

(Course Information)

اسم المقرر:	مختبر كهرومغناطيسية
رقم المقرر:	فيز 3922
اسم ورقم المتطلب السابق:	فيز 2212
اسم ورقم المتطلب المرافق:	--
مستوى المقرر:	Fifth
الساعات المعتمدة:	(0+4+0)2
<b>Module Title:</b>	Electromagnetism Lab.
<b>Module ID:</b>	PHYS 3922
<b>Prerequisite:</b>	PHYS 2212
<b>Co-requisite:</b>	--
<b>Course Level:</b>	Fifth
<b>Credit Hours:</b>	2 (0+4+0)

**Module**

وصف المقرر :

**Description**

Verification of Biot-Savart law, Helmholtz experiment, Measuring the force acting on current carrying conductors in a homogenous magnetic fields, Measuring the magnetic field of an air coil, and straight conductor, Motors and Generators (simulation), Voltage transformation using a transformer without load, Voltage transformation using a transformer with load, Effect of current on electron deflection, Effect of magnetic field on electron deflection, Measuring the induction voltage of a conductor loop in a variable magnetic field.

**Module Aims**

أهداف المقرر :

<b>1</b>	To demonstrate experimental application to the main concepts taken in electromagnetism I.	<b>1</b>
<b>2</b>	To develop experimental skill in the student by setting-up and conducting electromagnetism related experiment by themselves.	<b>2</b>
<b>3</b>	To cover the following concepts in the experiments: Biot - Savart law, Faraday's law, $e/m$ of the electron, Magnetic induction, transformers, force on current carrying conductors, generators, motors, magnetic moment of magnetized rod	<b>3</b>
<b>4</b>		<b>4</b>
<b>5</b>		<b>5</b>

**Learning Outcomes:****مخرجات التعليم:**

1	Students can assemble and operate the electromagnetism related experiment correctly and accurately.	1
2	Students will be able to read, explain and interpret the results of an experiment professionally and accurately.	2
3	Students will be able to write laboratory reports and explain the experiments using related electromagnetism concept.	3
4	Students will learn practice the safety and rules of the electromagnetism laboratories.	4
5	Students will be able to demonstrate and analyze data by plotting graphs with appropriate software programs.	5

**Course Contents:****محتوى المقرر:**

ساعات التدريس (Hours)	عدد الأسابيع (Weeks)	قائمة الموضوعات (Subjects)
4	1	Introduction: How to use excel program.
8	2	Measuring the magnetic field of an air coil, and straight conductor.
4	1	Motors and Generators (simulation)
4	1	Voltage transformation using a transformer without load.
4	1	Voltage transformation using a transformer with load.
4	1	Effect of current on electron deflection
4	1	Effect of magnetic field on electron deflection
4	1	Measuring the induction voltage of a conductor loop in a variable magnetic field.
4	1	Measuring the force acting on current carrying conductors in a homogenous magnetic fields
4	1	Verification of Biot-Savart law.
4	1	Helmholtz experiment.
4	1	Seminar and Review.

**Textbook and References:****الكتاب المقرر والمراجع المساندة:**

سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم الكتاب المقرر Textbook title
			Lab. Manual
سنة النشر Publishing Year	اسم الناشر Publisher	اسم المؤلف (رئيسي) Author's Name	اسم المرجع Reference
5 <sup>th</sup> edition	Oxford University Press	Matthew N. O. Sadiku	Elements of Electromagnetics
4 <sup>th</sup> Edition	Pearson	David J. Griffiths	Introduction to Electrodynamics