CATALOGUE FOR SPECTRUM POWER™ STANDARD TRAININGS

# Spectrum Power™ 7
# Course Catalogue

Document: GSW-SP7-S-EN-CD

SIEMENS

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# Spectrum Power™ Training

## Introduction

Employee development is a key factor in mastering the energy transformation and digitalization challenge. Siemens understands the importance of having adequately trained personnel for reliable and safe network management and operation.

Siemens has developed a broad set of courses specifically to train our customer on the Spectrum Power™ System, as well as operational and situational aspects related to control centers. Our training programs utilize a hands-on approach integrating a role-based methodology throughout the curricula.

## Training Program

Spectrum Power™ Training Courses are arranged into the following categories based on common roles and responsibilities of the typical electrical power utility business. This structure is offered as a guideline to assist customers in developing the best training plan with the support of Siemens for their employees, thereby providing a value added approach.

**Spectrum Power™ Overview** – Provide a high-level overview of the system, software architecture and hardware of the Spectrum Power™ system; It is primarily for Project Managers, Senior Management, and administrative support personnel who require a comprehensive high-level overview or introduction of the Spectrum Power™ system.

**Operation & Dispatching** – Operator/Dispatcher training typically planned in coordination with the project teams for those who need to learn to operate the system.

**Database and Display** – Technical classes that teach how to enter, edit and maintain a Spectrum Power™ database and build graphical displays.

**System Administration and Communications** – Technical instruction focused on the administrative duties required for the Spectrum Power™ applications and the configuration, administration, and use of communication protocols.

**Applications** – Courses that focus on a variety of power systems applications.

**Workshops –** Workshops span a variety of topics and are developed based on customer specific requirements. Workshops are not part of the standard Spectrum Power™ courses. They require special scheduling arrangements and are priced based on requirements and necessary preparation.

## Language

Our courses are available in English and German. You can see the available languages in the general information section of each specific course. For classes in any other language, an interpreter might be necessary, and course customization charges might apply. Customers with language translation requirements should contact Siemens Training Department.

# Delivery Methods

Our courses are available via multiple delivery methods:

| | |
|---|---|
| **Classroom** | Instructor-led training session at a formal classroom setting at Siemens |
| **Remote** | Live, Instructor-led training session given via online conferencing tools |
| **On-Site** | Instructor-led training session provided at the customer facility in a training environment supplied by the customer |
| **eLearning** | Pre-recorded training session provided on demand |
| **Blended Learning** | A combination of eLearning and instructor led training |
| **On-The Job** | Execute tasks and get hands-on experience, under the supervision of a trainer |

You can see the available Delivery Methods in the general information section of each specific course.

# Role Based Training

Siemens supports a role-based training curriculum. The course descriptions specify Job Roles as the target audience, as well as noting prerequisite skills. Job roles are associated with job activities. Often one person will fulfill multiple job roles and will benefit from the training recommended for each role.

| Job Role | Job Activities |
|---|---|
| **Management** | Making decisions at all product levels |
| **Database Administrator/ Engineer** | Defining the structure of the database, trouble shooting, defining data, coordinating data migration activities, backing up and restoring the database |
| **System Administrator** | Installing and upgrading the software incl. 3rd party products, ensuring the security of the system, tracking of problem reports |
| **System Hardware Maintainer/Administrator** | Installing, testing, and commissioning the hardware, diagnosing problems, maintaining spare parts |
| **Application Programmer** | Specifying, designing, and/or implementing the application logic and data requirements |
| **Operator/Dispatcher** | Operating the process system using the application software |

You can see the suggested roles in the target audience section of each specific course.

# Training Material

Training materials are specifically developed for Spectrum Power™ training courses. Siemens shall provide all necessary training materials, including course manuals and reference material in hard copy and/or PDF (Portable Document Format) files. Each trainee shall receive individual copies of the training materials. The contents of Spectrum Power™ training materials are confidential and proprietary, and usage is protected by Siemens copyright and to be used for internal use only.

# Course registration and Contact information

Registration requests should be submitted to the Training Center no later than 15 business days prior to the scheduled begin date of any class. To ensure adequate access to the laboratory equipment, enrollment in many of the classes is limited. Seating for classes is reserved in the order that requests are received.

