Learning Objectives for the ARFF-3 Exam

1. **Fire and Water Pump Systems**
   - Hydraulic Theory
   - Mechanical
   - Operations and Components
   - Controls and Instrumentation
   - Over Heat Protection
   - Pump Engagement
   - Pump and Roll
   - Interlock

2. **Plumbing Systems**
   - Hose Reel and Woven Jacket
     - Hand Lines
     - (1) required range
     - (2) required hose length
   - Master Drains
   - Windshield Deluge
   - Pressure Relief Valves
   - Priming System
   - Water tank
   - Flow Switches
   - Interlocks
   - Structural Panel
   - Piping
   - Valve
   - Interlocks
   - Winterization

3. **Foam Systems**
   - Transfer Pumps
   - Flushing Systems
   - Instruments and Controls
   - Interlocks
   - Check Valves
   - Foam Tanks
   - Metering Valves
   - Proportioning Systems
   - Foam Agents
   - Eductors
   - Foam Pumps
   - Testing
   - Foam Concentration Range
   - Wind Speed
   - Order of Discharge
   - Sampling
   - Premix
   - CAFS
   - Fluoroprotein
   - Protein Foam

4. **Nozzle and Turret Systems**
   - Piercing Nozzles
   - Discharge Patterns/distances
   - Non-Aspirated
   - Aspirated
   - Electric Controls
   - Manual Overrides
   - Micro-Processors
   - Joysticks
   - Auto oscillation
   - Hydraulic Controls
   - Actuators
   - Ground Sweep Systems
   - Under Truck Nozzles
   - Dual Agent Turrets
   - Dual Rate Turrets
   - Bumper Turrets
   - Roof Turrets
   - Interlock Systems
   - Elevated Water-Way Systems
   - Parallel multiple agent nozzle

5. **Ancillary Agent Systems**
   - Instruments and Controls
   - Refilling Agents
   - Caking and Fluffing
   - Plumbing
   - (1) Halogenated agent
   - Discharge and Blow Down Systems
   - Hydro Chemical Nozzles
   - Dual Agent Nozzles
   - Propellant Gases
   - Agents
   - Interlocks
   - Flow and Range
   - Performance parameters for clean agent systems