

“circuits”

course syllabus

Summer program 2020 in GERMANY

at



Jade University of Applied Sciences
Friedrich-Paffrath-Strasse 101
D-26389 Wilhelmshaven
GERMANY

Time and Location

This course circuits will take place from July 6 to August 16, 2020. Time details are listed in the 2020 schedule (not part of the syllabus). The syllabus is adjusted to reflect special circumstances related to the international experience. The tabular schedule is a guideline; we will try to follow it closely, but be prepared to adjust to changes in pace dictated by the collective experience.

Instructors

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Office Hours

We can meet after each class or lab for questions or on appointment.

Catalog Description and Prerequisites

The circuits course consists of three parts:

- **theoretical class**
- **simulation class and simulation in a computer pool room**
- **practical part in a lab**

American and German students attend the classes together. Simulation groups and laboratory groups are mixed too.

All students have to attend the theoretical classes and simulation classes, the simulation work in a computer pool and the laboratory work.

Content of circuits – class (person: JW)

- Circuit concepts
- Circuit analysis
- Capacitance and inductance
- Transient response
- AC circuit analysis
- AC power
- Reviews and exams

Content of circuits - simulation class and simulation in a computer pool room (person: US)

- Introduction to PSpice (**S**imulation **P**rogram with **I**ntegrated **C**ircuit **E**mphasis)
- Schematics
- Parts
- Libraries
- Analysis
- Analysis of circuits explained during class.

Content of practical part in a lab (person: RS)

- Security information
- Laboratory equipment
- Setup of the simulated circuits
- Measurements
- Comparison of the measurement results with the theory and simulation
- Report

Pre-requisite(s) or co-requisites:

MATH 1352.

Textbook(s) and/or other required materials

e. g.

Alexander and Sadiku, Fundamentals of Electric Circuits, 4th Edition, McGraw Gill, 2009

Afshin Izadian, Fundamentals of Modern Electric Circuit Analysis and Filter Synthesis, Springer, 2019

<https://link.springer.com/book/10.1007/978-3-030-02484-0>

Purpose

In this course students can apply their theoretical knowledge acquired in their previous studies. With the new theory in this class they understand circuits, they can simulate circuits and verify simulation results in laboratory work. They work together in small groups of American and German students.

Objectives - learning outcomes

Upon completion of this course, students should be able to:

1. analyze linear electric circuits to determine DC response.
2. analyze linear electric circuits to determine transient response.
3. analyze linear electric circuits to determine sinusoidal steady-state response, including power and energy storage.

Additionally students should be able to:

- work in international groups of different cultures.
- apply their previous knowledge and new features to a result.
- have first experience in simulating circuits
- have first experience in validating simulating results in laboratory work
- write a short measurement report

Course Schedule

Look at separate schedule of the class!

Assessment Instruments

There will be short written tests after the theoretical class, after the simulation class and an example report after the lab.

Grading Policy

Final grade is determined based on both tests and report. Letter grades will be assigned using University standards. The approximate weighting of graded material in determining the final grade is as follows:

Item	Percent of Grade
tests circuits class	50 %
test simulation	30 %
report	20 %

Grades will be provided latest 2 weeks after the end of the summer program.

Academic Misconduct

Cheating, plagiarism and academic dishonesty will not be tolerated.

Disability Policy

“Any student who, because of a disability, may require special arrangements in order to meet the course requirements should contact the instructor as soon as possible to make any necessary arrangements. Students should present appropriate verification from Student Disability Services during the instructors office hours. Please note instructors are not allowed to provide classroom accommodations to a student until appropriate verification from Student Disability Services has been provided. For additional information, you may contact the Student Disability Services office at TTU 335 West Hall or 806- 742-2405.