SAS® Education
Providing knowledge through global training and certification

2012

Featuring:
Training by Job Role
SAS® Certification
Conferences and Events

www.sas.com/training
Analytics is at the heart of a revolution that’s sweeping away old ways of thinking. We are living in some of the most exciting times. Things are possible now that we could never think of before. For example, a large investment bank in Singapore recently used SAS to reduce the time they spent processing pricing calculations down from 18 hours to just 12 minutes! What would you do with the extra time if your code ran in five minutes rather than hours or days? I invite you to let your mind explode with ideas; with SAS such things are now possible.

There’s been no better time to join with the hundreds of thousands of other SAS professionals who, over the past 35 years, have seen their organizations transformed by SAS technology and their careers enhanced by SAS training. SAS Education offers the most complete and timely curriculum of SAS courses in the world, so think big and join the analytics revolution.

Jim Goodnight
CEO

SAS® Education Takes You Where You Want to Go

When you choose SAS Education, you make the best investment of your time and money. As the world leader in business intelligence and analytical software, SAS improves performance and provides insight to 50,000 business, government and university sites in more than 120 countries. Wherever in the world your staff are, you can be assured that world-class education and training from SAS Education is available.

We are the recognized leader in delivering the most comprehensive, state-of-the-art SAS training in the industry.

Engaging with SAS Education gives you:

**Firsthand SAS® Knowledge**
Nobody knows SAS software and its advantages better than SAS personnel. And nobody has more information on new and pending developments.

**World-Class Instructors**
SAS instructors are recognized for their outstanding teaching skills and as thought leaders in their areas of instruction. Every SAS instructor has earned a SAS Certified Professional credential. In addition, they undergo rigorous, internal certifications on a chapter-by-chapter basis before teaching your course.

**Expert Instructional Design**
Our goal is to transfer knowledge and develop applicable skills. To achieve this, our courses are carefully designed using a combination of comprehensive course notes, lectures as well as software demonstrations, question-and-answer sessions, and hands-on computer workshops.

**Customizable Content**
Our experts will work closely with you to tailor a training path based on your individual needs. Our assessments will determine how you can get the help you need to excel in your job.

**Rapid SAS® Deployment**
With courses at all skill levels, we meet you at your level of knowledge. After your first course, you will be productive with SAS software. Deploying SAS software has never been faster or easier.

**Flexibility on All Levels**
Our customizable courses can be delivered how and where you need them. Over the Web or in person, at your premises or in one of our high-tech training centers, we can tailor our training to meet your needs.

**Long-Term Customer Relationships**
We are proud of the long-term relationships we have built with our customers. Your continued and future success is our highest priority.
Job Roles and Course Descriptions

**SAS® Foundation**
- 6 Programmer/Analyst
- 9 Report Writer

**SAS® Analytics**
- 10 Statistical Analyst
- 12 Market Researcher
- 13 Operations Researcher
- 13 JMP® Analyst
- 14 Data Miner
- 16 Forecaster
- 16 Six Sigma Professional
- 17 Performance Excellence Manager

**SAS® Solutions**
- 18 Customer Intelligence
- 20 Risk Management
- 21 Financial Management
- 21 Clinical Data Integration
- 21 IT Management
- 21 Merchandise Intelligence
- 22 Activity-Based Management
- 22 Fraud Prevention and Detection
- 22 Human Capital Management
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- 22 Strategy Management
- 23 Sustainability Management
- 23 Text Analytics
- 23 Warranty Analysis

**SAS® Enterprise Business Intelligence**
- 23 Business User
- 25 BI Content Developer
- 25 BI Applications Developer
- 25 Project Manager

**SAS® Data Management**
- 26 Data Integration Developer
- 27 Data Quality Steward

**SAS® Administrators**
- 28 Foundation Administrator
- 28 SAS® Enterprise Guide® Administrator
- 29 Platform Administrator
- 30 Solutions Administrator

Learn More or Register
Contact your local SAS® Education office, see page 32.
SAS Education strives to enable SAS users to unlock information in their data and make better decisions by helping them gain a new, deeper understanding of the power of SAS. As organizations collect more and more data, they rely on analytics to help them extract significant information from that data. By working closely with SAS software developers, we update our courses to coincide with the exciting new features being added to the software to ensure that we offer training that will help you make the most of your software investment. Your success is our goal and the reason we hold such high standards for the development and implementation of our training. Please join us for a successful SAS training experience in 2012.

Larry Stewart  
Vice President of SAS Education

Training Locations

New York  
Paris  
London  
Sydney  
Tokyo

Public courses are taught at SAS training facilities around the globe. Our instructors deliver critical SAS knowledge and helpful tips using a combination of expertly designed lectures and software demonstrations, question-and-answer sessions and hands-on computer workshops for an interactive learning experience that is second to none.

Custom training services have the same quality content and instructional design as our public courses. This training is delivered at your convenience in a private setting of your choosing. Create customized training that is optimized for your team by selecting any course from our full curricula, combining course segments, or having new training written for you.

Live Web classes bring instructor-led training directly to your desktop. Using a Web browser and telephone, you can interact with an instructor, who guides your learning and answers your questions in real time.

SAS e-Learning provides immediate access to award-winning training at your desktop 24/7. Be sure to check out the ever-expanding list of short e-Lectures as well as the dynamic and engaging multimedia e-Courses. SAS e-Learning allows you to train without travel time and cost.

Business Knowledge Series is a unique partnership between SAS and external professionals who bring their real-world knowledge directly to you. The courses are authored by respected practitioners who use SAS to solve common business problems.

SAS Certification recognizes excellence using SAS software. With growing, worldwide demand for professionals with a high level of SAS software knowledge, certification can help you distinguish yourself as a leading SAS professional.

For the most current information on what we offer, visit us on the Web at www.sas.com/training.
Our custom-made courses, workshops and seminars are affordable, flexible and ideal for small or large groups.

