1. *Course number and name*

**ENGR 350: Introduction to Engineering Electromagnetics**

1. *Credits and contact hours*

3 credit hours

1. *Instructor’s or course coordinator’s name*

Instructor: Dr. Rashid Kohan

Course coordinator: Hao Jiang, Professor

1. *Text book, title, author, and year*

Ulaby, Michielssen, Ravaioli, “Fundamentals of Applied Electromagnetics”, 6E, Prentice Hall.

1. *Specific course information*
2. *brief description of the content of the course (catalog description)*

Transmission lines; vector analysis; static electric fields; static magnetic fields; electromagnetic waves and propagation.

1. *prerequisites or co-requisites*

Grades of C or better in MATH 245 and PHYS 240

1. *indicate whether a required, elective, or selected elective course in the program*

Required for Electrical Engineering and elective for Computer Engineering

1. *Specific goals for the course*
2. *Specific outcomes of instruction, ex. The student will be able to explain the significance of current research about a particular topic.*
* Understand transmission lines and impedance matching using transmission lines.
* Have an in-depth understanding of electric static force, field, potential, and learn the method to estimate capacitance.
* Have an in-depth understanding of magnetic static force, field, potential, and learn the method to estimate inductance.
* Have an in-depth understanding of Faraday’s law and displacement current. Learn to design planar inductors.
* Have an in-depth understanding of electromagnetic wave equations and understand electromagnetic wave propagation in waveguides and transmission lines.
1. *Explicitly indicate which of the student outcomes listed in Criterion 3 or any other outcomes are addressed by the course.*

Course addresses ABET Student Outcome(s): 1, 2, 6, 7

1. *Brief list of topics to be covered*
* Transmission lines and impedance matching using transmission lines.
* Static electric force, electric field and electric potential in 3D spaces.
* Dielectric materials and capacitance estimation using Poisson’s equation.
* Static magnetic force, magnetic field and magnetic potential in 3D spaces.
* Magnetic materials and inductance estimation.
* Faraday’s law, displacement current and Maxwell’s equations
* Eddy current in inductors
* Electromagnetic waves and propagation in waveguide and transmission lines.