SoHaR

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MEADEP for system Reliability, Availability - Modeling and Assessment

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Course Syllabus & Objectives

Course objectives:

- The student will understand the use of Reliability Block Diagrams and Markov models.
- The student will know when to use Markov models, their applications, limitations, and benefits.
- The student will know how to use the MEADEP tool for system availability modeling.
- The student will know how to use the MEADEP tool to analyze data for parameter estimation to include in the model.

Course Syllabus:

Introduction:

- Role of Markov Models and Reliability Block Diagrams in the Modeling Spectrum
- Applications
- Limitations
- Benefits
- Input
- Process Flow Chart of Markov Modeling
- Step-by-Step Procedure
- Definitions
- Analogy
- Conceptual understanding of how system behavior can be represented with a set of states and inter-state transitions
- What is involved in constructing a Markov model given a system specification (process flowchart, step-by-step procedure, and examples)

MEADEP Software tool for Markov modeling:

- *MEADEP Overview*

- *Model Generator (MG)*
  - Function
  - Model Hierarchy Example
  - Markov Model Example
  - Block Diagram Example
  - Series and Parallel Blocks
  - Weighted Block Diagram Example
  - K out of N example

- Generate Text Modeling File

- *Model Evaluator (ME)*
  - ME Functions
  - Generating Results from Model Evaluator
  - Loop By Value Set
  - Graph Results

- *Data Editor and Analyzer (DEA)*
  - Major functions
  - Menu Tree
  - DEA Record Structure
  - Consolidate Example
  - Multiple Statistics - Definitions
  - Graphing & Parameter Estimation Capabilities
  - Pie Chart Graphing
  - Time Between Events Histogram
  - Time To Recovery Histogram
  - MTBE Line Graph
  - Major Functions
  - Record Structures
  - Main Form
  - Data Editing Capabilities
  - Selecting Data
  - Query Files

- *Data Pre-Processor (DPP)*
  - Main Form
  - File Types

Examples:

Customer-specific examples to demonstrate the application of the tool (arranged in advance)