

ECE435: Network Engineering – Homework 10
Wireless / Bridging

Due: Friday, 22 April 2022, 5:00pm

For this homework short answers will suffice.

To submit, create a document with your answers (text, pdf, libreoffice, MS Office if you must) and e-mail them to *vincent.weaver@maine.edu* by the homework deadline. Title your e-mail “ECE435 Homework 10” and be sure your name is included in the document.

1. LANs / Switches

- (a) With a self-learning bridge/switch the switch learns the port/MAC mapping by looking at the SOURCE field in incoming Ethernet frames. How does it ensure the frame gets to the right destination if the DESTINATION MAC address is one it hasn't seen before?

- (b) List one reason why you might separate your LAN into separate networks, rather than having one big LAN.

2. Wireless

- (a) You run `iwconfig` on a Raspberry Pi3 and get the following results:

```
wlan0      IEEE 802.11  ESSID:off/any
           Mode:Managed  Access Point: Not-Associated  Tx-Power=31 dBm
           Retry short limit:7   RTS thr:off   Fragment thr:off
           Power Management:on
```

It reports the Transmit power as 31 dBm. How much is that in Watts?

- (b) You are using WiFi at one of the 2.4GHz frequencies and you occasionally notice the signal drops out. What might be interfering with your connection? Is it legal for that interference to be happening?

- (c) How is the CSMA/CA (collision avoidance) mechanism used by WiFi different than the CSMA/CD (collision detection) used by wired ethernet? Why didn't WiFi use the wired Ethernet methodology?