**You choose:**
- Course topics: tailored to your needs or have a standard course delivered just for your staff.
- Course data: standard course data can be provided or your own data can be used.
- Dates: to suit your project timescales.
- Location: your premises, a SAS Training Center or a third-party location.

If you would like training at your premises but do not have suitable training equipment, we can provide a setup service upon request.

Our custom-made courses combine lectures, software demonstrations, hands-on computer workshops and course notes.

**We deliver:**
- SAS accredited instructor
- Tailored course notes and exercises
- Hands-on workshops
- Post-course evaluation

To book your custom event, simply contact one of our business development managers at your telephone or your email.

To find out more about custom events, go to your web url and follow the custom events link.
ANALYTICS

Build on your future.

SAS® Analytics help you discover innovative ways to increase profits, reduce risk, predict trends and turn data assets into true competitive advantage. Decide with confidence.

Scan the QR code* with your mobile device to view a video or visit sas.com/build for a free Harvard Business Review report.

*Requires reader app to be installed on your mobile device
What if you could accelerate your potential?  
You can with SAS Certification.

Earning the only globally recognized credential from SAS can set you, your team and your organization apart from the competition.

SAS Certification:
- helps managers select qualified professionals
- can increase individual and work group productivity
- supports world-class organizations with a metric to attract the brightest and retain the best employees

Accelerate your potential by earning SAS Global Certification credentials.  
www.sas.com/certify

“I first learned how useful SAS Certification could be when my graduate school professor told us about it. I thought it could help me find better job opportunities in the analytical field, and I have found that being a SAS Certified Advanced Programmer does put me in a distinct league.

When I talk to potential employers, they point to my certification as an advantage. I would recommend it to others.”

K. Parekh 
Quantitative Health Care Analyst

Get SAS Certified with these credentials:
Experience is a critical component to becoming a SAS Certified Professional. The diagrams below illustrate available credentials and training options that can help you prepare for the required examinations.

**SAS® Certified Base Programmer for SAS®9**

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**SAS® Certified Advanced Programmer for SAS®9**

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**SAS® Certified Clinical Trials Programmer Using SAS®9**

- SAS® Clinical Trials Programming Using SAS®9 exam

**SAS® Certified Predictive Modeler Using SAS® Enterprise Miner™**

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**SAS® Certified Data Integration Developer for SAS®9**

| **SAS® Data Integration Studio: Fast Track** | SAS® Data Integration Development for SAS®9 exam |

**SAS® Certified Platform Administrator for SAS®9**

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Programmer/Analyst

I'm responsible for accessing and managing data and for performing queries and analyses. I write SAS programs or use SAS® Enterprise Guide® for these tasks.

For SAS Programmers

No prior programming experience

- SAS® Programming Introduction: Basic Concepts  
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Training Preparation for Base Programmer Certification

- SAS® Programming 1: Essentials  
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- SAS® Programming 2: Data Manipulation Techniques  
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- SAS® Programming 3: Advanced Techniques and Efficiencies  
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Training Preparation for Advanced Programmer Certification

- SAS® Enterprise Guide® 2: Advanced Tasks and Querying  
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- SAS® Macro Language 1: Essentials  
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- SAS® Macro Language 2: Developing Macro Applications  
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For SAS Enterprise Guide Users

- SAS® Enterprise Guide® 1: Querying and Reporting  
  pg. 7
- SAS® Enterprise Guide® 2: ANOVA, Regression, and Logistic Regression  
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Advanced and Specialty Courses

- Data Cleaning Techniques  
  BKS
- Health Care Data and the SAS® System  
  BKS
- Processing Database and Spreadsheet Data with SAS/ACCESS® Software
- SAS® Certification Review: Base Programming for SAS®9
- SAS® Functions by Example  
  BKS
- SAS® Macro Language 2: Developing Macro Applications

Recommended Certifications

SAS® Certified Base Programmer for SAS®9
SAS® Certified Advanced Programmer for SAS®9
SAS® Certified Clinical Trials Programmer Using SAS®9

Please find more information about SAS Certification on page 5.

LEARN MORE OR REGISTER:  Contact your local SAS® Education office, see page 32.
SAS Enterprise Guide® 1: Querying and Reporting

This course is for users who do not have SAS programming experience but need to access, manage, and summarize data from different sources, and present results in reports and graphs. This course focuses on using the menu-driven tasks in SAS Enterprise Guide. Although you can write, submit, and generate SAS programming code using SAS Enterprise Guide, this course does not teach the SAS programming language.

Learn how to:
- access and manipulate local and remote data of various types
- create queries that filter and summarize data, compute new columns, and join multiple tables
- create frequency and tabular reports
- create interactive graphs
- automate output results.

Who should attend: Data, business and statistical analysts who want to use the menu-driven tasks in SAS Enterprise Guide

Level I: Beginner
Delivery: Classroom, e-Course
Duration: 2 days (16 hours for e-Course)
Course code: EG143

SAS Enterprise Guide® 2: Advanced Tasks and Querying

This course focuses on using the Query Builder within SAS Enterprise Guide, including manipulating character, numeric, and date values; converting variable type; and building conditional expressions using the Expression Builder. This course also addresses efficiency issues, such as joining tables and using a single query to group, summarize, and filter data.

Learn how to:
- use tasks to transpose, stack, rank, and create a random sample of your data
- use functions to convert data type from character to numeric and from numeric to character
- use conditional logic in the Query Builder to create new columns
- use multiple value parameters.

Who should attend: Non-programmers with SAS Enterprise Guide experience, as well as experienced programmers with SAS Enterprise Guide experience

Level II: Fundamental
Delivery: Classroom
Duration: 2 days
Course code: EG243

SAS® Enterprise Guide® for Experienced SAS® Programmers

This course introduces experienced SAS programmers to SAS Enterprise Guide as an interface to write and submit code, as well as use the point-and-click tasks to generate queries, reports and graphics.

