Lecture Syllabus

Module Code	Semester	ECTS	SWS	Lecture	Tutorial	Lab
MECH-M-1-EDY-EDY-VO	1	3	2	2	0	0

Course Name	Electrodynamics		
Lecturer	D. T. McGuiness, Ph.D (Daniel.McGuiness@mci.edu) (4A-434c)		
Study Programme	Mechatronik Smart Technologies		
Official Name	Elektrodynamik	**Lingo**	English
Lecture Prerequisites	The student should be comfortable with working with physical problems and have a basic understanding of material science along with calculus.		
Course Objectives	The goal of this lecture is to introduce you to the physical foundation governing all thing electrical and magnetics. Through the eyes of an engineer we shall look at different magnetic and electric events and using these effects, utilise the most out of materials.		
Primary Course Content	Lecture Homepage on GitHub | WebBook		
Secondary Course Content(s)	*A modern introduction to classical electrodynamics* by Maggiore Michele , *Introduction to Electrodynamics (4th Edition)* by Griffiths David J. , *Field and Wave Electromagnetics* by Cheng David Keun. , by Electromagnetic Waves and Radiation , by Schaums Electromagnetics ,		
Homework(s) and Project(s)	Personal Assignment (40) Final Exam (60)		

	Assignment Type	Effect	Count
Assessment Criteria	Personal Assignment	40	1
	Final Exam	60	1

Lecture Structure

Order	Topic	Units	Self Study
1	The Purpose of Electromagnetism	4	8
	Mechanics in Four Different Views		
2	Vector Calculus	4	8
	Vector Algebra · Differential Calculus · Integral Calculus · Curvilinear Coordinates · Dirac Delta Function · Vector Field Theory		
3	Electrostatics	4	8
	The Electric Field · Divergence and Curl of Electrostatic Fields · Electric Potential		
4	Advanced Mathematical Methods	4	8
	Solving Electrostatics · Method of Images · Separation of Variables · Multipole Expansion		
5	Electric Fields in Matter	2	4
	Polarisation · The Field of a Polarised Matter		
6	Magnetostatics	4	8
	Lorentz Force Law · Divergence and Curl of B · The Magnetic Vector Potential@@@		
7	Magnetic Fields in Matter	2	4
	Magnetisation · The Field of a Magnetised Object · The Auxiliary H Field · Linear and Non-Linear Media		
8	Electrodynamics	4	8
	Introduction · Electromagnetic Induction		
9	Final Exam	2	4
	Final Exam		
10	**Sum**	30	60

- Any major announcements will be made on SAKAI regarding any possible date/content/structural changes for the assignment(s), exam(s).

- Any lecture material will be posted at the lectures corresponding GitHub home-page. The link will be present on the lectures SAKAI homepage.

- If there are any questions regarding course content/exams/assignments please do not refrain from contacting me (Daniel.McGuiness@mci.edu).