



# HP Education Services Course Description

Data Center Energy and Environmental Efficiency (HH608S)

This two-day course on Data Center Energy and Environmental Efficiency is designed to provide state-of-the-art information to students related to concepts on designing, planning, and implementing energy-efficient data center practices. As energy costs are typically the largest expense for a data center, efficiency considerations and metrics are covered in detail, as well as how they relate to the ongoing data center operation and maintenance.

## Audience

- Facility management professionals who want to increase the efficiency of their data center facility.
- IT professionals who want to gain greater insight into how electricity is used in the data center aside from the ITC equipment itself.
- Energy professionals who need to gain familiarity with the nuances of data center power consumption.

## Prerequisites

- A good understanding of data center power and cooling systems.
- A basic understanding of energy-related topics, including CO2 emissions and renewable energy.

## Course objectives

After completing this course, the student should be able to:

- Explain the relationship between data processing power and electrical power used to support data processing.
- Identify the major components of energy usage in data center operations.
- Understand how energy costs in data centers are calculated.
- Explain the concept of the PUE (Power Usage Effectiveness) metric in data centers and how it is employed for benchmarking energy use.
- Identify major energy saving or energy cost reduction strategies in data center operations.
- Explain how energy saving practices contribute to lower capital investment, reduced operational expense, and smaller environmental impact.

<b>Course title:</b>	Data Center Energy and Environmental Efficiency
<b>HP product number:</b>	HH608S
<b>Category/Subcategory:</b>	Data Center
<b>Course length:</b>	2 days
<b>Level:</b>	Intermediate
<b>Delivery language:</b>	English
<b>To order:</b>	You can order this course online at <a href="http://www.hp.com/learn">http://www.hp.com/learn</a> . At the site, select a country, then choose "registration" or "Book a course" and fill out the online registration form.

## Benefits to you

Students will receive instruction on Data Center Energy and Environmental Efficiency topics in the following critical areas:

- Strategy and Planning
- Design and Implementation
- Operations and Maintenance

## Why education services from HP?

- Recognized as an IDC MarketScape leader for IT education (“Worldwide IT education and training 2013 vendor analysis” Cushing Anderson, IDC MarketScape, #239139, January 2013).
- Global training with more than 90 training locations worldwide.
- Unmatched technical expertise and support for HP products and technologies.
- HP MyRoom for real-time collaboration and Virtual Labs for a real hands-on experience.
- The training you need, when and where you need it with our Virtual Instructor-Led Training (VILT).
- Comprehensive curriculum of job-specific training leading to certification.
- Streamlined purchase and management of training with HP Care Pack Services for Education.
- Our HP Education Consulting team has delivered best-in-class tailored training solutions to clients for more than 30 years.
- One of the top 20 training and content development providers (TrainingIndustry.com - 2013).

## Next steps

- Optimized Data Center Simulation 1/2 day (HF980S) or 1 day (HF981S)
- Data Center Operations, Maintenance and Risk Reduction (HH602S)
- Data Center for Managers (HH607S)

## Detailed course outline

### Strategy and Planning

- Initial steps in energy and environmental strategies for data Centers
- Overview of data center energy and environmental impacts
- Effects of climate on power use
- Energy and site selection
- Water consumption in data centers
- Renewable Energy Technologies (RET)
- PUE analytics
- Rating systems for data centers
- Data center-related CO2 emissions

### Design and Implementation

- Drivers of power and cooling equipment efficiency
- Efficiency of electrical system topologies
- Optimizing reliability and efficiency
- Major power outages: world & USA
- Effects of part load ratio on efficiency
- Cooling/power systems effects on PUE
- Effects of water temperature on chiller efficiency
- Cooling systems
- Airflow management and distribution
- Economizer analysis
- Control and automation systems
- Integration of facilities and ITC systems
- Consolidation & virtualization effects on CO2 footprint

### Operations and Maintenance

- Ensuring energy efficiency and reliability
- On-site data measurement and collection
- Data analysis methodology
- Operating for energy efficiency and reliability
- Case study – energy efficiency and ROI analysis

## For more information

To locate country contact information and to learn more about education services, please visit our worldwide web site at <http://www.hp.com/learn>.

