DCEP Generalist Training

7:45 **Registration (15 minutes)**

8:00 **1. Generalist Training Introduction (30 minutes)**
- Objectives
- Overview
- Resources

8:30 **2. Data Center Profiler (DC Pro) Overview (40 minutes)**
- Introduction to Benchmarking and PUE
- Overview of DC Pro
- Introduction to PUE Estimator

9:10 **3. IT Equipment (40 minutes)**
- IT Equipment Energy Use
- Provisioning and Minimizing Waste
- Best Practices

9:50 **Break (10 minutes)**

10:00 **4. Air Management (60 minutes)**
- Environmental Specifications and Metrics
- Airflow and Temperature Management
- Best Practices

11:00 **5. Cooling Systems (60 minutes)**
- DX and Chilled-Water Systems
- Liquid-Cooled Systems
- Best Practices

12:00 **Lunch (60 minutes)**

1:00 **6. Electrical Systems (50 minutes)**
- Causes of Energy Inefficiencies
- Electrical Power Chain
- Best Practices

1:50 **7. Assessment Process Manual (20 minutes)**
- DCEP Assessment Process Manual
- DCEP Assessment Process

2:10 **Break (10 minutes)**

2:20 **8. Data Center Profiler (DC Pro) Case Study (40 minutes)**
- Input Steps
- Results
- Abbreviations and Acronyms

3:00 **Exam (120 minutes)**

5:00 **End of Generalist Training/Exam**

DCEP HVAC-Specialist Training (Day 1)

8:00 **Registration (15 minutes)**

8:15 **9. HVAC Specialist Training Introduction (30 minutes)**
- Overview
- Resources
- Performance Metrics

8:45 **13. Air Handlers and Air Conditioners (80 minutes)**
- HVAC Systems Overview
- Airside Economizers
- Indirect Evaporative Coolers
- Energy Efficiency Opportunities
- Best Practices

10:05 **Break (10 minutes)**

10:15 **14. Liquid Cooling (70 minutes)**
- Why Liquid Cooling?
- When to Consider Liquid Cooling
- Cooling Configurations
- Best Practices

11:25 **Lunch (60 minutes)**

12:25 **15. Chilled Water Plants (60 minutes)**
- Metrics to Identify Energy Efficiency Opportunities
- Optimizing Energy Usage
- Design Considerations for Data Centers
- Best Practices

1:25 **16. Cooling System Controls (45 minutes)**
- Temperature, Humidity, and Airflow Control
- Cooling Plant Control
- Feedback and Diagnostics
- IT Equipment Integration
- Best Practices

2:10 **Break (10 minutes)**

2:20 **17. Assessment Process (60 minutes)**
- Role and Purpose of DCEPs
- Objectives of DCEP Assessment
- DCEP Assessment Process

3:20 **18. Modeling Data Center HVAC Systems (75 minutes)**
- Levels of Modeling Detail
- Modeling Energy Usage
- Annual Energy Usage vs. Annual Energy Cost
- Abbreviations and Acronyms

4:35 **End of HVAC Specialist Training Day 1**

DCEP HVAC-Specialist Training (Day 2)

8:00 Registration (15 minutes)

8:15 10. Environmental Requirements (45 minutes)
- Temperature and Humidity Specifications
- Recommended and Allowable Ranges (ASHRAE/NEBS)
- Compliance Metric RCI
- Best Practices

9:00 11. Airflow and Temperature Management (80 minutes)
- Air Management Goals and Results
- Energy vs. Thermal Performance
- Air Management Measures
- High-Level Air Management Metrics
- Data Gathering and Management
- Best Practices

10:20 Break (10 minutes)

10:30 12. DOE Air Management Tool (80 minutes)
- DOE Tool Suite
- DOE Air Management Tool
- Application Example
- Input Steps and Results

11:50 Lunch (60 minutes)

12:50 Exam (180 minutes)

3:50 End of HVAC Specialist Training/Exam

CENTER OF EXPERTISE FOR ENERGY EFFICIENCY IN DATA CENTERS