

BENT312 Electrical and Electronic Components 2

ECTS Value: 5 ECTS
Self-Study Hours: 64

Contact Hours: 25
Assessment Hours: 36

Overall Objectives and Outcomes

This module starts by giving the student a basic understanding of discrete electronic components such as passive components. It will then continue by outlining active components such as actuators, motors and relays and electrical sources such as batteries, power supplies, solar cells. Special mention will be given to electrical sources between renewable and non-renewable energy sources together with the definitions of primary and secondary sources. Finally, the module concludes by looking into various switches and their use in electronic circuits.

By the end of this module, the learner will be able to:

Competences

- identify electrical and electronic components from their schematic, pictorial and real-life representation in discrete or in circuits including specifications, classification and labelling;
- master and identify in sub-circuits the various electrical sources for electronic circuits such as batteries, power supplies and solar cells and their combined configuration;
- determine the use and function of most common switches such as single pole/throw and double pole/throw switches.

Knowledge

- know the design and application of electrical and electronics components through calculations;
- understand the principles of operation of actuators, motors and relays;
- understand the principles of operations of electrical energy sources including renewable and non-renewable sources;
- interpret the characteristics from datasheets of individual components.

Skills

- use actuators and components in actuating circuit/s or visual indicator circuit/s;
- use the combination of electrical energy sources as reliable portable power supplies.

Assessment Methods

This module will be assessed through Research Assignment: (60%), Practical assignment (40%)

Suggested Readings

Core Reading List:

1. Hughes Edward, (2008). Hughes Electrical and Electronic Technology, Tenth Edition. Pearson PH.
2. Bird J., (2017). Electrical and Electronics Principles & Technology. Routledge.
3. Everett, B., Boyle, G., Peak, S. and Ramage, J. (Eds). (2011). Energy Systems and Sustainability: Power for a Sustainable Future. UK: Oxford University Press.

Supplementary Reading List:

1. Platt, C. (2016). Make: Encyclopaedia of Electronic Components Volume 3: Light, Sound, Heat, Motion, Ambient, and Electrical Sensors. Maker Media Inc.
2. Nilsson, J.W. and Riedel, S. (2014). Electric Circuits, Global Edition. Pearson.

Useful Online Resources:

1. www.batteryuniversity.com
2. www.pveducation.org
3. www.edisontechcenter.org