

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 circuit, conductance
 9. voltage divider
 10. simplification of networks
 11. superpositioning
 12. Thevenin's theorem (realistic electric sources)
 14. basic circuits
 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>

Additional Links

- A great introductory script into electrical engineering can be found at [LibreText - Physics II Thermodynamics, Electricity and Magnetism](#). The content is originally from [OpenStax](#).
- Another good introduction is given by [HyperPhysics](#)

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