Overview

Introduction

SAS Software Programming Courses

Our standard courses are appropriate for a wide range of abilities and centre around the core of the SAS System. All courses are developed with Version 8, but can be adapted to Version 6 upon request.

Courses presented in this edition are:

Overview

SAS Software Programming Courses (ctd.)

Introduction (ctd.)

The SAS trainers

Our trainers are experienced senior SAS consultants

Our trainers are experienced SAS consultants who have received SAS Certification and who have been using SAS software for many years. The approach we use is to tackle learning needs by reinforcing the technical information delivered on our training courses with comprehensive practical sessions, leading to much more **workshop based** rather than 'stand and deliver' courses.

Course Software

SAS Version 8, or 6

Our standard courses are appropriate for a wide range of abilities and centre around the core of the SAS System. All courses are developed with Version 8, but can be adapted to Version 6 upon request.

Investment

Increase your SAS productivity and coding efficiency

Increase your SAS productivity and coding quality by investing in training for your staff. Our training is highly **effective** and fees will vary according to the number of attendees, duration of course and individual requirements. Please contact our Commercial Director to discuss your specific needs in more detail.

Bespoke Courses and Graduate Recruitment Training Plan

Unique training plan for graduates entering the pharmaceutical industry

Standard courses can incorporate minor changes pertinent to the needs of your company with no extra charge. Tailored courses and non-standard courses can be developed at an extra charge.

A **unique training plan** developed primarily **for graduates** entering the pharmaceutical industry is also available.

Training Location

Ideal location in Brussels, with access close to Metro

Courses can be delivered on-site or at our own training facilities in Brussels**.**

Contact Information

To book courses, request further information or to discuss alternate methods for meeting your staff's learning needs please contact **us to discuss your** specific requirements further at:

Base 3 Systems **sa**,
Avenue **Roger Vandendriessche 18**
B-1**150** Brussels, Belgium,
Tel: +32 (0)2 738 03 30
or by Email: **adminb**@base3.**be**

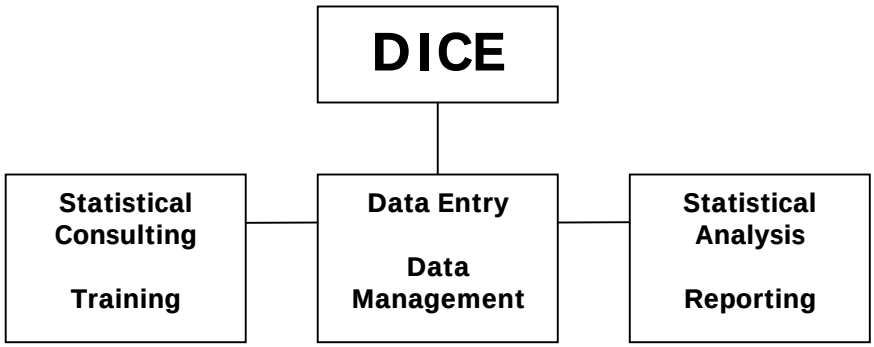
Introduction (ctd.)

Renowned local Contract Research Organisation

Who is DICE?

DICE is a **CRO** offering customized services in areas of **data entry, data management, and statistics**. It's range of services also includes randomization, protocol and CRF preparation and design, coding, medical writing, meta-analysis, quality control, and health economics. DICE has experience in a wide range of study designs and therapeutic areas and uses the most up-to-date tools of data management and statistics.

Departments



Services

Wide range of Services

- Design and Planning of Trials
- Data Entry and Data Management
- Type of Studies
- Procedure for the Statistical Analysis

Design and Planning of Trials

Tasks Covered

- Assistance in planning
- Sample size determination / power calculation
- Writing the statistical section of the protocol
- Development of the analysis plan
- CRF design
- CRF review
- Preparation of randomization lists
- Centralized randomization / minimization

Introduction (ctd.)