Learn how to:
- write, edit and submit SAS programs in SAS Enterprise Guide
- use point-and-click tasks and wizards to access data and create queries, reports and graphics
- customize task output by modifying the code that is generated by SAS Enterprise Guide
- use the concept of SAS Enterprise Guide project to combine SAS programs with point-and-click functionality, including automated exporting and scheduled updates.

Who should attend: Experienced SAS programmers who want to learn the point-and-click functionality of SAS Enterprise Guide, including the intricacies of using it as a primary programming interface

Level III: Intermediate
Delivery: Classroom
Duration: 2 days
Course code: EGSP43

SAS® Macro Language 1: Essentials

This course focuses on the components of the SAS macro facility and how to design, write, and debug macro systems. Emphasis is placed on understanding how programs with macro code are processed.

Learn how to:
- perform text substitution in SAS code
- automate and customize the production of SAS code
- conditionally or iteratively construct SAS code
- use macro variables and macro functions.

Who should attend: Experienced SAS programmers who have a sound understanding of DATA step programming and who want to write SAS programs that are reusable and dynamic

Level IV: Expert
Delivery: Classroom, e-Course
Duration: 2 days (16 hours for e-Course)
Course code: MAC1
Certification: This course is suggested preparation for the SAS® Advanced Programming for SAS®9 exam.

SAS® Programming 1: Essentials

This course is for users who want to learn how to write SAS programs. It is the entry point to learning SAS programming and is a prerequisite to many other SAS courses. If you do not plan to write SAS programs and you prefer a point-and-click interface, you should attend the SAS® Enterprise Guide® 1: Querying and Reporting course.

Learn how to:
- navigate the SAS windowing environment
- read various types of data into SAS data sets
- validate and clean SAS data sets
- create SAS variables and subset data
- combine SAS data sets
- create and enhance listing and summary reports.

Who should attend: Anyone getting started writing SAS programs

Level II: Fundamental
Delivery: Classroom, e-Course
Duration: 3 days (24 hours for e-Course)
Course code: PRG1
Certification: This course is suggested preparation for the SAS® Base Programming for SAS®9 exam.

SAS® Programming 2: Data Manipulation Techniques

This course is for those who need to learn SAS DATA step programming techniques for processing, controlling, and manipulating SAS data sets. The course builds on the concepts that are presented in the SAS® Programming 1: Essentials course and is not recommended for beginning SAS software users.

Learn how to:
- control SAS data set input and output
- combine SAS data sets
- summarize, read, and write different types of data
- perform DO loop and SAS array processing
- transform character, numeric, and date variables.

Who should attend: Business analysts and SAS programmers

Level III: Intermediate
Delivery: Classroom, e-Course
Duration: 3 days (24 hours for e-Course)
Course code: PRG2
Certification: This course is suggested preparation for the SAS® Base Programming for SAS®9 exam.
SAS® Programming 3: Advanced Techniques and Efficiencies
This course is for SAS programmers who prepare data for analysis. The comparisons of manipulation techniques and resource cost benefits are designed to help programmers choose the most appropriate technique for their data situation.

Learn how to compare various SAS programming techniques that enable you to:
• control memory, I/O, and CPU resources
• create and use indexes
• combine data horizontally and vertically
• use hash and hiter DATA step component objects, arrays, and formats as lookup tables
• compress SAS data sets
• sample your SAS data sets.

Who should attend: Experienced SAS programmers  
Level IV: Expert  
Delivery: Classroom, e-Course  
Duration: 3 days (24 hours for e-Course)  
Course code: PRG3  
Certification: This course is suggested preparation for the SAS® Advanced Programming for SAS®9 exam.

SAS® Programming Introduction: Basic Concepts
This course teaches you how to write simple SAS programs. The course is a subset of the SAS® Programming 1: Essentials course. If you do not plan to write SAS programs and prefer a point-and-click interface to SAS, you should attend the SAS® Enterprise Guide® 1: Querying and Reporting course.

Learn how to:
• plan and write simple SAS programs to solve common data analysis problems
• create simple list and summary reports
• define new data columns (variables)
• execute conditional code
• navigate the SAS windowing environment.

Who should attend: Beginning computer users who want to write simple SAS programs  
Level I: Beginner  
Delivery: Classroom, e-Course  
Duration: 2 days (16 hours for e-Course)  
Course code: INTRO

SAS® SQL 1: Essentials
This course teaches you how to process SAS data using Structured Query Language (SQL).

Learn how to:
• query and subset data
• summarize and present data
• combine tables, including complex joins and merges
• create and modify table views and indexes
• replace multiple DATA and PROC steps with one SQL query.

Who should attend: SAS programmers and business analysts  
Level III: Intermediate  
Delivery: Classroom, e-Course  
Duration: 2 days (16 hours for e-Course)  
Course code: SQL1  
Certification: This course is suggested preparation for the SAS® Advanced Programming for SAS®9 exam.

SAS® Global Certification
A world of opportunity
Increase your career and business opportunities.  
Earn global recognition for your SAS expertise.  
Distinguish yourself in today’s competitive job market.

www.sas.com/certify
I'm responsible for performing queries and generating reports. I write SAS programs or use SAS Enterprise Guide to perform these tasks.
Statistical Analyst
I cleanse and prepare data for analysis as well as conduct and interpret simple to complex statistical data analyses.

www.sas.com/paths/stat

For SAS Programmers

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Predictive Modeling Using Logistic Regression
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Categorical Data Analysis Using Logistic Regression
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Mixed Models Analyses Using SAS®
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For SAS Enterprise Guide Users

SAS® Enterprise Guide® 1: Querying and Reporting
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SAS® Enterprise Guide®: ANOVA, Regression, and Logistic Regression
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Advanced and Specialty Courses

Applied Clustering Techniques
Bayesian Analyses Using SAS®
NEW
Design and Analysis of Probability Surveys
Statistical Graphics with ODS
Multilevel Modeling of Hierarchical and Longitudinal Data Using SAS®
UKS
Statistical Process Control Using SAS/QC® Software
Survival Analysis Using the Proportional Hazards Model

For JMP Users

See the JMP® Analyst job role training path (pg. 13)

LEARN MORE OR REGISTER: Contact your local SAS® Education office, see page 32.
Categorical Data Analysis Using Logistic Regression
This course focuses on analyzing categorical response data in scientific fields. The SAS procedures addressed are PROC FREQ, PROC LOGISTIC, and PROC GENMOD. The course is not designed for predictive modelers in business fields.