For registration, or if you want to get more information about our courses or have special training requests, please reach out to your local Siemens sales partner, or contact us directly at gridsoftware-training@siemens.com

# Cancellation Policy

Siemens may cancel classes with less than the minimum of four (4) registered students, no less than two weeks prior to the scheduled start of that class. Any enrolled students would be notified of the cancellation and optionally rescheduled for a later offering.

Customer cancellation of student enrollments received less than two weeks prior to the start of the class will be subject to a cancellation fee equal to 50% of the tuition. If an enrolled student fails to appear for a scheduled class, a cancellation fee equal to 100% of the tuition will be charged.

# Spectrum Power™ Overview Courses

# SP 7 – Overview

## Objectives

Course content will vary as appropriate. This course describes the purpose and features of the base software applications.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-OV |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 4 Hours |
| **Language** | English and German |

## Target Audience

This course is designed for those who need an introduction to Spectrum Power 7.

**Roles**: Managers, Supervisors, System Administrators, Software Engineers, Programmer/Analysts/DBA, Operations

## Prerequisites

- None

## Content

Introduction to functions to:

- Manage the Spectrum Power 7 configuration, data transmission, and communications.
- Generate, organize, and access the information used in a Spectrum Power 7 system.
- Provide the user interface to the information.
- Provide the SCADA and historical data information capabilities.
- The relationships of the applications within Spectrum Power 7 are described, along with key user interfaces.

## Note

*SP7- Management Overview and SP7 – Overview are components of the SP7 Overview.*

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# SP7 – Management Overview

## Objectives

This course is tailored for each customer by the customer's project team. Course content will vary as appropriate. This course is given early in the life of a project and presents the system in broad terms. The course serves as a top-down overview of the hardware, the software, and configuration. The capabilities of the system are introduced. This course is part of the Spectrum Power 7 Overview. Those interested in just this subject may wish to attend only this course and omit the other overview segments.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-MOV |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 2 Hours |
| **Language** | English and German |

## Target Audience

This course is targeted Management needing to know what the system includes project personnel needing an introduction to the system.
**Roles**: Management

## Prerequisites

- None

## Content

- System Functional Overview
- Hardware Configuration Overview
- Software Overview
- System Data Flow
- System Design Goals

# SP7 – Hardware Overview

## Objectives

This course is tailored for each customer by the customer's project team to cover the project's hardware configuration. Course content will vary as appropriate. This course is part of the Spectrum Power 7 Overview. Those interested in just this subject may wish to attend only this course and omit the other overview segments.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-HOV |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 2 Hours |
| **Language** | English and German |

## Target Audience

This course is designed for those who are interested in the hardware configuration of the delivered system.

**Roles**: Managers, Supervisors, Engineers, technicians, System Administrators, Software Engineers, Programmer/Analysts/DBA

## Prerequisites

- None

## Content

- Hardware configuration
- Server functions
- Redundancy issues
- Diagnostic functions
- Configuration Utilities

.

# Operation & Dispatching Courses

# SP7 Operator/Dispatcher Training

## Objectives

This tailored course provides participants with background information and hands-on practice in using the EMS for operating the power system. System configuration and functionality are covered, with emphasis on application programs used in operating the power system. Use of the Basic Signaling Window, tool bars, and pull-down menus is described. Software details and terminology are avoided. During the lab sessions, participants practice what they have learned. The course is modular allowing it to be adapted to the functionality of each customer's EMS.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-OPER |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 5 Days |
| **Language** | English and German |

## Target Audience

This course is targeted for all who are responsible for observing and operation of power system control centers and need to operate and handle daily system operation.
**Roles**: Operators/Dispatchers, Operations Engineers

## Prerequisites

- Participants should be familiar with use of a previous generation EMS.
- Familiarity with basic Windows operations is also assumed

## Content

The training will be tailored according to the required functionality. These are the possible options

- Display Navigation
- Monitoring System digital Analog Values and the Status of Devices
- Operation of Power System Equipment (circuit breakers, tap changes, etc.) using Supervisory Control
- Tag and Management
- Alarm Processing
- Trend Display Management
- Sequence of Events and Disturbance Data Collection
- Energy Accounting
- Historical Data Collection
- Automatic Generation Control
  - ACE and frequency
- Network Applications
  - State Estimator
  - Security Analysis
  - Operator Power Flow
  - Interchange Scheduler
  - System Load Forecast
  - Outage Scheduler
- Emergency Applications
  - Voltage Reduction
  - Rotating Load Shed

# SP7 Operator-Train the Trainer

## Objectives

This course is a combination of lecture, labs, and hands-on exercises that provides the student with practical experience operating the EMS system. It provides a functional summary of the base system and the application modules. Fundamental training concepts are presented.

