ECE 504

POWER SYSTEMS
STABILITY II

SESSION no. 41
I. Overview of what the tool does

A. Security Assessment Module
B. Contingency Screening Module
C. First Time Domain Module
D. Remedial Action Module
A. Security Assessment Model

1. Define the system
2. Set criteria for security
3. Test system against criteria
   a) Test range of security
      (One dimension)
b) test region of security
(two dimensional)
c) Model Analysis

d) UQ Curves
B. Contingency Screening Matrix

Ranking of Contingencies by severity
C. F TO Module

Fast time Domain

similar to analysis of i/n a voltage

ex 14.2
D. Remedial Action Module.

1. List of available controls.
   e.g. generator fields
   SUC
   capacitor

2. Rank order controls.
Security Criteria

a) Voltage stable, pre and post contingency
   (power-flow solution exists)

b) MW and UVAR margins
   
   \[ P = 100 \text{ MW} \]
   \[ \text{Ph margin} \geq 20 \text{ MW} \]
   \[ p < 80 \text{ MW} \]
\[ P = \frac{90}{20} = \frac{20}{90} \]
c. Voltage with limits; pre & post contingencies

d) MVAR reserves

99 MVAR

100

e) Line & transformer thermal limits
Master scenario file (USAT.use)

Scenario 1 — Scenario N

A. Initial Conditions (base case)
   a. solved power-flow
      eg. 535.psf

B. Parameter file.