**Learn how to:**
- write code in the LOGISTIC procedure for binary, ordinal, and nominal logistic regression
- create effect plots and odds ratio plots using ODS Statistical Graphics
- create logit plots and use the FREQ procedure for preliminary analyses
- assess models for fit and influential observations using PROC LOGISTIC
- create ROC curves for measuring sensitivity and specificity
- analyze repeated and clustered data using GEE’s in the GENMOD procedure.

**Who should attend:** Biostatisticians, epidemiologists, social scientists, and physical scientists who analyze categorical response data

**Level III: Intermediate**
- **Delivery:** Classroom
- **Duration:** 3 days
- **Course code:** CDAL92

Longitudinal Data Analysis with Discrete and Continuous Responses
This course is for scientists and analysts who want to analyze observational data collected over time. It is not for SAS users who have collected data in a complicated experimental design; they should take the Mixed Models Analyses Using SAS course instead.

**Learn how to:**
- create individual and group profile plots and sample varigrams
- use PROC MIXED to fit a general linear mixed model and a random coefficient model
- plot information criteria for models with selected covariance structures
- generate diagnostic plots in PROC MIXED
- fit a binary or ordinal GEE model in PROC GENMOD
- compute GEE deletion diagnostic statistics in PROC GENMOD
- fit a generalized linear mixed model in PROC GLIMMIX.

**Who should attend:** Epidemiologists, social scientists, physical scientists, and business analysts

**Level IV: Expert**
- **Delivery:** Classroom
- **Duration:** 3 days
- **Course code:** LONG92

Mixed Models Analyses Using SAS
This course teaches you how to analyze linear mixed models using PROC MIXED. A brief introduction to analyzing generalized linear mixed models using PROC GLIMMIX is also included.

**Learn how to:**
- analyze data (including binary data) with random effects
- fit random coefficient models and hierarchical linear models
- analyze repeated measures data
- obtain and interpret the best linear unbiased predictions
- perform residual and influence diagnostic analysis
- deal with convergence issues.

**Who should attend:** Statisticians, experienced data analysts, and researchers with sound statistical knowledge

**Level IV: Expert**
- **Delivery:** Classroom
- **Duration:** 3 days
- **Course code:** AGLM92

Multivariate Statistical Methods: Practical Research Applications
This course teaches how to apply a variety of multivariate statistical methods to research data.

**Learn how to:**
- perform multivariate analysis of variance (MANOVA) and multivariate regression analysis
- perform canonical correlation and discriminant function analyses
- perform principal components analysis
- perform exploratory and confirmatory factor analysis
- use structural equation modeling.

**Who should attend:** Statisticians, researchers, and data analysts with a strong statistical background

**Level IV: Expert**
- **Delivery:** Classroom
- **Duration:** 3 days
- **Course code:** AMUL92

SAS® Enterprise Guide®: ANOVA, Regression, and Logistic Regression
This course is designed for SAS Enterprise Guide users who want to perform statistical analyses.

**Learn how to:**
- generate descriptive statistics and explore data with graphs
- perform analysis of variance
- perform linear regression and assess the assumptions
- use diagnostic statistics to identify potential outliers in multiple regression
- use chi-square statistics to detect associations among categorical variables
- fit a multiple logistic regression model.

**Who should attend:** Statisticians and business analysts who want to use a point-and-click interface to SAS

**Level II: Fundamental**
- **Delivery:** Classroom
- **Duration:** 3 days
- **Course code:** EGBS43

Statistics 1: Introduction to ANOVA, Regression, and Logistic Regression
This course is for SAS software users who perform statistical analyses using SAS®/STAT® software. The focus is on t-tests, ANOVA, linear regression and logistic regression. This course (or equivalent knowledge) is a prerequisite to many of the courses in the statistical analysis curriculum.

**Learn how to:**
- generate descriptive statistics and explore data with graphs
- perform analysis of variance and apply multiple comparison techniques
- perform linear regression and assess the assumptions
- use diagnostic statistics to assess statistical assumptions and identify potential outliers in multiple regression
- use chi-square statistics to detect associations among categorical variables
- fit a multiple logistic regression model.

**Who should attend:** Statisticians, researchers, and business analysts who use SAS programming to generate analyses using either continuous or categorical response (dependent) variables

**Level II: Fundamental**
- **Delivery:** Classroom
- **Duration:** 3 days
- **Course code:** ST192
Statistics 2: ANOVA and Regression

This course teaches you how to analyze continuous response data and discrete count data. Linear regression, Poisson regression, negative binomial regression, gamma regression, analysis of variance, linear regression with indicator variables, analysis of covariance, and mixed models ANOVA are presented in the course.

Learn how to:
- fit polynomial regression models using the REG procedure
- evaluate model fit and model assumptions using the REG, GLM, GENMOD, and UNIVARIATE procedures
- perform ANOVA using the GLM procedure
- fit models with random effects using the MIXED procedure
- create a variety of statistical graphs.

Who should attend: Data analysts and researchers with some statistical training

Level III: Intermediate
Delivery: Classroom
Duration: 3 days
Course code: ST292

What our students have to say
“In the class, I found many ways to do my work more efficiently! The in-class, hands-on practice was VERY helpful. And, the instructor was very good: welcomed questions; easy to interact with and very approachable.”

Kritika Thapa

97% of our customers felt the course objectives were attained to a good or to an excellent degree

Achieved Course Objectives

Market Researcher
I analyze and interpret market research data using SAS programs and applications.

