

وصف مقرر دراسي Course Description

متطلب متزامن Co-Req.	متطلب سابق Pre-Req	تأريخ TU	عملي LB	نظري LT	الساعات CR	اسم المقرر Course Title	رقم ورمز المقرر Course Code
-	104 فيز	1		3	3	الكهرومغناطيسية Electromagnetism	203 كهر EE 203

محتويات المقرر:

حساب المتجهات؛ المجالات الكهربائية؛ قانون جاوس والتشتت؛ الجهد الكهربائي؛ العوازل والمواسعة؛ معادلات بواسون ولاپلاس؛ صور الشحنات؛ كثافة التيار والموصلات؛ المجالات المغناطيسية؛ قانون أمبير؛ نظرية الالتفاف ونظرية ستوكس؛ الجهود المغناطيسية؛ القوى والعزوم؛ المواد والدوائر المغناطيسية؛ الحث والحاثية؛ الطاقة في المجالات الساكنة، مقدمة للموجات الكهرومغناطيسية.

Course Contents:

Review to vector calculus; Electrostatic fields; Gauss's law and divergence; Electric potential; Dielectrics and capacitance; Poisson's and Laplace's equations; Charge images; Current density and conductors; Magnetostatic fields; Biot-Savart and Ampere's laws; Curl and Stoke's theorem; Magnetic materials and circuits; Self and mutual inductances; Energy in static Fields, Introduction to electromagnetic waves.

Course Objectives:

1. Teaching the students the concepts and principles of the electrostatic and Magnetostatic fields, and the associated electrical and magnetic potentials..
2. Acquainting them the skills of determining the electrostatic fields and the electric potential of any physical configuration using the appropriate technique such as the application of Coulomb's law, the application of Gauss's law, the application of Maxwell's equations at the boundaries, the application of Poisson's and Laplace's law, the image theory, e.t.c
3. Acquainting the students the skills of determining the Magnetostatic fields and magnetic potential of any physical configuration using the suitable techniques such as Ampere's law, Biot-Savart's law, constructing and analyzing magnetic circuits, e.t.
4. Preparing the students for some advanced courses such as electrical-machines and communication courses.

Evaluation Methods:

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| 1. Midterm exams | 4. Class evaluation |
| 2. Assignments | 5. Final exam. |
| 3. Quizzes | |

Text Book and References:

Sadiku, "Elements of Electromagnetics", Oxford