

---

# e-Learning SAS Graph Training Content



**BASE 3 SYSTEMS  
THE LOW BARN  
BEAMSLEY  
SKIPTON  
NORTH YORKSHIRE  
BD23 6HJ  
TEL +44 (0)1756 718080  
FAX +44 (0)1756 718087  
E-MAIL [ADMIN@BASE3.COM](mailto:ADMIN@BASE3.COM)**

---



---

SAS and all other SAS Inc. product and service names are registered trademarks of SAS Inc. in the USA and other countries. ® indicates registration in the USA.

All other brand and product names are registered trademarks of their respective owners.

SAS Inc. has not authorized, sponsored, endorsed or approved this course and is not responsible for its content.

Copyright © 2019 by Base 3 Systems Limited, The Low Barn, Beamsley, Skipton, North Yorkshire, BD23 6HJ. All rights reserved. No part of this publication may be reproduced, stored in a retrieval system, or transmitted, in any form or by any means, electronic, mechanical, photocopying, or otherwise, without the prior written permission of the publisher, Base 3 Systems Limited.

Base 3 Systems Limited registered in England no. 3268508. Registered Office: Stuart House 15/17 North Park Road, Harrogate, North Yorkshire, HG1 5PG

Created : 19 February 2019



---

## Course Aims

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, use SAS/Graph software to enhance tabular reporting and generate web-ready reports.

## Duration

3 days

## Required Knowledge

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

## SAS/GRAPH at Your Site

To see if your site has SAS/GRAPH licensed you will need to execute the following piece of code in the editor window:

```
PROC SETINIT;  
RUN;
```

The results will be displayed in the Log window and if SAS/GRAPH is available you will have a line that resembles the following:

```
---SAS/GRAPH                14NOV2012
```

*Note: The date 14NOV2012 represents the expiry date for the SAS/GRAPH product. This will vary at your site depending on when your SAS license is due for renewal.*

---

## Graph Course

### 1. Graph Concepts

#### 1.1 What is SAS/GRAPH?

- SAS/GRAPH Features

### 2. Text Applications & the GSLIDE Procedure

#### 2.1 Using text within SAS/Graph

- Attributes

#### 2.2 Verifying SAS/Graph Installation

- The GTESTIT Procedure
- Device drivers

#### 2.3 The GSLIDE Procedure

- General Syntax
- Titles and Footnotes
- Controlling text within a graphic
- SAS/GRAPH Fonts
- Windows System Fonts
- Controlling the appearance of text
- NOTE Statements
- TITLE, NOTE & FOOTNOTE options
- Moving Text

#### 2.4 GOPTIONS for Controlling Text

- Options List
- Resetting Graphics Options

#### 2.4 Exercises

#### 2.4 Solutions

### 3. The GPLOT Procedure

#### 3.1 The GPLOT Procedure

- Syntax and Options
- The PLOT statement
- Plot Requests
- The PLOT2 Statement
- Reference Lines

#### 3.2 Controlling Lines & Symbols

- SYMBOL Statements
- Options for controlling symbols
- Specifying Plot Markers
- Multiple SYMBOL Statements
- Controlling Lines
- Generating Box Plots
- INTERPOL=BOX options
- Standard Deviation Plots
- Combining STD and BOX Plots

#### 3.2 Exercises

#### 3.2 Solutions

---

### 3.3 Controlling Axes

- AXIS Statements
- Controlling Axis Lines & Labels
- Controlling Axis Tick Marks
- Controlling Major Tick Mark Text

3.3 Exercises

3.3 Solutions

### 3.4 The LEGEND Statement

- The LEGEND Statement
- Controlling the General Appearance of Legends
- Controlling the Position of Legends
- Controlling the Appearance of Legend Entries

3.4 Exercises

3.4 Solutions

## 4. The GCHART Procedure

### 4.1 Introduction to the GCHART Procedure

- GCHART: General syntax
- The GCHART Procedure - Options
- GCHART: Chart Types
- GCHART Terms - Chart Variables
- GCHART Terms - Midpoints
- GCHART Terms - Chart statistics

### 4.2 Bar Charts - Basics

- General Syntax
- Appearance Options

### 4.3 Controlling Midpoints

- Character Midpoints
- Discrete Numeric Midpoints
- Continuous Numeric Midpoints
- Controlling Midpoints with LEVELS=
- Controlling Midpoints with MIDPOINTS=
- Controlling Character Midpoints
- Controlling Numeric Midpoints