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## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-OPER_TTT |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 3 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those who are responsible training the dispatchers.
**Roles**: Operators/Dispatchers Trainers

## Prerequisites

- Spectrum Power™ 7 Operator/Dispatcher Training
- Spectrum Power™ 7 testing On the Job Activities recommended

## Content

- Train
- The Trainer Fundamentals
  - Review materials
  - Classroom
  - How People Learn
  - Training Skills
  - Communication Skills
- System Overview
- Navigation
- Log-on steps
- Additional interfaces
  - Areas of Jurisdiction
  - User Access Restrictions
- Minor troubleshooting
- Training Exercises
  - Develop

*Optional 1 cycle of Operator Training can be scheduled to follow this session for reinforcement.*

# SP7 Operator Training Simulator (OTS)

## Objectives

This course provides participants with background information and hands-on practice in using the Spectrum Power 7 Operator Training Simulator (OTS). OTS set up and operation are covered. During the lab sessions, participants practice what they have learned.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-OPER_OTS |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 3 Days |
| **Language** | English and German |

## Target Audience

System operator instructors and operations engineers who will configure and use the OTS.
**Roles**: System Administrators, Operations personnel, Operations Trainers

## Prerequisites

- Spectrum Power 7 ™ Overview
- Spectrum Power™ 7 testing On the Job Activities recommended

## Content

- Training Simulator Data base topics
- Base Case Management
- Training Scenario creation and management
- Training Simulator Data Flows
- Using the external AGC model
- Monitoring trainee performance

# Database & Display Building Courses

# SP7 Database Fundamentals - Introduction

## Objectives

To understand the Spectrum Power™ 7 data entry process and data entry process.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-DBF |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1 Day |
| **Language** | English and German |

## Target Audience

Persons who independently perform network data entry.

**Roles**: Database Administrator/Engineer, Database Entry, Display Builder

## Prerequisites

- Spectrum Power™ 7 Overview

## Content

- Introduction to the Spectrum Power™ 7 database terminology
- Introduction to job management and IMM user interface
- Identify and describe standard database views
- Using predefined structures, Description of analog values
- Use a database editor session to enter new data into the database
- Efficiently use the editing process for new and existing database use cases
- Import and export of technological data, Description of switch bay structure

# SP7 Database Fundamentals Data Engineering

## Objectives

To understand the Spectrum Power™ 7 data entry process and independently perform data entry and verification.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-DBE |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 2 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those who are responsible for the collection of data to be input into **Spectrum Power 7**, data input, data correction, data integrity, and coordination of data changes,

**Roles**: Database Administrator/Engineer, Database Entry, Display Builder

## Prerequisites

- Spectrum Power™ 7 Overview
- Spectrum Power™ 7 Database Fundamentals - Introduction

## Content

- Logging onto Spectrum Power 7 and Navigation
- Spectrum Power 7 Data Entry Management
  - Technological Address
  - Topology Types and Network Components
  - Data Definition Editors
- Demonstrate the use of the database editor search techniques
- Identify the database views required to define SCADA telemetry devices such as RTUs and associated analog, status, and accumulator point data.
- Configure an RTU and related database items in the training environment
- View the newly defined RTU and related telemetry points via the standard dynamic data display

# SP7 Graphic Editor & Display - Introduction

## Objectives

This course introduces the concepts of the SP7 Graphic Editor and the display building process. It introduces sample use cases for the creation and maintenance of displays.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-GEDI |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1 Day |
| **Language** | English and German |

## Target Audience

This course is designed for those who are responsible for the display building and maintenance into **SP 7**,

**Roles**: Database Administrator/Engineer, Database Entry, Display Builder, Application Programmer

## Prerequisites

- Spectrum Power™ 7 Overview
- Spectrum Power™ 7 Database Fundamentals - Introduction and Engineering

## Content

- Understand the difference between auto generated and converted displays
- Identify and utilize the various display tools available for creating one line, world based, and list-based
- Review Graphic editor process

# SP7 Graphic Editor & Display - Engineering

## Objectives

This course describes the display building process using the Spectrum Power 7 graphic editor. It provides practice in building one-line diagrams and associating database values with display variables.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-GEDE |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 2 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those who are responsible for the display building and maintenance into **SP 7**,