Data Entry and Data Management

Tasks Covered

- Data coding (WHO-ART, COSTART, WHO-DRUG, ICD-9, ICD-10, SPONSOR)
- Design and implementation of the data base
- Development of a data management plan
- Double data entry
- Data clarification
- Consistency checking
- Quality assurance / Quality control
- Structured lists of individual data

Types of Studies

- Clinical trials (Phase I to Phase IV, PMS)
    - Parallel and cross-over designs
    - Pharmacokinetic studies
    - Bio-equivalence trials
    - Dose finding
    - Quality of Life
- Meta-analysis
- Epidemiological studies
- Health economics

Procedure for the Statistical Analysis

- Development of a detailed analysis plan (according to ICH E9 guideline)
- Blind data base review with extensive checking of violations of inclusion / exclusion / study criteria
- Pre-analysis discussion to settle questions concerning:
    - Populations
    - Data to be considered in the analysis
- Statistical analysis (blind)
- Statistical report
    - Summary of the protocol
    - Statistical methodology
    - Study characteristics
    - Description of the populations at baseline
    - Course of the study
    - Evaluation of efficacy
    - Evaluation of safety
    - Conclusions

Introduction (ctd.)

Training Courses on Statistics for staff involved in clinical research

DICE offers courses in English, French, and Dutch on various topics of biostatistics. These courses are practically oriented with each of the topics being illustrated with real-life examples. They are particularly intended **for people involved in the organization and conduct of clinical trials** and do not require any prior knowledge of statistics. *This course is not intended for statisticians.*

Training Location

Courses can be delivered on-site or at DICE's own training facilities in Brussels, or at Base 3 Systems' training offices. Minimum number of attendees for our courses is 5 participants for non on-site courses.

Contact Information

To book courses, request further information or to discuss alternate methods for meeting your organisation's learning needs, please contact in the first instance our Customer Manager,

Mrs. Marie-Paule Derde,
DICE
K. Albert Avenue 160,
B-1082 Brussels
Belgium

Tel: +32 2 465 76 50
E-mail: mail@dice.nu
Web site: www.dice.nu

SAS Software Programming Courses

Programming with SAS

Duration

3 days

Required Knowledge

No previous programming knowledge is assumed, but familiarity with MS Windows, a keyboard and a mouse is essential.

Course Aims & Objectives

The goal of this course is to take someone with little or no previous exposure to the SAS system, or any other programming language, and produce someone who is able to perform elementary coding operations with the SAS System.

After completing this course attendees should have a broad understanding of data input, manipulation, reporting and output with Version 8 of the SAS System. They should be able to: write data steps that read/write raw input or native SAS tables; apply code to deal with date processing structures; shape, transform and conditionally process data; and, produce simple reports with the Output Delivery System in many different formats (e.g. HTML, RTF and PDF).

Concepts Covered

Navigating the SAS System V8

- *Explorer window*
- *Results window*
- *Enhanced Editor*
- *Output and viewer windows*
- *Log window*

Programming Fundamentals

- *Variables*
- *Statements*
- *Operators*
- *Expressions*
- *Functions*

SAS Tables / Datasets

- *Librefs*
- *Viewing SAS Tables*
- *Reading SAS Tables*
- *Sub setting SAS Tables*
- *Writing SAS Tables*
- *Combining SAS Tables*

Data Processing

- *Conditional processing*
- *Data Transformations*
- *Date processing*
- *Retaining values*
- *Repetitive processing*

Programming with SAS (ctd.)

Reading Raw Data

- *Filerefs*
- *Infile statement*
- *Input statement*
- *Informats*

Writing Raw Data

- *File statement*
- *Put statement*
- *Formats*

Reporting with the Output Delivery System

- *Proc Tabulate*
- *Proc Report*
- *Proc Print*
- *Proc Means*

Advanced SAS Programming

Duration

1 day

Required Knowledge

Attendees should have attended Programming with SAS or have at least five months experience of programming with the SAS System.

Course Aims & Objectives

At the end of this course attendees should have an understanding of efficiency techniques that may be employed, and the balance between efficiency and maintainability of SAS code, enabling streamlining of existing code and development of new code that meets efficiency requirements.