For more information and full course listings, visit www.sas.com/paths/mkt

For SAS Programmers

SAS® Programming 1: Essentials

Statistics 1: Introduction to ANOVA, Regression, and Logistic Regression

Statistics 2: ANOVA and Regression

Applied Clustering Techniques

Design of Experiments for Direct Marketing

For SAS Enterprise Guide Users

SAS® Enterprise Guide® 1: Querying and Reporting

SAS® Enterprise Guide®: ANOVA, Regression, and Logistic Regression

Preparation for SAS® Certification Exam
Business Knowledge Series
**Operations Researcher**
I help solve business, manufacturing, transportation, and supply chain issues using operations research and quality control techniques.

For more information and full course listings, visit [www.sas.com/paths/or](http://www.sas.com/paths/or)

**JMP® Analyst**
I use JMP software to dynamically visualize statistical data analyses.

For more information and full course listings, visit [www.sas.com/paths/jmp](http://www.sas.com/paths/jmp)

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**SAS Software Users**

- SAS® Programming 1: Essentials
- Building and Solving Optimization Models with SAS/OR®

**JMP Software Users**

- JMP® Software: Data Exploration
- JMP® Software: ANOVA and Regression
- JMP® Software: Classic Design of Experiments

**For JMP Users**

- JMP® Software: Data Exploration
- JMP® Software: ANOVA and Regression
- JMP® Software: Classic Design of Experiments

**For SAS Programmers**

See the [Statistical Analyst job role training path](#) (pg. 10)
**Data Miner**

I'm responsible for extracting information from large databases to construct data segments and predictive models. I use SAS Enterprise Miner, SAS Credit Scoring, SAS Text Miner, or write SAS code.

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For SAS Programmers

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**Advanced and Specialty Courses**

- Advanced Analytics for Customer Intelligence Using SAS®
- Applying Survival Analysis to Business Time-to-Event Problems
- Credit Scorecard Development and Implementation
- Customer Segmentation Using SAS® Enterprise Miner™
- Data Preparation for Data Mining
- Development of Credit Scoring Applications Using SAS® Enterprise Miner™
- Exploratory Analysis for Large and Complex Problems
- Extending SAS® Enterprise Miner™ with User-Written Nodes
- Managing SAS® Analytical Models Using SAS® Model Manager

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**Advanced and Specialty Courses Cont.**

- Net Lift Models: Optimizing the Impact of Your Marketing Efforts
- Neural Network Modeling
- Rapid Predictive Modeling for Business Analysts
- SAS® Enterprise Miner™: Administration
- Web Analytics and Web Intelligence Using SAS®

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**Recommended Certifications**

- SAS® Certified Predictive Modeler Using SAS® Enterprise Miner™

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**Advanced Predictive Modeling Using SAS® Enterprise Miner™**

This course teaches you how to optimize the performance of predictive models beyond the basics. The course continues the development of predictive models that begins in the Applied Analytics Using SAS® Enterprise Miner™ course.

**Learn how to:**
- use advanced techniques for input selection and model assessment
- construct and evaluate two-stage and multi-stage models using SAS Enterprise Miner
- evaluate variability in model predictive performance.

**Who should attend:** Predictive modelers and data analysts

**Level IV:** Expert

**Delivery:** Classroom

**Duration:** 2 days

**Course code:** PMAD61

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**For more information:** www.sas.com/paths/dm
Predictive Modeling Using Logistic Regression

This course covers predictive modeling using SAS/STAT software with emphasis on the LOGISTIC procedure. This course also discusses selecting variables, assessing models, treating missing values, and using efficiency techniques for massive data sets.

Learn how to:
- use logistic regression to model an individual's behavior as a function of known inputs
- create effect plots and odds ratio plots using ODS Statistical Graphics
- handle missing data values
- tackle multicollinearity in your predictors
- assess model performance and compare models.

Who should attend: Modelers, analysts, and statisticians who need to build predictive models, particularly models from the banking, financial services, direct marketing, insurance, and telecommunications industries

Level IV: Expert
Delivery: Classroom
Duration: 2 days
Course code: PMLR92

Survival Data Mining: Predictive Hazard Modeling for Customer History Data

This advanced course identifies the benefits and pitfalls of using survival analysis for business intelligence. Designed for data analysts, it covers both theoretical justification of various survival data mining methods and their practical implementation using SAS software.

Learn how to:
- build models for time-dependent outcomes derived from customer event histories
- account for competing risks, time-dependent covariates, censoring, and truncation
- use techniques to model current status data and to evaluate the predictive performance of the model.

Who should attend: Predictive modelers, data analysts, and statisticians

Level IV: Expert
Delivery: Classroom
Duration: 3 days
Course code: BMCE

Text Analytics with SAS® Text Miner

In this course, you will learn to use SAS Text Miner to uncover underlying themes or concepts contained in large document collections, automatically group documents into topical clusters, classify documents into predefined categories, and integrate text data with structured data to enrich predictive modeling endeavors.

Learn how to:
- identify topics in a document collection
- classify documents based on derived or user-supplied topic definitions
- extract a subset of documents with term-based and string-based query filters
- address problems from the areas of forensic linguistics, document categorization, and information retrieval.

Who should attend: Statisticians, business analysts, market researchers who incorporate free-format textual information in their analyses; managers of large document collections who must organize and select documents using data mining; students of data mining who want to learn about text mining

Level III: Intermediate
Delivery: Classroom
Duration: 3 days
Course code: DMTX51
**Forecaster**

I use SAS applications to develop forecasting models to empower the organization to make informed decisions.

For more information and full course listings, visit [www.sas.com/paths/forecaster](http://www.sas.com/paths/forecaster)

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**Six Sigma Professional**

I implement Six Sigma methodology to improve processes and reduce variation.