**Roles**: Database Administrator/Engineer, Database Entry, Display Builder, Application Programmer

## Prerequisites

- Spectrum Power™ 7 Overview
- Spectrum Power™ 7 Database Fundamentals - Introduction and Engineering
- Spectrum Power™ 7 Graphic Editor and Display – Introduction

## Content

- Build energy management displays
- Use base display tools and features
- Create system overview displays
- Modify existing displays
- Create commonly used electrical devices and display dynamic cross references
- Create a template
- Apply a template
- Testing displays
- Scheduling displays

# SP7 Historical Information System (HIS)

## Objectives

Participants gain basic knowledge of the functions of the “Historical Information System HIS”, and how to retrieve data using the implemented tools

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-HIS |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 2 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those who will configure, and/or maintain the Historical Information System and for those who require in depth knowledge of the HIS database.
**Roles**: Database Administrators/Engineers, System Administrators, Application Programmers

## Prerequisites

- Spectrum Power™7 Overview

## Content

- Viewing HIS data
- HIS Replay
- Editing HIS data
- User-defined displays
- HIS calculations
- Viewing audit trails
- External Interfaces
- Security and access controls
- HIS configuration including aggregation and compression
- Data flow through HIS
- Defining the points to be collected and the collection attributes
- Monitoring tools and troubleshooting

# System Administration & Communications Courses

# SP7 Administration Basic

## Objectives

The participants will gain basic knowledge about the hardware and software configuration of Spectrum Power™ 7 system administration and security aspects.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-ADMB |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1 Day |
| **Language** | English and German |

## Target Audience

This course is designed for those responsible for maintaining and enhancing the Spectrum Power™ 7 Applications.

**Roles:** System Administrators, Utility Trainers

## Prerequisites

- Spectrum PowerTM 7 Overview
- General Operating System Knowledge

## Content

- Identify Spectrum hardware configuration
- Identify location of hardware components of the system
- System navigation and general administration
- Patch management
- GIT

# SP7 Administration Advanced

## Objectives

Provide an overview of user administration and system maintenance. Following this course, the student will be able to independently create backups, maintain the system, and perform initial system diagnostic steps of problems and provide administrative support.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-ADMA |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 4 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those responsible for maintaining and enhancing the Spectrum Power™ 7 Applications.

**Roles:** System Administrators, Utility Trainers

## Prerequisites

- Spectrum PowerTM 7 Overview
- General Operating System Knowledge
- Spectrum PowerTM 7 Administration Basic

## Content

- Ability to run on-line diagnostic tests and interpret results
- Ability to identify the components of the Servers and Disk Units and perform basic maintenance
- Ability to install Spectrum Power™
- Aquire basic knowledge of Oracle
- Ability to deploy patches
- System backup and restore

# SP7 Independent Front End (IFS) Basic

## Objectives

Participants gain basic knowledge of the functions of the “Historical Information System HIS”, and how to retrieve data using the implemented tools

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-IFSB |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1 Day |
| **Language** | English and German |

## Target Audience

This course is designed for those who need to configure and maintain the Independent Front-End System.
**Roles**: Communications Administrators, System Hardware Maintainers/Administrators, Operations Support Personnel

## Prerequisites

- Fundamental Data Communication Knowledge
- Familiarity with RedHat Enterprise Linux (RHEL)
- Familiarity with Spectrum Power™ 7 Database Fundamentals

## Content

- Overview
  - Highlights
  - Base functions
  - Communication Protocols
- Configurations
  - IFS topology
  - IFS Hardware
  - IFS Redundancy
- IFS Relation
  - Pair relation, IFSPAIR
  - Channel relation, IFSCHAN
  - RTU relation, IFSRTU
  - Point relation, IFSPOINT
  - Scan Group Relation IFSSG
- User Functions
  - Basic signaling window
  - IFS display
    - IFS Line Display
    - IFS RTU display
    - IFS RTU Data Display
  - Sorting Pair / Channel
    - Filtering Pair
    - RTU Search
    - Column Filtering
    - Communication Channel operations
    - RTU Operations
    - Demand Scan

# SP7 Independent Front End (IFS) Advanced

## Objectives

Participants gain basic knowledge of the functions of the “Historical Information System HIS”, and how to retrieve data using the implemented tools

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-IFSA |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1 Day |
| **Language** | English and German |

