جامعة الملك عبدالله
للعلوم والتقنية
King Abdullah University of
Science and Technology

Course Syllabus: Electromagnetics - EE 122

Division	Computer, Electrical and Mathematical Sciences & Engineering
Course Number	EE 122
Course Title	Electromagnetics
Academic Semester	Spring
Academic Year	2016/2017
Semester Start Date	01/22/2017
Semester End Date	05/18/2017
Class Schedule (Days & Time)	02:30 PM - 04:00 PM | Mon Thu

Instructor(s)

Name	Email	Phone	Office Location	Office Hours
Talal Al Attar	talal.attar@kaust.edu.sa			TBD

Teaching Assistant(s)

Name	Email
TBD	TBD

Course Information

Comprehensive Course Description	This course covers the following topics: Vector analysis and vector calculus. The laws of Coulomb, Lorentz, Faraday, and Gauss. Dielectric and magnetic materials. Energy in electric and magnetic fields. Capacitance and Inductance. Maxwell's equations. Wave equation. Poynting vector. Wave propagation and reflection.
Course Description from Program Guide	The course covers quasistatic and dynamic solutions to Maxwells equations; waves, radiation, and diffraction. The main contents are: vector analysis and vector calculus. The laws of Coulomb, Lorentz, Faraday, Gauss, Ampere, Biot-Savart and Lenz. Dielectric and magnetic materials. Poisson equation solutions. Forces, Power and Energy in electric and magnetic fields. Capacitance and Inductance. Maxwells equations. Boundary conditions. Introduction to Wave equation, Poynting vector, Wave propagation and reflection. Includes weekly Simulations.
Goals and Objectives	After completing this course, the student should have a firm grasp on: •The concepts of the vector calculus (Scalars, vectors, gradient, divergence and curl). •The application of different laws (Coulomb, Gauss, Poisson, Ampere, Biot-Savart, Lorentz, Maxwell, and Faraday) •The difference between dielectrics and conductors. •The nature of the magnetic materials and circuits.
Required Knowledge	Familiarity with Resistance, Capacitance, Electric current, and basic vector calculus.

Reference Texts	- Required Textbook: Elements of Electromagnetics Matthew N.O. Sadiku - Reference Books: Engineering Electromagnetics Hayt & Buck Fundamentals of Electromagnetics (with Matlab) Lonngren, Savov & Jost
Method of evaluation	**20.00**% - Exam 2 **15.00**% - Quiz(zes) **15.00**% - Homework /Assignments **30.00**% - Final exam **20.00**% - Exam 1
Nature of the assignments	Homework: Homework assignments are due on Thursday in the class. The Solutions will be provided by the end of the day homeworks are due. If you need more time for your homework, you have to inform the Instructor or th Quizzes: There will be at least one Quiz every week starting the 2nd week and will be bas The worst few quizzes will be dropped (If any). If you are keeping up with the pr relatively easy. Exams: There will be two midterm exams and one final exam You are free to use your text book, course notes and any provided figures and h
Course Policies	All homework assignments, quizzes, and exams are required. Students who do not show up for a Quiz or an exam should expect a grade of zero on that exam. If you dispute your grade on any homework, quiz, or exam, you may request a re-grade (from the TA for the homeworks and quizzes or from the instructor for the exams) only within 48 hours of receiving the graded exam. Incomplete (I) grade for the course will only be given under extraordinary circumstances such as sickness, and these extraordinary circumstances must be verifiable. The assignment of an (I) requires first an approval of the dean and then a written agreement between the instructor and student specifying the time and manner in which the student will complete the course requirements.
Additional Information	Engineers are required to practice "continuous" or "life-long" learning. This course will cover a lot of material which will require the students to do a lot of self-study, reading of the textbooks and handouts, learning how to use equipment and software, etc…Although the instructor and the TAs are committed to help the students in this course, the students are also expected to take initiatives and to get used to this notion of self-study that will be anyway (i) expected form them in their future careers and (ii) imperative to their success and survival in the real engineering and academic worlds. Please don't hesitate to ask if you have any question or concern about the course.

Tentative Course Schedule *(Time, topic/emphasis & resources)*		
Week	**Lectures**	**Topic**
1	Mon 01/23/2017 Thu 01/26/2017	
2	Mon 01/30/2017 Thu 02/02/2017	
3	Mon 02/06/2017 Thu 02/09/2017	
4	Mon 02/13/2017 Thu 02/16/2017	
5	Mon 02/20/2017 Thu 02/23/2017	
6	Mon 02/27/2017 Thu 03/02/2017	
7	Mon 03/06/2017 Thu 03/09/2017	
8	Mon 03/13/2017 Thu 03/16/2017	
9	Mon 03/20/2017 Thu 03/23/2017	
10	Mon 03/27/2017 Thu 03/30/2017	
11	Mon 04/03/2017 Thu 04/06/2017	
12	Mon 04/10/2017 Thu 04/13/2017	
13	Mon 04/17/2017 Thu 04/20/2017	
14	Mon 04/24/2017 Thu 04/27/2017	
15	Mon 05/01/2017 Thu 05/04/2017	
16	Mon 05/08/2017 Thu 05/11/2017	
17	Mon 05/15/2017 Thu 05/18/2017	
18		

Note

The instructor reserves the right to make changes to this syllabus as necessary.