Concepts Covered

Efficiency Concepts

- *Real time vs Elapsed time*
- *I/O usage*
- *Data storage*
- *Benchmarking*
- *Efficiency vs Maintainability*

Raw Data

- *Reading raw data files efficiently*
- *Writing raw data files efficiently*

Indexes

- *Understanding indexes*
- *Creating indexes*
- *Deleting & recreating indexes*
- *Overheads of indexes*

Efficient Storage of SAS Tables

- *Variable definitions*
- *Views*
- *Compression Techniques*

Efficient Use of SAS Tables

- *Randomly accessing data*
- *Working with Transaction Data sets*
- *Creating data with SAS Procedures*
- *Formats as an efficiency technique*
- *Sub setting*

SAS Macro

Duration

2 days

Required Knowledge

Attendees should have a level of knowledge equivalent to that given by our course 'Programming with SAS' above, or have at least five months experience of programming with the SAS System.

Course Aims & Objectives

After completing this course attendees should have a thorough knowledge of the principals of Macro processing and be able to use the SAS Macro Language to generate dynamic, maintainable code.

Concepts Covered

Basics

- *What is a macro?*
- *When to use macros*
- *Creating macros*
- *Referencing macros*
- *Macro variable scope*
- *Storing macros*
- *Accessing macros*

Macro Processing Foundations

- *Tokens*
- *Compilation*
- *Execution*
- *Symbol tables*
- *Debugging macro code*

Coding SAS Macros

- *Declaring macro variables*
- *Controlling macro variable resolution*
- *Using SAS Macro functions*
- *Conditional processing with the SAS Macro Language*
- *Repetitive processing with the SAS Macro Language*
- *Evaluating numerical expressions*
- *Positional and keyword parameters*

Considerations

- *Stored macros*
- *SAS system options*
- *Best practice*
- *Maintainability vs Efficiency*

SAS SQL

Duration

2 days

Required Knowledge

Attendees should have a level of knowledge equivalent to that given by Programming with SAS. No previous experience of SQL is required.

Course Aims & Objectives

After completing this course attendees should be able to use the SQL procedure to: create, query, delete, update and modify SAS data; combine SAS Tables; apply conditional processing in queries; summarize data; report on data; and create macro variables.

Concepts Covered

Queries

- *What is a query?*
- *How to access Tables in a query*
- *How to subset data in a query*
- *How to create Tables & Views with SQL*
- *How to sort data with SQL*
- *How to process groups with SQL*
- *How to report with SQL*

SAS SQL Joins

- *Inner Joins*
- *Left & Right Joins*
- *Full Joins*

SAS SQL Set Operators

- *Union*
- *Outer Union*
- *Except*
- *Intersect*

Further Topics in SQL

- *Updating rows*
- *Adding rows*
- *Conditional processing*
- *Formats & Informats*
- *Indexes*
- *Numeric Functions*
- *String Functions*
- *Creating Macro variables*

A Step up to SAS version 8

Duration

2 days

Required Knowledge

This is a conversion course for those needing to move from using SAS V6 to SAS V8. Attendees should have knowledge of SAS programming techniques and be comfortable applying these.

Course Aims & Objectives

After completing this course attendees should be able to navigate the SAS System Version 8 interface and be aware of changes and new features that may enhance, or impact on, the way they work.

Note that, this course does not consider changes and enhancements to SAS/AF software.

Concepts Covered

SAS V8 GUI

- *Explorer*
- *Enhanced Editor*
- *Log*
- *Window*
- *Output*
- *Results Viewer*
- *Results window*
- *Preferences*
- *Keyboard macros*
- *Abbreviations*
- *File Shortcuts*

SAS V8 Help

- *System help*
- *OnlineDoc*

Enhanced Procedures

- *Reporting*
- *Summarising*
- *Formatting*
- *Querying*
- *Listing*
- *Sorting*
- *Environment*

General Enhancements & Additions

- *Variables*
- *System Options*
- *DATA step*
- *Functions*
- *Indexing*
- *SAS/Access*

A Step up to SAS version 8 (ctd.)

