Topics for Today:

- URL: http://www.ece.mtu.edu/faculty/bamork/EE5223/index.htm
- Labs - EE5224 - Plan to begin in Week 3 (Tues 10am Jan 24th)*
- Bus Configurations (Ch. 10, sect 10.1 - 10.10)
  - Single Bus, Single Bus w/tie
  - Main & Transfer
  - Ring Bus
  - Breaker-and-a-half
  - Breaker-and-a-third
- Software - Aspen “OneLiner” (installed on software server)
- Zones of protection - let’s look at Assignment #1
- Zones of protection - generators, motors as fault source.
- Reading Relaying One-Lines (examples posted in Week 1)
EE5224 Lab - 68 registered so far!

Intend to begin next Monday, 7-9pm (need to confirm a lab equipment repair)

Open lab seats:
• 5 seats - Mon 7-9pm
• 4 seats - Tues 10-noon
• 4 seats - Wed 4-6pm
• 3 seats - Thurs 10-noon
Bus Configurations

- Flexibility
  - Maintenance
  - Operation
- Reliability, if something fails
  - "Backup" Strategies
Next: Bus Configs - Sects. 10.1 - 10.10.

- Single Bus
- Double Bus
- Ring Bus
- "Breaker-and-a-half"
- "... third"
Single Breaker, Single Bus

Ch.10 - Tables 10.1 & 10.2

Line to another sub

Radial Load
Radial System
- Backfeed thru sect. 5w.
in interim for maintenance.
Single Bus w/ Bus Tie Breaker 69-kV
Main & Transfer - Fig. 10.3
Double-Bus Double Breaker
Ring Bus - One CB per Circuit
Breaker and a half

Bay

Bus 1

Bus 2

1.5 CBS/Line

Breaker and a third: 4 CBS/Bay
0) CIRCLE THE ZONES OF PROTECTION FOR THE FOLLOWING POWER SYSTEM

1) ZONE 1Z
2) ZONE 2Z
3) ZONE 3Z
4) ZONE 4Z
5) ZONE 5Z
6) ZONE 6Z
7) ZONE 7Z
8) ZONE 8Z
9) ZONE 9Z

b) STATE WHICH CB'S TRIP FOR A FAULT AT:
   1) L1
   2) BUS III
   3) G2
   4) T4
   5) BUS II
   6) LOAD
   7) M1

c) FOR A FAULT ON BUS I AND CB3 FAILS WHICH CB OPENS AS BACKUP

d) DOES CB2 NEED TO OPERATE FOR A BUS I FAULT

e) FOR A FAULT ON L4 WHICH CB'S BACK UP CB11

f) FOR A FAULT ON L2 WHICH CB'S BACK UP CB4

G) CB6 & 9 TRIP WHERE WAS FAULT?

h) CB 6, 9, 8, 11 TRIP WHERE WAS FAULT

i) CB2 TRIPS WHERE WAS FAULT

j) CB1 TRIPS WHERE WAS FAULT

k) CB7 TRIPS WHERE WAS FAULT

l) FOR A FAULT ON BUS III, WHICH CB'S
   1) TRIP FIRST
   2) IF THE ONES WHICH SHOULD TRIP FIRST DON'T WHICH ONES SHOULD TRIP NEXT.