## Target Audience

This course is designed for those who need to configure and maintain the Independent Front-End System.
**Roles**: Communications Administrators, System Hardware Maintainers/Administrators, Operations Support Personnel

## Prerequisites

- Fundamental Data Communication Knowledge
- Familiarity with Spectrum Power™ 7 Database Fundamentals
- Completed Independent Front End Basics

## Content

- IFS Relation Review
- Pair relation, IFSPAIR
  - Channel relation, IFSCHAN
  - RTU relation, IFSRTU
  - Point relation, IFSPOINT
  - Scan Group Relation IFSSG
- IFS Trace
- CSD and related displays
  - Data
  - RTU Statics
- IFS Utility
- IMM/MAGE
  - How to create a Job
  - Review IFS Pair & Channel
  - Review IFS RTU
  - Review Digital & Analog Data point
- Review accumulator Data point
- Review Scan Groups
- Review Characteristic curve
- Job Management

# SP7 Inter-Control Center Communications Protocol (ICCP)

## Objectives

This course provides the participant with detailed knowledge of the Spectrum Power 7 ICCP implementation.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-ICCP |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1 Day |
| **Language** | English and German |

## Target Audience

This course is designed for those responsible for maintaining ICCP communications in a Spectrum Power 7 system.
**Roles:** Software Engineers, Communications Engineers

## Prerequisites

- Spectrum Power™ 7 Overview
- Spectrum Power™ 7 Database Fundamentals

## Content

- Overview
  - System Interfaces
  - Processing Modules
- Database Setup
  - Links
  - Data Points
  - Processing Options
- Program Functionality
  - Data Input and Output
  - Network Control
  - Data Link Management
- Connection Troubleshooting

# SP7 DNP3-Introduction to SCADA Communication

## Objectives

This course introduces participants to the concepts of DNP3 communication. Participants gain an understanding of the basics of DNP3 Communication, Data Objects, Controls, Message Structure, and templates.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-DNP3 |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1 Day |
| **Language** | English and German |

## Target Audience

This course is designed for those who are responsible for supporting data acquisition using the DNP 3.0 protocol.
**Roles**: Communication Administrators, Database Engineers, Programmer/Analysts

## Prerequisites

- Introduction to DNP3 Communication - You must have prior experience to any Byte oriented Protocol communications.

## Content

- Overview DNP3 Communication
- DNP Data Objects
- DNP Controls
- Message Structure
- DNP Polling Options
- Examples
- DNP Protocol related to SIEMENS System

# SP7 Utilities

## Objectives

Participants gain basic to know the utilities to analyze errors, monitor, expand and optimize the system. This course will give you more time and details about utilities.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-UT |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 2 Days |
| **Language** | English and German |

## Target Audience

Operators and those who need historical data of the SCADA system

This course is designed for those who are responsible for Spectrum Power 7 system administration and support.
**Roles:** System Administrators, Software Engineers, Programmer/Analysts

## Prerequisites

- Spectrum Power™ 7 Overview
- Spectrum Power™ 7 Administration – Basics
- Spectrum Power™ 7 Administration – Advanced

## Content

- Overview of Utilities
- Database Utilities
- System Utilities
- SCADA Utilities
- Data Processing Utilities
- HIS Utilities (optional)
- GIT
- Debugging Utilities

# SP7 Independent Health Monitor

## Objectives

Participants gain basic knowledge of the functions of the “Historical Information System HIS”, and how to retrieve data using the implemented tools

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-IHM |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 2 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those who are responsible for administering and using the Independent Health Monitor.
**Roles**: System Administrators, Network Administrators, Information Technology (IT) Personnel, Operations Technology (OT) Personnel

## Prerequisites

- Familiarity with UNIX systems, basic UNIX usage, system, and network administration

## Content

- IHM System Overview
- IHM Installation
- IHM Configuration
- IHM Operation
- IHM Administration / Ongoing Maintenance
- Patch Management

# SP7 Security

## Objectives

This course provides participants with the skills to configure Spectrum Power 7 to conform to deregulation and system security requirements. The deregulation-related topics focus on configuring the Spectrum Power 7 User Interface to manage access to the system. The system security topics focus mainly on the Spectrum Power 7 tools, features, and parameters available to tighten system security, but they also include discussions of operating system, network, and application security features, as well as methods to maintain users and enable their access to Spectrum Power 7 utilities.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-SEC |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 2 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those who are responsible for administering Spectrum Power 7.
**Roles**: System Administrators, Network Administrators, Information Technology (IT) Personnel, Operations Technology (OT) Personnel