V6 – V8 Compatibility

- *Various considerations when migrating from V6 to V8*

Output Delivery System

- *What is it?*
- *How does it work?*
- *ODS Destinations*
- *Selection & Exclusion lists*
- *Using Table & Style definitions (creating HTML reports)*

SAS/Graph

- *Various changes and enhancements*

Data Management

- *Generation DataSets*
- *Integrity Constraints*
- *Audit Trails*

SAS Graph

Duration

3 days

Required Knowledge

Attendees should have attended Programming with SAS or have at least five months experience of programming with the SAS System.

Course Aims & Objectives

After completing this course attendees should be able to: produce a wide range of graphical reports using SAS/Graph software; extend basic SAS/Graph functionality with the ANNOTATE facility; and use SAS/Graph software to enhance tabular reporting and generate web-ready reports.

Concepts Covered

Basics

- *What is SAS/Graph?*
- *SAS/Graph Features*
- *Graphics generation with SAS/Graph Software*

Text & SAS/Graph

- *The GSLIDE Procedure*
- *Controlling text with graphics options*

Plotting Data

- *The GPLOT Procedure*
- *Lines & Symbols*
- *Axes*
- *Legends*

Producing Charts

- *The GCHART Procedure*
- *Bar Charts*
- *Pie Charts*
- *Midpoints*
- *Chart Statistics*
- *Groups & Subgroups*
- *Customising Charts*

Replaying Graphs

- *The GREPLAY Procedure*
- *Graph Storage*
- *Templates*

Graphics Output & External Files

- *The GDEVICE Procedure*
- *Sending SAS/Graph output to external files and printers*

SAS Graph (ctd.)

Customising Graphics Output

- *The ANNOTATE facility*
- *ANNOTATE variables*
- *Annotating Plots & Charts*

Additional Topics

- *Generating web-ready Graphical Reports with The ODS*
- *Combining Tabular & Graphical Reports*

Elementary Statistics with SAS

Duration

2 days

Required Knowledge

Attendees should have attended Programming with SAS or have at least five months experience of programming with the SAS System. Additionally, attendees should be familiar with most of the following statistical concepts: measures of central tendency, standard deviation, ranges, frequency tables, plots and histograms/bar-charts.

Course Aims & Objectives

The drive of this course is to illustrate how the SAS/Base module can be used to analyse variables and their relationships. Other modules used are SAS/Graph, SAS/Stat and SAS/Insight.

After completing this course attendees should be able to use the SAS System to: explore variables and their properties; examine and test simple relationships between variables; and, graphically display distributions and relationships.

Concepts Covered

Basics

- *SAS Tables & Variables*
- *Statistical Distributions & Functions*
- *Principles of Statistical Confidence*

Univariate Statistics

- *Presenting Continuous & Categorical Variables*
- *Testing for Location & Variability*
- *Testing for Distributions*

Bivariate Statistics

- *Linking two variables*
- *Two categorical variables*
- *Two continuous variables*
- *One categorical & one continuous variable*
- *Extensions to more than two variables*

Advanced Representations

- *Histograms & charts*
- *2D & 3D plots*
- *Simple curve fitting*

Interactive Data Analysis

- *SAS/Insight Basics*
- *Exploring one variable*
- *Exploring several variables*
- *Simple tests & models*

Tabular Reporting with SAS

Duration

2 days

Required Knowledge

Attendees should have attended Programming with SAS or have at least five months experience of programming with the SAS System.

Course Aims & Objectives

After completing this course attendees should be familiar with the different methods of creating tabular reports with the SAS/System and be able to choose the appropriate method for a particular report.

