Additional Links

Student Group

First Name	Surname	Matrikel Nr.

Table of Contents

1. physical values
2. introduction in structure of matter
    1. electrical charge
    2. atoms
    3. electrical conductivity in metals
    4. electrical conductivity in semiconductors and isolators
    5. examples of conductive properties (gaseous, liquid, bulk)
3. effects of electrical current
    1. thermal effects
    2. magnetic effects
    3. electromagnetic effects
    4. chemical effects
4. introduction in DC circuits
    1. simple model for voltage and current
    2. technical direction of the current
    3. the electric circuit
    4. important circuit symbols
    5. ohm's law
    6. convention for assigning directional signs
    7. Kirchhoff voltage law (Kirchhoff law for meshes)
    8. divided circuit, parallel cicruit, conductance
    9. voltage divider
    10. simplification of networks
    11. superpositioning
    12. Thevenin's theorem (realistic electric sources)
    14. basic ciruits
        1. example for series circuit: contact resistance given by (0) connection cable (ca. 10..20mOhm) (1) resistance of crimping, (2)resistance of contact body (e.g. with spring), (3) contact spring element (ca. 1mOhm). All three for male and female connector each
5. linear sources

- https://en.wikibooks.org/wiki/Electronics

You already know V-I-R and you not only connect AC/SC with music?
Great! Then you should Go one step Fürther.
In this course we will investigate

- which ideal components are used in circuits and
- how they interact with each other and different typesaf current.

Introduction in Electrical Engineering 1
or: How to work with this course?

Direct Current Circuits

1. Preparation, Properties, Proportions

or: Watt is Power and Current?
2. Simple Circuits
   or: about Branches and Stars
3. Non-ideal Sources and two terminal Networks
   or: something lumpy with two Pins and why shots circuits may be important
4. Network Analysis
   Recipes for Networking
5. Switching Operations of RC-Combinations
   oder: unfinite Charging

Alternating Current Circuits

6. Introduction in Alternating Current Technology
   or: active and reactive
7. Circuits under different frequencies
   or: dampening and oscillating

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Weiterführende Links

Lesestoff

- Online Brückenkurs des KIT/Uni Stuttgart: Schönes, teilanimiertes Onlineskript, welches die Kapitel 1, 2, 3 und 5 abdeckt
- H.Er.T.Z der HS Karlsruhe: Das **H**ochschuloffene **E**lekt**r**o**t**echnik **Z**entrum der Karlsruher HS hat ein schönes Online-Skript
- LeifiPhysik: Hier finden Sie weitere Erklärungen zu unseren Kapiteln auf Berufschul-/Gymnasial-Ebene.
- Electricity and Magnetism: beautiful online course covering most of the parts of my course.

Übungsaufgaben

- Passend zum H.Er.T.Z Skript (siehe oben), gibt es noch weitere Übungsaufgaben
- Weiter Übungsaufgaben werden über ILIAS ausgeteilt

Additional Links

English

- A great introductary script into electrical engineering can be found at LibreText - Physics II Thermodynamics, Electricity and Magnetism. The content ist originally from OpenStax.
- Another good introduction ist given by HyperPhysics

German

- simple club: Erklär-Videos zu Elektrotechnik im Physik-Bereich ; Abo nicht notwendig!
- Elektrotechnik einfach erklärt: noch wenige, aber gut entwickelte Videos
- Elektrotechnik in 5 Minuten: guter Fundus an kurzen Videos