## Prerequisites

- Spectrum Power™ 7 Overview
- Spectrum Power™ 7 Administration – Basics
- Spectrum Power™ 7 Administration – Advanced

## Content

- System Overview
- System Security
- Security Risks
- Hardening Operating System
  - Trusted Computing Base
  - Securing the System Logs
  - Disabling and Restricting Services
- Hardening Oracle
  - Username/Password Management
  - Patch Management
- User Access Control
- Technological Areas
- Message Classes
- Basic Signaling Window Assignment
- Network Security
  - Network Applications
  - Server Network Connections
  - SCADA Network Connections
  - Firewalls
- User Interface Access Controls
- Authorities
  - Assigning Authorities
    - Console Assignments
    - User Assignments
    - Window Group Assignments
  - Enforcing Authorities
    - Login/Logout
    - Relations
    - Display Callup
    - Program Checks
    - Monitoring Changes

# Applications Courses

# SP7 – Multisite

## Objectives

This course provides the participant with detailed knowledge of and hands-on experience with the Spectrum Power 7 Multisite implementation.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-MS |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 2 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those responsible for maintaining Multisite Software application in a Spectrum Power 7 system.
**Roles**: Software Engineers, Communications Engineers, and Programmer/Analysts

## Prerequisites

- Common knowledge in (Microsoft Windows) system administration
- Basic knowledge in Spectrum PowerTM 7, operation and data engineering
- Completed training in data engineering is proposed (Database Fundamentals encouraged)

## Content

- Overview
- Multisite Configuration
  - Configuring Servers
  - Configuring Control Centers
  - Configuring Connections
- Data Distribution
  - Synchronizing the Runtime Files
  - Synchronizing Databases
- Database Maintenance
  - Specifying Shared Database Blocks
  - Specifying Shared Infos
- Data Base Model
  - The Database Structure
  - Data Types
  - Normelements
  - Elements and Element Types
  - Infos and Info types
- Program Functionality
  - Software Components
  - Data Flow
- Troubleshooting
  - Network Connectivity Troubleshooting
  - Console Log
  - Trace facility

# SP7 Transmission Network Applications (TNA)

## Objectives

Participants gain basic knowledge of the functions of the TNA, and how to retrieve data using the implemented tools.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-TNA |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 3 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those responsible for maintaining and using the Shared Transmission Network Applications.

**Roles:** Network Engineers, Power System Engineers, Programmer/Analysts, Lead Dispatchers

## Prerequisites

- Spectrum Power™ 7 Overview
- Basic UNIX usage and Comfort with the vi editor

## Content

- TNA database structure and access
- TNA database generation and population
- TNA source code and executable directories
- For each Transmission Network Application
- Input data and output results
- User Interface
- Purpose and features
  - Important definitions
  - Problem formulation
  - Solution methods
  - Interfaces with other TNA and with the rest of the system

# SP7 Power Applications (AGC)

## Objectives

This course provides the participant with the information needed to maintain and enhance the Spectrum Power 7 Automatic Generation Control (AGC) Power Applications.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-AGC |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 3 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those responsible for maintaining and enhancing the Spectrum Power™ 7 Applications.

**Roles:** System Administrators, Software Engineers, Programmer/Analysts/DBA

## Prerequisites

- Familiarity with Power System modeling concepts
- Familiarity with AGC theory
- Spectrum Power™ 7 Overview

## Content

- Functional design of the power applications functions
- Algorithms and models used by the Power Applications
- Programming techniques for the Power applications
- Software implementation aspects
- Database implementation aspects

# SP7 Power Script

## Objectives

Participants gain basic knowledge of the functions of the Power Script application, and how define simple power scripts.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-PS |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 2 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those responsible for maintaining and enhancing the Spectrum Power™ 7 system.