Concepts Covered

Fundamental Steps of Report Building

- *Report layout, composition & physical format*
- *Methods of Report Generation*
- *Preparing/Pre-summarising data*
- *Useful system options*

Proc Means

- *Statistics*
- *Class & analysis variables*
- *Controlling interactions*
- *Output datasets*

Proc Tabulate

- *Dimensions*
- *Crossings*
- *Concatenations*
- *Formatting*
- *Summary Reports*
- *Specifying Statistics*

Proc Report

- *Specifying available variables & their usage*
- *Detail Reports*
- *Summary Reports*
- *Customising the appearance of a report*
- *Report storage and retrieval*
- *Specifying Statistics*
- *Creating new variables with Compute Blocks*

Reporting with the DATA Step

- *File & Put Statements*
- *Absolute & relative, line & column pointers*
- *Using label blocks*
- *Dynamic line & page control*

Tabular Reporting with SAS (ctd.)

Using The ODS

- *Output objects*
- *Output destinations*
- *Selecting output objects*
- *Working with style definitions*
- *Generating HTML & RTF reports*

Web-ready reports

- *Modifying style attributes: Proc Report & Tabulate*
- *Combining tabular & graphical reports*
- *User-created output objects*
- *Traffic lighting with Proc Format*

Statistics Course for staff involved in clinical research (non statisticians)

Duration

2 days

Required Knowledge

Attendees should have a basic knowledge of the design and conduct of clinical trials, in particular of the types of data collected in trials.

Course Aims & Objectives

After completing this course attendees should be familiar with the terminology used for the statistical analysis of clinical trials. They should be able to interact with a statistician and communicate the results of an analysis to participating investigators.

Topics Covered

Introduction (includes a discussion of the role of statistics in clinical trials and the impact of inclusion and exclusion criteria)

Statistical tests

Overview of the most widely used tests

Calculation of the sample size

Design of a trial

- Blinding
- Randomisation
- Equivalence, non-inferiority, superiority

Bio-equivalence

Analysis of a study

- Guidelines (ICH)
- Derived variables
- Data transformations
- ITT versus PP analysis
- Implications of drop-outs

Dimensional Modelling for Data Warehouses and Data Marts

Duration

2 days

Required Knowledge

No previous programming knowledge is assumed. The course is appropriate for data warehouse architects, DBAs, developers, and everybody that is involved in the creation of data warehouses and data marts.

Course Aims & Objectives

The goal of this course is provide a profound understanding of dimensional modelling for data warehouses and data marts.
After completing this course attendees should understand the necessary steps for translating the business requirements into consistent and high-performance dimensional models. The course is offered in the form of a workshop, where each participant is stimulated to participate in the discovery of a solution to common modelling situations.

Concepts Covered

Dimensional Modelling Defined

- Data warehouses and data marts
- OLTP systems versus data warehouses
- Consequences of entity relationship modelling
- Characteristics and role of dimensional modelling

Nine Step Approach

- Subject area matrix
- Granularity
- Dimensions and dimension attributes
- Facts
- History requirements
- Aggregations
- Conforming dimensions
- Slowly changing dimensions

Dimensional Modelling for Data Warehouses and Data Marts (ctd.)

Exploring Dimensions

- Degenerate dimensions
- Junk dimensions
- Snowflaking
- Sub-dimensions
- Many-to-many dimensions
- Rapidly changing monster dimensions
- Dimension roles

Exploring Facts

- Families of fact tables
- Factless fact tables
- Value-band reporting

Base 3 Systems: Practical Information

Nearest Metro

Metro M**ontgomery**: Line 1B

A map and directions will be provided with confirmation of your registration on a course.

Parking

Paid parking is available in Avenu**e Roger Vandendriessche** and adjacent streets. If using the car please allow ample time to park nearby.

Training Hours

Morning: 09h00 -> 12h30

Afternoon: 14h00 -> 17h30

Breakfast

A breakfast consisting of croissants, fruit juice, water, coffee or tea is offered every morning to the participants.

Lunch

Lunch is not included in the course**.**

Messages

Our reception staff will be happy to pass on messages left at the office for course participants.

Travel Expenses

Our prices are forfeits and do not include expenses related to travel for inter-enterprise training.

Registration

- A completed course registration form, signed by an authorised person, needs to be returned to Base 3 Systems no later than 15 days before the start of the training session required. This will help with our preparations.
- We will provide you with confirmation of your registration on a course by return.