



# HUNT

## Hacking 101

### Intro to Wi-Fi

**Summary:**

The purpose of this Hacking 101, is to introduce our guests to what Wi-Fi is. Most of us just click on the Network Name, maybe type in a password and that's it. That's Wi-Fi right?

BUT HOW DOES IT WORK? What are the technologies behind it? The intent of this class is to shed a light on the technology is, the protocols and standards, the frequencies and how it all comes together so we can watch our cat video's online.

**Requirements:**

A working laptop with a Operating System (Windows or Apple)

A working laptop with a functioning Wi-Fi Network Adapter

Curiosity

## Objectives:

- Wi-Fi Name
- Wi-Fi Alliance
- IEEE
- WLAN
- Antennas
- Networking Traffic Modalities
  - Simplex
  - Half-Duplex
  - Full-Duplex
- TDD
- FDD
- AD-HOC Wi-Fi
- Infrastructure Wi-Fi
- AP
- SSID
- HISTORY and timeline of Wi-Fi
- Wi-Fi Standards
- ISM
- Wavelengths
- FM
- AM
- GPS
- Analog Television
- Digital Television
- Wireless Applications
- Electromagnetic Interference
- 802.11b/g/n Frequencies - Spectrum
- Discrete Frequencies
- 5GHz Frequencies – Spectrum
- DFS

- Wi-Fi Ranges
- DSSS
- OFDM
- OFDMA
- MU-MIMO
- SU-MIMO
- Spatial Multiplexing
- Beamforming
- MIMO Signal Processing – Digital Aggregation
- Channel Bonding
- Wi-Fi Pollution / Interference
- Decibels
- SNR
- Sound Floor
- Wi-Fi Encryption
  - WEP
  - WPA
  - WPA2
  - WPA3
- Wi-Fi – IS A BROADCAST
- TKIP
- AES
- Radius Servers – AAA
- Active Directory for Authentication
- inSSIDer – Familiarize w/ Application
- Netspot – Familiarize w/ Application
- GITHUB – Wi-Fi-101
- Easy Lab. Maybe do Demo.

## **LAB:**

Using one of the previously shown Wi-Fi Analyzers

1. Analyze multiple Wi-Fi networks in different locations
2. Are you able to find unsecured networks?
3. Are you able to identify multiple access points using the same frequency?
4. Are you able to identify interreference?
5. Are you able to identify printers and other IoT devices creating ad-hoc Wi-Fi?
6. Are you able to identify access points that might be transmitting intermittently?