**Roles:** System Administrators, Software Engineers, Programmer/Analysts/DBA

## Prerequisites

- Spectrum Power™ 7 Overview
- Spectrum Power™ 7 Database Fundamentals - Introduction and Engineering

## Content

- Overview
- Getting Started
- Scripting
- Templates
- PowerScript Extensions
- Examples
- Scenarios

# SP7 User Interface (UI) Application Coding

## Objectives

Participants gain basic knowledge of the functions of the Power Script application, and how define simple power scripts.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-UI |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 3 Days |
| **Language** | English and German |

## Target Audience

This course is designed for those responsible for display building or who have an interest in display building in the Spectrum Power™ 7 system.
**Roles:** Display Builders, Programmers/Analysts, System Maintenance

## Prerequisites

- Spectrum Power™ 7 Overview
- Spectrum Power™ 7 Database Fundamentals - Introduction and Engineering

## Content

- UI Introduction
- Spectrum Displays
- UI General Architecture
- Application Data Servers
- Tabular Displays
- Modifying WebSDK Displays

# Spectrum Power™ Workshops

# SP7 Applications Data Engineering Workshop

## Objectives

This course provides practical experience preparing and identifying data dependencies with the application data for the EMS system. The workshop will take place after the formal training and discuss the project's implementation of the skills learned.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-ADEW |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1-2 Days |
| **Language** | English and German |

## Target Audience

Data engineers whose responsibilities include the collection of data to be input into Spectrum Power 7, data input, data correction, data integrity, and coordination of data changes.

## Prerequisites

- Spectrum Power 7 Overview
- Spectrum Power 7 Database Fundamentals Courses

## Content

- Review topics covered in formal training
- Identify data requirements
- Prepare data for input
- Discuss protocols
- Compare project data with Spectrum Power 7 requirements
- Develop action plan

# SP7 Display Generation Data Engineering Workshop

## Objectives

This workshop provides practical experience creating user interface displays for the EMS system. The exercises will incorporate actual Project data and will use the graphical and textual options chosen by the Project.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-DGDEW |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1-2 Days |
| **Language** | English and German |

## Target Audience

Data engineers whose responsibilities include the collection of data to be input into Spectrum Power 7, data input, data correction, data integrity, and coordination of data changes.

## Prerequisites

- Spectrum Power 7 Overview
- Spectrum Power 7 Database Fundamentals Courses
- Spectrum Power 7 Graphic Editor and Display Courses

## Content

- Review topics covered in formal training
- Identify display requirements
- Prototype displays
- Discuss displays, elements, and attributes
- Compare project displays with Spectrum Power 3 requirements
- Develop action plan
- Define implementation schedule

# SP7 Historian Data Engineering Workshop

## Objectives

This workshop provides practical experience creating user interface displays for the EMS system. The exercises will incorporate actual Project data and will use the graphical and textual options chosen by the Project.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-HDEW |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1-2 Days |
| **Language** | English and German |

## Target Audience

Data engineers whose responsibilities include the collection of data to be input into Spectrum Power 7, data input, data correction, data integrity, and coordination of data changes.

## Prerequisites

- Spectrum Power 7 Overview
- Spectrum Power 7 Historical Information System

## Content

- Review topics covered in formal training
- Identify project's data to be archived
- Discuss techniques
- Identify reports to be archived
- Develop action plan
- Define implementation schedule

# SP7 Operator Training Simulator Workshop

## Objectives

This workshop provides practical experience preparing and entering Operator Training Simulator (OTS) data for the EMS system. The exercises will incorporate actual project data.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-OTSW |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1-2 Days |
| **Language** | English and German |

## Target Audience

Data engineers whose responsibilities include the collection of OTS data to be input into Spectrum Power 7, data input, data correction, data integrity, and coordination of data changes.

## Prerequisites

- Spectrum Power 7 Overview
- Spectrum Power 7 Database Fundamentals

## Content

- Review topics covered in formal training
- Identify project's data to be archived
- Discuss techniques
- Identify reports to be archived
- Develop action plan
- Define implementation schedule

# SP7 SCADA Data Workshop

## Objectives

This workshop provides practical experience preparing and entering SCADA data for the EMS system. The exercises will incorporate actual project data.

## General Information

| | |
|---|---|
| **Course Code** | GSW-SP7-SDW |
| **Delivery Method** | Classroom, Remote, On-Site |
| **Duration** | 1-2 Days |
| **Language** | English and German |

## Target Audience

Data engineers whose responsibilities include the collection of data to be input into Spectrum Power 7, data input, data correction, data integrity, and coordination of data changes.

## Prerequisites

- Spectrum Power 7 Overview
- Spectrum Power 7 Database Fundamentals

## Content

- Review topics covered in formal training
- Identify project's data to be archived
- Discuss techniques
- Identify reports to be archived
- Develop action plan
- Define implementation schedule

**End of Document**

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