


COURSE OBJECTIVES:
1. To teach students the basics of propagating electromagnetic waves from Maxwell’s equations;
2. To teach students how to solve basic problems in electromagnetic wave propagation using Maxwell’s equations and boundary conditions;
3. To teach students how to solve basic problems in wave guidance and radiation;
4. To teach students experimental knowledge of electric and magnetic forces on charged or current carrying systems, and applications such as optical imagery and Doppler radar.

TOPICS COVERED:
1. Faraday’s and Ampere’s laws
2. Lenz’s law, induction, motors, generators, transformers
3. Maxwell’s equations
4. Boundary conditions
5. Plane waves, polarization, propagation in lossy media
6. Snell’s law, Brewster angle, oblique incidence
7. Radiation, antenna arrays
8. Satellite communication, radar, and waveguides

COURSE DESCRIPTION: University of Michigan, College of Engineering, ELECTRICAL ENGINEERING PROGRAM