Department of Electrical and Computer Engineering
Electric Power and Power Electronics Institute

2-Day Short Course

INTEGRATED/COORDINATED DIGITAL SUBSTATION CONTROL AND PROTECTION SYSTEM DESIGN

Prof. M. Kezunovic
Department of Electrical and Computer Engineering, Texas A&M University

Contents

Day 1

SECTION I. Advances in digital substation equipment development

- Digital Protection Designs
- Digital Control System Designs
- Digital Monitoring and Metering System Designs
- Instrument Transducers
- Local Area Networks
- Fiber-Optic Communications

SECTION II. Functional Requirements for Substation Monitoring, Control and Protection Functions

- Time Response Requirements
- Sampling Rate Requirements
- Algorithm Requirements
- Functional Co-ordination
- User Interfacing
- Data Base Requirements

Day 2

SECTION I. Distribution of Substation System Architecture and Allocation of Functions

- Hierarchical Functional Organization
- Distributed Substation Computer System Architecture
- Allocation of Functions
- Functional Co-ordination/ Integration
- Implementation Requirements
- Example: Breaker- and- a- half Substation Switchyard Design

SECTION II. Examples of Digital Substation System Designs

- Historic Prospective: WESPAC System Design
- SIEMENS Design
- ABB Design
- GEC/ALSTHOM Design
- GE Design

- TASNET Design
- Utility Substation Initiative/EPRI Design in the USA