M.Sc Non Linear Electronics

Introduction to the Lecture

LectureSlide

D. T. McGuiness, Ph.D

2025.WS

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- The goal of this lecture is to give you a deper understanding of electronic components used in everyday-life from the point-of-view of engineers.
- This lecture is a total of 2 SWS with a total of thirty (30) UE.
- A unit (UE) is defined as 45 min lecture.

Introduction

- Lecture materials and all possible supplements will be present in its Github Repo.
  - You can easily access the link to the web-page from here.

> Github is chosen for easy access to material management and CI/CD capabilities and allowing hosting websites.

- In the lecture content is also distributed as a WebBook which can be accessed from the Repo website.

- The student should have a preliminary knowledge on passive circuit elements (R, L, and C) and should be comfortable applying circut analysis techniques
- After completion, the student will have a good foundation on advanced circuit analysis, non-linear component knowledge and a good understanding on integrated circuits and amplifier design.

Requirements	Taught Lecture	Code	Degree	Outcome
Circuit Analysis	Electrotechnic	MDT	B.Sc	Advanced Circuit Analysis
Linear Circuits	Electrical Engineering	ELT	B.Sc	Transistor Physics
				IC Design

Table 1: Distribution of materials across the semester.

Description	Value
Official Name	Nichtlineare Elektronik
Lecture Code	EDY
Module Code	MECH-M-1-EDY-NLE-VO
Lecture Name	Non Linear Electronics
Semester	1
Season	WS
Lecturer	Daniel T. McGuiness, Ph.D
Module Responsible	GeS
Software	SPICE, Open Modelica
SWS Total	2
UE Total	30
ECTS	3
Work Language	English

- The lecture will have a single personal assignment comprising of a set list of questions and a final exam comprising of all the topics covered in the lecture.
- For the written exam you are allowed to write your own equation reference paper, as long as it is a single sheet of A4, double sided and contains no exercise or solutions.
- The final grade will be the total of assignment and exam with passing based on their sum rather than individual.

Assignment Type	Value
Personal Assignment	40
Final Exam	60
Sum	100

Title
Linear And Nonlinear Circuits
Introduction to Electric Circuits (9th Edition)
Microelectronic Circuits (7th Edition)
Electrical and Electronic Technology (10th Edition)
Electronic Amplifier Circuits: Theory and Design

Table 2: Lecture sources which can be useful during the course of the lecture. For more information on sources, please consult the repo.

Topic	Units	Self Study
Signals and Amplifiers	4	8
Semiconductors	4	8
Operational Amplifiers	4	8
Diodes	4	8
MOS Field Effect Transistors	4	8
Bipolar Junction Transistors	4	8
Transistor Amplifiers	4	8
SUM	28	56