Technology
Arts Sciences
TH Köln

Course
SNT - Switch-Mode Power Supplies

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General information

Long name	Switch-Mode Power Supplies
Approving CModule	SN_BaET
Responsible	Prof. Dr. Christian Dick Professor Fakultät IME
Organisation and materials	undefined
Level	Bachelor
Semester in the year	summer semester
Duration	Semester
Hours in self-study	60
ECTS	5
Professors	Prof. Dr. Christian Dick Professor Fakultät IME
Requirements	Successful participation in the module power electronics
Language	German, English if necessary
Separate final exam	Yes

Final exam

Details

It is planned to conduct the summary examination as an oral examination, in individual cases with a high number of candidates also a written examination. The examination ensures that each student has achieved the goals of the L.O. individually.

55% of this summary examination is included in the overall grade. The remaining 45% weighting consists of an assessed internship, which does not take place every semester.

Minimum standard

Sound explanation of the function of diverse converters

Exam Type

It is planned to conduct the summary examination as an oral examination, in individual cases with a high number of candidates also a written examination. The examination ensures that each student has achieved the goals of the L.O. individually.

55% of this summary examination is included in the overall grade. The remaining 45% weighting consists of an assessed internship, which does not take place every semester.

Lecture / Exercises

Learning goals

Knowledge

Flow converter, flyback converter, push-pull converter, resonant converters, soft switching, EMI and filtering

Skills

Independent familiarisation with topics that are assigned as tasks

Analysis and evaluation of RF circuits incl. interference emissions and filtering

Magnetic Circuit Design

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Lecture	2
Exercises (whole course)	2
Exercises (shared course)	0
Tutorial (voluntary)	0

Separate exam

none

Practical training

Learning goals

Demonstrate action competence

The following topologies can be analysed, described, evaluated, constructed, put into operation and measured by the students (in lab probably 3 out of 4 Topologies):

buck converter with focus on inductance

flyback converter

push-pull converter

series-resonant converter

Expenditure classroom teaching

Type	Attendance (h/Wk.)
Practical training	2
Tutorial (voluntary)	0

Separate exam

Exam Type

working on practical scenarion (e.g. in a lab)

Details

The students work independently and consciously with few specifications / instructions on the construction of converters. In a detailed discussion with the lecturer, the students explain the steps and effects.

Minimum standard

The students are able to describe the function of the assembled circuits in a valid way, the circuits function in the laboratory setup.