For more information and full course listings, visit [www.sas.com/paths/ss](http://www.sas.com/paths/ss)

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**Forecasting One-Time Series with Possible Regressors**

- Forecasting Using SAS® Software: A Programming Approach

**Large-Scale Forecasting**

- Forecasting Using SAS® Forecast Server Software
- Using SAS® High-Performance Forecasting Software
- SAS® Programming 1: Essentials

**Six Sigma Professional**

- Green Belt Project Leader with Lean Six Sigma
- Black Belt Process Excellence with Lean Six Sigma
Performance Excellence Manager
I integrate Lean Six Sigma methodology into my organization to improve operational performance.

For more information and full course listings, visit www.sas.com/paths/pe

What our students have to say
“The class went so far beyond what to do and how to do it. We explored the why and how it works that way. That provided a much greater understanding of the material. Thank you.”

Stuart Spencer,
Client Information Analyst, BB&T

Courses of the Highest Quality
98% of our customers rated their overall course experiences as good or excellent

Source: 2011 SAS Education Survey; n=10,818

Courses of the Highest Quality
Customer Intelligence

The SAS Customer Intelligence curriculum teaches you how to plan your customer communications strategically, use analytic techniques to understand and anticipate customer behaviors, develop and evaluate marketing campaigns, and establish and maintain the marketing automation system/data environment.

www.sas.com/paths/ci
Advanced and Specialty Courses

Managing Broadcasts Using SAS® Digital Marketing
Maximizing Campaign Efficiency with SAS® Marketing Optimization
SAS® for Social Conversation Center
SAS® Social Media Analytics Portal
SAS® Social Media Analytics Workbench
Using SAS® Real-Time Decision Manager
Web Analytics and Web Intelligence Using SAS®

Customer Experience Analytics

Introduction to SAS® for Customer Experience Analytics (e-Lecture)
SAS® for Customer Experience Analytics: Customizing Business Content
SAS® for Customer Experience Analytics: Data Integration
SAS® for Customer Experience Analytics: Normalization
SAS® for Customer Experience Analytics: Reporting

Advanced Analytics for Customer Intelligence Using SAS®

It is increasingly important to extract, understand, and exploit analytical patterns of customer behavior and strategic intelligence. This course helps clarify how to successfully adopt recently proposed state-of-the-art analytical and data mining techniques for advanced customer intelligence applications. This highly interactive course provides a sound mix of both theoretical and practical insights as well as practical implementation details and is illustrated by several real-life cases. Background material such as selected papers, tutorials, and guidelines are provided.

Learn how to:
• apply a series of powerful analytical and data mining techniques
• ensure the practical application of these techniques to optimize strategic business processes and decision making
• explore a futuristic vision of how emerging data mining techniques might change your key business processes
• deploy, monitor, and optimally back-test data mining systems.

Who should attend: Those involved in estimating, monitoring, auditing, or maintaining models for various types of customer intelligence; those involved with using data mining techniques for various types of customer intelligence; job titles including business analysts in various settings (e.g., risk management, manufacturing, telco, retail, advertising, public, pharmaceutical, and so on), marketing/CRM managers, fraud managers, customer intelligence managers, risk analysts, CRM analysts, marketing analysts, senior data analysts, and data miners

Level IV: Expert
Delivery: Classroom
Duration: 3 days
Course Code: BDMCI71

Customer Segmentation Using SAS® Enterprise Miner™

No marketing strategy can be effective without segmentation. While the concept of segmentation is deceptively simple, in practice it is extremely difficult to execute. Emphasizing practical skills as well as providing theoretical knowledge, this hands-on, comprehensive course covers segmentation analysis in the context of business data mining.

Learn how to:
• understand and apply both attitudinal and behavioral segmentation tools and techniques on customer data
• use descriptive as well as predictive segmentation
• evaluate stability of segments over time
• create segments based on product affinity
• analyze textual data (such as customer comments) for segmentation

Who should attend: Business analysts, managers, marketers, programmers, and others who want to learn how to segment customers based on behaviors to develop increasingly effective targeted marketing

Level III: Intermediate
Delivery: Classroom
Duration: 3 days
Course Code: BEMC71

Designing and Executing Marketing Campaigns Using SAS® Customer Intelligence Studio

In this course, students learn how to create a campaign, work with diagrams to create a target population, define the communications, and schedule and execute a campaign. The course also demonstrates how to assign offers to groups, and work with groups having different subjects.

Learn how to:
• use the SAS Customer Intelligence Studio interface
• define the target groups and subgroups for a marketing campaign
• validate selections using built-in and ad hoc reports
• manage and monitor campaigns.

Who should attend: Users of SAS Marketing Automation who want to learn how to use SAS Customer Intelligence Studio to create marketing campaigns

Level II: Fundamental
Delivery: Classroom
Duration: 1.5 days
Course Code: CISTU54

Managing the SAS® Marketing Automation Data Environment

This course provides an understanding of how to build, extend, and maintain the information map required in a SAS Marketing Automation environment.

Learn how to:
• create an information map for use in SAS Marketing Automation
• use the information map to generate metadata tables
• create a business context and definitions using the SAS Customer Intelligence plug-in in SAS Management Console.

Who should attend: Data modelers, IT administrators, and marketing analysts

Level III: Intermediate
Delivery: Classroom
Duration: 1 day
Course Code: MADATA54

Who should attend: Those involved in estimating, monitoring, auditing, or maintaining models for various types of customer intelligence; those involved with using data mining techniques for various types of customer intelligence; job titles including business analysts in various settings (e.g., risk management, manufacturing, telco, retail, advertising, public, pharmaceutical, and so on), marketing/CRM managers, fraud managers, customer intelligence managers, risk analysts, CRM analysts, marketing analysts, senior data analysts, and data miners
Risk Management

Risk management helps analysts and business decision makers improve financial performance by reducing losses, improving capital management, building a risk-aware culture, and reducing time and costs of compliance.

www.sas.com/paths/risk

Credit Risk Modeling Using SAS®

In this course, students learn how to develop credit risk models in the context of the recent Basel II guidelines. The course provides a sound mix of both theoretical and technical insight, as well as practical implementation details. These are illustrated by several real-life case studies and exercises.

