engineering technology Dep.
Academic year / Level: Second year
Date of specification approval: 2009

A- Basic Information

Title: Engineering Applications  
Code: E240
Credit Hours: N.A.  
Lecture: 1
Tutorial: 0  
Practical: 4  
Total: 5

B- Professional Information

1 - Overall aims of course

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).

2- Intended learning outcomes of course (ILOs)

a. Knowledge and understanding:
- 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
- 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 and practical skills
- 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 and transferable skills
By the end of this course, the student should be able to:
- Work cooperatively and effectively in a group.
- Find information independently.

3- Contents

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4- Teaching and learning methods

- Lectures.
- Practice in Laboratories.
- Internet collected information and Self-study projects.

5- Student assessment methods

- Written exams (Midterm), assignments and quizzes to assess knowledge and understanding, and interpretation capabilities of physical phenomena.
- Oral exams to assess the abilities of discussing physical concepts.
- Practical exam to assess measuring and professional skills.

6- List of references

6.1- Lecture notes.
6.2- Recommended books.


7- Facilities required for teaching and learning

   Lecture rooms –Experimental Labs.

Course coordinator:

Head of Department: Assoc. Prof. Ghada Amer

Date: