RF and microwave engineering rely on wave theory. A transmission line guides waves, and an antenna radiates unguided waves. So much of our world relies on radiated waves at higher frequencies. At higher frequencies, a printed circuit board trace is no longer a simple wire but is a transmission line.

Transmission lines require impedance matching to be efficient. Measuring transmission line system characteristics can be done using a network analyzer.

Radio communication principles rely on electromagnetic waves and how the waves reflect and diffract from objects as the signal travels from the transmitter to the receiver.

All these fundamental concepts and more are covered in EECE 5100/ELEN 4100

**RF and microwave engineers are in high demand.**
This course covers the fundamental concepts and technology for RF and microwave engineering.

## What you will learn from this course:

- Transmission line theory and applications
- Use of dB's in power system gain and loss
- Operation and internal workings of vector network analyzer (VNA)
- Use of the Smith chart to plot and analyze data, as well as solve problems
- Impedance matching techniques
- Fundamentals of electromagnetic waves and their similarity to transmission line waves
- Free space path loss
- Physical principles of radio communication: antennas, link budgets, and receiver architectures.