Learn how to:
• develop probability of default (PD), loss given default (LGD), and exposure at default (EAD) models
• validate, backtest, and benchmark credit risk models
• stress test credit risk models
• develop credit risk models for low default portfolios.

Who should attend: Anyone who is involved in building credit risk models or is responsible for monitoring the behavior and performance of credit risk models

Level III: Intermediate
Delivery: Classroom
Duration: 3 days
Course code: BB3C

Credit Scorecard Development and Implementation

This business-focused course provides the necessary knowledge to plan, develop, implement, and maintain risk scorecards in-house. The course offers a high-level introduction to credit risk management and covers scorecard implementation strategies.

Learn how to:
• create business and project plans for scorecard development
• develop and validate intelligent credit risk scorecards in a step-by-step fashion
• generate scorecard and portfolio performance reports.

Who should attend: Credit risk/scoring managers and data miners; those involved in model vetting/validation and auditing; risk strategy developers; and credit risk executives

Level IV: Expert
Delivery: Classroom
Duration: 2 days
Course code: CSDI

Development of Credit Scoring Applications Using SAS® Enterprise Miner™

This course teaches students how to build a credit scorecard, from start to finish, using SAS Enterprise Miner and the methodology recommended by leading credit and financial experts.

Learn how to:
• use the SAS Enterprise Miner Interactive Grouping node to select the predictive variables using Information Value and calculate Weight of Evidence values
• use the SAS Enterprise Miner Scorecard node to build a preliminary scorecard using the appropriate scaling methodology
• perform reject inference techniques in order to augment the scorecard by using rejected applicants
• determine how well the scorecard performs using scorecard diagnostic tools such as ROC and Lift charts.

Who should attend: Risk analysts, credit modelers, credit scorecard developers, credit managers, credit analysts, and business analysts in banks and other financial institutions

Level III: Intermediate
Delivery: Classroom
Duration: 1 day
Course code: CSEM
Financial Management
For more information and full course listings, visit www.sas.com/paths/fm

Clinical Data Integration
For more information and full course listings, visit www.sas.com/paths/cdi

IT Management
For more information and full course listings, visit www.sas.com/paths/it

Merchandise Intelligence
For more information and full course listings, visit www.sas.com/paths/mi

Merchandise Planning
Overview of SAS® Merchandise Planning 6.1
Technical Overview of SAS® Merchandise Planning 6.1
SAS® Merchandise Planning 6.1: Administration Training

Revenue Optimization
Using SAS® Markdown Optimization 4.2
Using SAS® Regular Price Optimization 4.2
Using SAS® Promotion Optimization 4.2
Activity-Based Management
For more information and full course listings, visit www.sas.com/paths/abm

Fraud Prevention and Detection
For more information and full course listings, visit www.sas.com/paths/fdp

Human Capital Management
For more information and full course listings, visit www.sas.com/paths/hcm

Profitability Management
For more information and full course listings, visit www.sas.com/paths/pfm

Strategy Management
For more information and full course listings, visit www.sas.com/paths/stm

LEARN MORE OR REGISTER: Contact your local SAS Education office, see page 32.
Sustainability Management
For more information and full course listings, visit www.sas.com/paths/sm

Warranty Analysis
For more information and full course listings, visit www.sas.com/paths/wa

Text Analytics
For more information and full course listings, visit www.sas.com/paths/ta

What our students have to say
“The instructor really enjoys his work and that shows; it's much easier to learn from someone who is so enthusiastic about his topic. He clearly knows his stuff and answered all our questions thoroughly.”

Jamie Calloway
Research Data Analyst

99% of our customers gave their SAS instructors an overall rating of good or excellent.

Source: 2011 SAS Education Survey; n=11,520

Outstanding Instructors
Business User
I use SAS' point-and-click applications to access existing information as well as create my own reports and analyses.

For more information and full course listings, visit www.sas.com/paths/bu
BI Content Developer
I understand my organization’s data and use applications such as SAS Enterprise Guide to create reports and analyses.

For more information and full course listings, visit www.sas.com/paths/bic

BI Applications Developer
I’m responsible for building, implementing, and customizing SAS interface applications.

For more information and full course listings, visit www.sas.com/paths/bi

Project Manager
I’m responsible for managing the strategy, objectives, and tasks for a SAS project.

For more information and full course listings, visit www.sas.com/paths/pm

Maximizing Tech and Resource Investment with a Business Analytics Center of Excellence

Business Knowledge Series
Data Integration Developer

I use SAS applications to collect, store, and cleanse data required for reporting and analysis.

For more information and full course listings, visit [www.sas.com/paths/did](http://www.sas.com/paths/did)
Data Quality Steward
I profile data for inconsistencies, apply various data cleansing techniques, and monitor data to ensure it is usable for reporting and analysis.

For more information and full course listings, visit www.sas.com/paths/dq

DataQuality Using DataFlux® Technology: Fast Track

What our students have to say
“The class covered lots of detail on efficient programming tips. I learned some subtle things about how SAS works that are very helpful in everyday programming to understand why certain things happen the way they do.”

Glenn Goodrich
Data Specialist, Kaiser Permanente
SAS® Administrators

- Foundation Administrator
  - I install, configure, administer, and maintain SAS Foundation.
  - For more information and full course listings, visit [www.sas.com/paths/fa](http://www.sas.com/paths/fa)

- SAS® Enterprise Guide® Administrator
  - I install, configure, administer, and maintain SAS Enterprise Guide.
  - For more information and full course listings, visit [www.sas.com/paths/ega](http://www.sas.com/paths/ega)

LEARN MORE OR REGISTER: Contact your local SAS® Education office, see page 32.
SAS® Platform Administrator
I install, configure, administer, and maintain the platform for SAS Business Analytics.

