



Learn with Newtyne

PROC SQL – the Language of SAS

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Duration: 14 – 16 hours (plus additional time for exercises)

Learning Overview:

The PROC SQL course is ideal for those looking to add to their professional knowledge of the Language of SAS.

There are mini quizzes and comprehensive exercises throughout to help assess and reinforce your learning.

Learning Outcomes:

By the end of this course you will be able to:

1. Describe the language elements of SQL
2. Write SQL queries to summarise data tables and generate reports
3. Write SQL queries to generate new data tables
4. Manage tables and indexes using SQL

Delivery Schedule:

On day 1 we invite you to join a short online welcome to meet your instructor, introduce you to our Digital Learning platform and get you started on the eLearning modules of this course.

You will need 2 hours to complete the 3 eLearning modules with additional time required for exercises. We ask you to complete these modules before joining us for the online masterclass in the afternoon of day 1.

This is followed by 2 x 4 hour live online classes to complete your learning.

In addition, you will also need to set aside time to complete the Hands-On exercises.

Each day finishes with an opportunity for you to join an open Q&A session with the instructor if you need any additional support.

Day 1	Welcome and introduction to eLearning modules	09:00 – 10:00 (GMT)
Day 1	Live Online Masterclass to consolidate eLearning	13:00 - 17:00 (GMT)
Day 2	Live Online Class 1	09:00 – 13:00 (GMT)
Day 3	Live Online Class 2	09:00 – 13:00 (GMT)

Pre-requisites:

To get the most out of this course, it is expected that you should have attended the Fundamentals - the Language of SAS course (or comparable course of study).

If not, we would advise that you have at least six months experience of developing code in the language of SAS, including:

- Building DATA and PROC steps
- Character, Numeric and Date functions
- KEEP and DROP to select variables
- IF and WHERE statements to select observations
- Conditional Processing with IF-THEN-ELSE
- Combining Data Tables vertically and horizontally
- Summarising Data with the FREQ, MEANS and TABULATE procedures.

A prior understanding of SQL is not required.

For the hands-on practice activities in the course, you will need access to an environment that runs the programming Language of SAS. On our courses, we signpost you to some of the free tools available.

Check out the link below to review system requirements:

- [SAS® OnDemand for Academics](#)

Learning Modules:

Introduction to SQL Language Elements (eLearning)

Learning Objective: Explain how to implement SQL within the language of SAS;

- Origins of Structured Query Language (SQL)
- Implementing SQL within the Language of SAS
- SQL Language Elements

Selecting COLUMNS & ROWS (eLearning)

Learning Objective: Describe how to subset data to select columns and rows.

- Selecting Columns
- The DESCRIBE and FEEDBACK options
- Create Columns
- The CASE Expression
- Selecting Rows
- Special WHERE Operators
- CALCULATED Rows

Summarising Data (eLearning)

Learning Objective: Explain how to summarise and classify data

- Producing Summary Statistics
- Columns created by a query
- Classifying Data – GROUP BY
- Summary Statistics by Group/Selecting Summarised Data – HAVING

Report Presentation (live online class)

Learning Objective: Describe ways to improve the presentation of data.

- Formats and Labels
- Ordering Data
- Summarising Data

Sub Queries (live online class)

Learning Objective: Describe the different types of sub-queries used in the programming Language of SAS

- Non-Correlated Subquery
- Correlated Subquery
- Substituting Values
- Returning Multiple Values

Creating Data Tables (live online class)

Learning Objective: Explain PROC-SQL techniques used to create a Data Table

- Create a Data Table from the Results of a Query
- Create a Data Table from a Definition
- Create a Data View from the Results of a Query
- Data Views versus Data Tables

Joining Data Tables Horizontally (live online class)

Learning Objective: Explain PROC-SQL techniques used to join Data Tables horizontally

- Inner Joins
- Outer Joins
- Full Outer Joins
- The COALESCE Statement
- Table Aliases
- In-Line Views

Joining Data Tables Vertically (live online class)

Learning Objective: Explain the PROC SQL techniques used to join Data Tables vertically

- Methods of Combining Data
- Modifiers
- Except Rule
- Intersect Rule
- Union Rule
- Outer-Union Rule

Managing Tables (live online class)

Learning Objective: Describe how to manage tables using PROC SQL

- Add, Update and Delete data rows
- Add, Modify and Delete data columns
- Delete a Table, View or Index
- Explain what an Index is
- Create and use an Index