### 4.4 Controlling Chart Statistics

- Options to Control Statistics
- Horizontal Bar Charts: Statistics
- Vertical Bar Charts: Statistics

4.4 Exercises

4.4 Solutions

### 4.5 Customising Colours, Patterns & Text

- Axis Options
- Enhancing Axes
- PATTERN Statements
- PATTERN Statement Options
- Pattern Fill Types
- The PATTERNID Option

- Controlling Patterns
- Multiple PATTERN Definitions

#### 4.5 Exercises

#### 4.5 Solutions

### 4.6 Grouped & Subgrouped Charts

- Grouped Charts
- Subgrouped Charts
- Subgrouping Grouped Charts

#### 4.6 Exercises

#### 4.6 Solutions

### 4.7 PIE Charts

- PIE Charts - Basics
- Adding Legends
- Slice Labels
- Slice Labelling Options
- Controlling Slice Labels
- Controlling Patterns
- Controlling Statistics
- Grouping PIE Charts
- Subgrouped PIE Charts
- Applying Emphasis to Slides
- Controlling Slice Order

#### 4.7 Exercises

#### 4.7 Solutions

### 4.8 Other GCHART Statements

- 3D Bar charts
- 3D PIE charts
- DONUT Charts
- Star Charts

## 5. The GREPLAY Procedure

### 5.1 Replaying SAS/GRAPH Output

- GREPLAY Procedure Uses

### 5.2 Storing SAS/Graph Output in Catalogs

- SAS/Graph Catalog Entry Names
- Storing SAS/GRAPH Output in Catalogs

### 5.3 Templates

- Creating Templates
- Creating a SAS/GRAPH Template

### 5.4 The GREPLAY Procedure for Replaying Graphs

- GREPLAY Procedure Syntax
- The TREPLAY Statement
- Replaying Graphs
- Other GREPLAY Statements

#### 5.4 Exercises

#### 5.4 Solutions

### 5.5 Creating Templates Interactively

- 
- Template Design Window
  - Defining Panels
  - Creating a Template
  - Editing an Existing Template
  - GREPLAY Procedure Interactive
  - Deleting Entries
  - Replaying Entries

## 6. Graph Output & External files

### 6.1 The GDEVICE Procedure

- GDEVICE Procedure Uses

### 6.2 Sending SAS/Graph Output to an External File

- Exporting Output to a .CGM File
- Exporting Output to .GIF Files
- Exporting Output to .JPG Files

#### 6.2 Exercises

#### 6.2 Solutions

### 6.3 Sending SAS/Graph Output to a Printer

- Choosing a Graphics Device Driver
- Windows Printer Drivers
- SAS/GRAPH Printer Drivers

## 7. ANNOTATING Graphs

### 7.1 Introduction to Annotate Graphs

- Creating Custom Graphs
- Enhancing Graphs
- The Annotate Facility in SAS Help

### 7.2 Basics of Annotate Data Sets

- ANNOTATE Variables
- Action Variables
- Coordinate Variables
- Coordinate Systems
- Coordinate System Units
- Coordinate System Placement
- The POSITION Variables
- Graphic Instructions
- Selected Variables Related to MOVE, DRAW and LABEL

#### 7.2 Exercises

#### 7.2 Solutions

### 7.3 Enhancing Plots & Charts with Annotate Data sets

- Enhancing Output with Annotate
- Manual Generation of Annotate Data Sets
- Dynamic Generation of Annotate Data Sets
- Enhancing Bar Charts with Annotate
- The MIDPOINT Annotate Variable
- The GROUP Annotate Variable

#### 7.3 Exercises

---

## 7.3 Solutions

### 8. Additional Topics

#### 8.1 The Output Delivery System (ODS)

- How Does the ODS Work?
- ODS destinations
- Opening & Closing Destinations
- Producing HTML Output
- Sending Graphics to the ODS HTML Destination
- HTML File Specification
- Producing Drill-Down Graphs
- Producing Drillable Graphs

#### 8.1 Exercises

#### 8.1 Solutions

#### 8.2 SAS/Graph Output & PROC REPORT

- Combining SAS/GRAPH & PROC REPORT Output

#### 8.2 Exercises

#### 8.2 Solutions