Introduction to the Lecture

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MCI

M.Sc Drive Systems

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- Warning: This is the content only covered by me as this lecture is shared by both me and Prof. Bernhard Hollaus, Ph.D.
- The goal of this lecture is to introduce to you the interesting world of machine design/control. The content is relatively math heavy but there are quite some simulations to give a better picture on how machines operate and are controlled.
- Simulation are done via MATLAB and SIMULINK and therefore to get the most out of the lecture, it is recommended for students to download and install these software(s). The structure for this lecture is as follows.
- This lecture is a total of 1 SWS with a total of thirty (15) UE.
  - With 15 UE is devoted to lectures.

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 some exercises are solved using programming and can be accessed from the Repo website.

Introduction

- The student should be comfortable with working with electrical machines and have a fundamental undestanding of poly-phase and AC circuits.
- For a refreshment on its content the students are encouraged to read the materials presented in the following repos:
- B.Sc Drive Technology
- M.Sc Higher Mathematics I

Requirements	Taught Lecture	Code	Degree	Outcome
Laplace Transform	Higher Mathematics I	HMA	M.Sc	Modelling Machines
Linear Algebra	Higher Mathematics I	HMA	M.Sc	Working with SIMULINK
Machine Basics	Drive Technology	ATS	B.Sc	Machine Control Methods
Machine Builds	Drive Technology	ATS	B.Sc	Magnetic Materials
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Table 1: Distribution of materials across the semester.

Introduction

Description	Value
Official Name	Antriebssysteme
Lecture Code	ATS
Module Code	MECH-M-2-ATS-ATS-VO
Degree	M.Sc
Lecture Name	Drive Systems
Semester	2
Season	SS
Assignments	Oral Exam
Lecturer	Daniel T. McGuiness, Ph.D, Prof. Bernhard Hollaus, Ph.D
Module Responsible	DaM
Software	Simulink, MATLAB
SWS Total	1
UE Total	15
ECTS	2

Table 2: Information regarding the lecture.

Introduction

- The lecture examination will be %100 oral exam based where you will be asked questions about the topics discussed during the lectures.
- The exam will be carried out by both lecturers who will ask questions from their respective topics.

Assignment Type	Value
Oral Exam	100
SUM	100

Table 3: Distribution of materials across the semester.

Title
Advanced electric drives: analysis control and modeling using MATLAB/Simulink
Analysis of electric machinery and drive systems
Design of rotating electrical machines
Electric Machinery Fundamentals (5th Edition)
Electric Machinery.
Electric Motors and Drives: Fundamentals Types and Applications
Electrical Machines and Drives: Fundamentals and Advanced Modelling
Electrical machines, drives, and power systems
Fundamentals of Electrical Drives

Table 4: Lecture sources which can be useful during the course of the lecture. For more information on sources, please consult the repo.

Introduction

- The content and unit distribution of the lecture is as follows where a unit is defined as 45 min lecture.

Topic	Units	Self Study
Modelling DC Machines	4	8
Induction Motor Dynamics and Control	4	8
Vector Controlled Induction Machines	4	8
Sum		

Table 5: Distribution of materials across the semester.