For more information and full course listings, visit www.sas.com/paths/pa

Advanced and Specialty Courses
SAS® Data Integration Studio: Administration
SAS® Enterprise Guide®: Administration
SAS® Enterprise Miner®: Administration
SAS® OLAP Environment: Administration
SAS® Scalable Performance Data Server®: Administration

Recommended Certifications
SAS® Certified Platform Administrator for SAS®9

Please find more information about SAS Certification on page 5.

SAS® Platform Administration: Fast Track
This intensive training course provides accelerated learning for those students who will administer the platform for SAS Business Analytics. This course is for individuals who are comfortable with learning large amounts of information in a short period of time.

Learn how to:
This fast track course covers the same topics as SAS® Platform Administration 1: Essentials and SAS® Platform Administration 2: Security.

Who should attend: Experienced SAS administrators responsible for the platform for SAS Business Analytics
Level IV: Expert
Delivery: Classroom
Duration: 5 days
Course code: SPAFT
Certification: This course is suggested preparation for the SAS® Platform Administration for SAS®9 exam.

SAS® Platform Administration: Getting Started
This course provides an overview of the platform for SAS Business Analytics from a platform administrator’s perspective.

Learn how to:
• identify the tiers of the platform for SAS Business Analytics
• understand metadata and how it can be modified by the various client tier applications
• understand the specific job functions of a SAS platform administrator.

Who should attend: Anyone responsible for needing to understand or administer the platform for SAS Business Analytics
Level I: Beginner
Delivery: Classroom
Duration: 1 day
Course code: SPAG43

SAS® Platform Administration 1: Essentials
This course provides students with the essential knowledge to perform the job functions of a SAS platform administrator. It is the entry point to learning SAS platform administration and is a prerequisite to many other administration courses.

Learn how to:
• back up the SAS environment and move metadata
• administer users, access to data and SAS content
• understand how client applications interact with metadata
• monitor, log, and troubleshoot SAS servers.

Who should attend: SAS administrators responsible for the platform for SAS Business Analytics
Level II: Fundamental
Delivery: Classroom
Duration: 2 days
Course code: SPA1
Certification: This course is suggested preparation for the SAS® Platform Administration for SAS®9 exam.

SAS® Platform Administration 2: Security
This course explains security concepts and teaches how to secure the platform for SAS Business Analytics and the content that it contains.

Learn how to:
• identify and administer the different types of users
• recognize and establish various security techniques
• secure data and other shared content
• troubleshoot metadata security.

Who should attend: SAS platform administrators
Level III: Intermediate
Delivery: Classroom
Duration: 3 days
Course code: SPA2
Certification: This course is suggested preparation for the SAS® Platform Administration for SAS®9 exam.
Enhance or kick-start your career with our comprehensive list of SAS®, JMP®, and business titles. Written by industry leaders, our books cover an ever-expanding variety of topics. We welcome your feedback about additional subjects you’d like us to consider. Visit us at support.sas.com/bookstore.

View free sample chapters
Explore bonus content by visiting our Author Pages at support.sas.com/authors. There you’ll find free book chapters, interviews with authors, social networking opportunities, and more. You can also sign up to receive notification when new books become available.

Interested in writing a book for us?
You’re in capable hands with our team of editorial, production, technical, and marketing professionals. We’d love to hear your ideas. Learn more about our publishing program by visiting support.sas.com/saspress.
Conferences and Events

### Analytics 2012 Conference Series

**June 14–15**  
Hotel Pullman Cologne, Germany

**October 8–9**  
Caesars Palace, Las Vegas

Join hundreds of analytics professionals from all over the world at the Analytics 2012 Conference Series. The Analytics 2012 Conference Series, hosted by SAS, promises to bring attendees the latest trends and advances in the field of analytics. Listen to experts share case studies and real-world examples of how analytics has improved the way their organizations do business. Session topics include data mining, forecasting, fraud detection, text mining, retail optimization, marketing optimization, predictive analytics and more.

[View the latest conference information at www.sas.com/analyticsseries](http://www.sas.com/analyticsseries)

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### DISCOVERY SUMMIT 2012

**September 10–14**  
Cary, NC

At this interactive forum, hosted by JMP® statistical discovery software, you will explore broad analytic concepts with world-renowned authorities in statistics, technology and innovation; participate in conversations with JMP developers and JMP users from all industries; and learn proven statistical techniques in visual and compelling ways.

[Learn more at www.jmp.com](http://www.jmp.com)

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### SAS Global Forum 2012

**April 22–25**  
Orlando, Florida

SAS Global Forum provides SAS users the opportunity to sharpen their SAS skills while sharing ideas with fellow users.

[For additional conference information, visit www.sasglobalforum.org](http://www.sasglobalforum.org)

Maximize your time at SAS® Global Forum with SAS® Training and SAS® Certification!

SAS Education will offer numerous training courses and SAS Certification exams in conjunction with SAS Global Forum.

[For more information and to register, visit www.sas.com/training/sasglobalforum](http://www.sas.com/training/sasglobalforum)
Training Locations

Albania
www.sas.com/adriatic/training

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www.sas.com/argentina/training

Australia
www.sas.com/australia/training

Austria
www.sas.com/austria/training

Belgium & Luxembourg
www.sas.com/belux/training

Bosnia & Herzegovina
www.sas.com/adriatic/training

Brazil
www.sas.com/brazil/training

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support.sas.com/training/canada

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www.sas.com/chile/training

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Japan
www.sas.com/japan/training

Korea
www.sas.com/korea/training

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Training Locations

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- Malaysia
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- Mexico
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- Montenegro
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- Netherlands
  www.sas.com/netherlands/training
- New Zealand
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- Norway
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- Philippines
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  www.sas.com/uk/training
- United States
  www.support.sas.com/training
Analytics 2012 topic areas include:

- Data mining.
- Forecasting.
- Fraud detection.
- Text mining.
- Retail optimization.
- Marketing optimization.
- Predictive modeling.
- And more!

www.sas.com/analyticsseries