المادة: نظرية الموجات الكهرومغناطيسية	عدد الساعات: 3 نظري	عدد الوحدات: 5

مفردات المادة	الساعات الاسبوعية
Chapter one: Electrostatic **Coulomb's law , electric field intensity, electric field intensity due to charge distribution, electric flux and electric flux density (definition of electric flux), Gauss 's law, Application of Gauss 's law, the electric potential, the electric dipole, materials in an electric field, conductors in an electric field, dielectrics in an electric field, semiconductors in an electric field, energy stored in an electric field, boundary conditions of the electric field, the normal component of D, the tangential component of E, Piosson 's and Laplace 's equations, application of Piosson 's and Laplace 's equations, solved examples, problems**	**15**
Chapter Two: Magnetostatics **The Biot-Savart law , application of Biot-savart law (examples) , Ampere 's law , application of Ampere 's law (examples) , magnetic torque , magnetic flux and Gauss 's law , magnetic field intensity and Ampere 's circuital laws , Ampere 's circuital laws , magnetic materials , boundary conditions for normal components of B field , boundary conditions for tangential components of H field , solved examples , problems.**	**15**
Chapter Three: Time-varying electromagnetic fields **Faraday 's law of induction , Maxwell 's equation from Faraday 's law , Maxwell 's equation from Ampere 's law , Maxwell 's equation from Gauss 's law , Maxwell 's equation and boundary conditions , applications of Maxwell 's equation (examples) , problems.**	**25**
Chapter Four: Electromagnetic waves **EM waves in vacuum, Monochromatic plane waves, Linear and circular polarization, Energy and momentum EM waves, EM in matter, Reflection and transmission of EM waves at normal incidence, Reflection and transmission of EM waves at oblique incidence.**	**20**

References:

1. **The text book: Electromagnetic field theory fundamentals, 2nd edition , 2004, Bhag Singh Guru and Hüseyin R. Hiziroğlu, kettering University, Cambridge University Press.**

2. **The assistant book: Elements of electromagnetic, 3rd ed., 2000, Matthew N. O. Sadiku.**