Shin Shin Training Center

SAS

What is SAS?

As the most complete software for all the needs in data manipulation and data analysis in every aspect, SAS is used as data processing tool by many companies, especially large corporations, where huge amount of data is analyzed to drive the business, such as banks, insurance companies, pharmaceutical companies, even high-tech/Web companies. Demanding of professionals with proficiency of SAS is constantly high in the job market.

Course Objectives:

- To teach base and advanced SAS knowledge.
- To demonstrate practical SAS programming skills in Business Analysis
- To prepare students to pass both Base and Advanced SAS Programming Certification Exams.
- To train analytical methods in data analysis, and logic thinking of data manipulation.
- To provide real-case for practice.

Course Dates: 80 hours (20 sessions) (pls call for details)

- Base – 36 hours (9 sessions)
- Advanced – 16 hours (4 sessions)
- Projects – 28 hours (7 sessions)

April 2012 Class （LA， CA）	
Starting Date	**April 29**
Ending Date	**July 8**
Schedule	**8:30am-12:30pm; 1:30pm-5:30pm (Sunday)**

About the Instructor:

- Over 10 years of experience in financial industry. Strong analytical and management skills with deep expertise in profiling and segmentation, statistical analyses and modeling, forecasting,

marketing strategy analyses, data mining, and MIS reporting. Conducted Clinical Trial Phase III Study, both efficacy and safety study.

- Certified SAS professional
- Strong SAS programming skills with 7 years of experience in SAS teaching.

Class Format:

- Lecturing
- Exercises
- Questions and Answers
- Real World Projects

Course Content

SAS Base Programming

- **Accessing Data**
    - Use FORMATTED, LIST and COLUMN input to read raw data files
    - Use INFILE statement options to control processing when reading raw data files
    - Use various components of an INPUT statement to process raw data files including column and line pointer controls, and trailing @ controls
    - Combine SAS data sets using the DATA step
- **Creating Data Structures**
    - Create temporary and permanent SAS data sets
    - Create and manipulate SAS date values
    - Use DATA Step statements to export data to standard and comma delimited raw data files
    - Control which observations and variables in a SAS data set are processed and output
- **Managing Data**
    - Investigate SAS data libraries using base SAS utility procedures
    - Sort observations in a SAS data set
    - Conditionally execute SAS statements
    - Use assignment statements in the DATA step
    - Modify variable attributes using options and statements in the DATA step
    - Accumulate sub-totals and totals using DATA step statements
    - Use SAS functions to manipulate character data, numeric data, and SAS date values
    - Use SAS functions to convert character data to numeric and vice versa
    - Process data using DO LOOPS

    - Process data using SAS arrays
- **Generating Reports**
    - Generate list reports using the PRINT and REPORT procedures
    - Generate summary reports and frequency tables using base SAS procedures
    - Enhance reports through the use of labels, SAS formats, user-defined formats, titles, footnotes and SAS System reporting options
    - Generate HTML reports using ODS statements
- **Handling Errors**
    - Identify and resolve programming logic errors
    - Recognize and correct syntax errors
    - Examine and resolve data errors

SAS Advance Programming

- **Accessing Data Using SQL**
    - Generate detail reports by working with a single table or joining tables using PROC SQL and the appropriate options
    - Generate summary reports by working with a single table or joining tables using PROC SQL and the appropriate options
    - Construct subqueries within a PROC SQL step
    - Compare solving a problem using the SQL procedure versus using traditional SAS programming techniques
    - Access Dictionary Tables using the SQL procedure
    - Demonstrate advanced PROC SQL skills by creating and updating tables, updating data values, working with indexes using the macro interface/creating macro variables with SQL, defining integrity constraints, SQL views and SET operators
- **Macro Processing**
    - Creating and using user-defined and automatic macro variables within the SAS Macro Language
    - Automate programs by defining and calling macros using the SAS Macro Language
    - Understand the use of macro functions
    - Recognize various system options that are available for macro debugging and displaying values of user-defined and automatic macro variables in the SAS log
- **Advanced Programming Techniques**
    - Demonstrate advanced data set processing techniques such as updating master data sets, transposing data, combining/merging data, sampling data using generation data sets, integrity constraints and audit trails
    - Reduce the space required to store SAS data sets and numeric variables within SAS data sets by using compression techniques, length statements or DATA step views
    - Develop efficient programs by using advanced programming techniques such as permanent formats and array processing
    - Use SAS System options and SAS data set options for controlling memory usage

- Control the processing of variables and observations in the DATA step
- Create sorted or indexed data in order to avoid unnecessary sorts, eliminate duplicate data and to provide more efficient data access and retrieval
- Use PROC DATASETS to demonstrate advanced programming skills (e.g. renaming columns, displaying metadata, creating indexes, creating integrity constraints, creating audit trails)

Real Life SAS Applications

- **Real life Project for Business Analysis Track**
  - Besides the pharmaceutical industry traditionally using SAS as sole data analysis tool, SAS has been also selected as the major data analysis by other industries, especially large corporations, such as banks, insurance companies, financial services, and even high-tech companies. Along with the growth of the business, many companies developed to a stage that the further development of the business will heavily depend on information driven decision making and strategies. All of these require data processing software that can handle huge amount of data and be able to process the data quickly, that is why SAS, as the sole complete software for data manipulation and data analysis in the market, has been chosen as the first choice of data processing tool.
  - The bigger the business, the more of the need of information based decision making, strategy development, and analytical works, and therefore the more of demanding of individuals who are proficiency in SAS, SQL, Excel, etc. data processing tools in the job market. This class is designed to provide hands-on opportunities with real case projects. Three projects are included the class to cover the most popular business analysis topics in the industry, such as risk management, marketing analysis and MIS reporting, etc. The objective of this class is to prepare those who would like to develop a career in financial, insurance, public health, web service, etc. companies.
  - Individuals possess basic SAS knowledge, data step programming, SQL and macros, and want to develop a career in business analysis area.
- **Real life Project for Clinic Track**
  - It is a fairly long history to use SAS for clinical trial phase III study analysis and reporting in pharmaceutical industry, due to the requirement by FDA for new drug application. Demanding of qualified SAS programmers, who possess strong SAS data step skills and know the clinical trial data and related process, has been presenting for many years, especially in bay area where located significant amount of biotech and pharmaceutical companies. This class is designed to provide hands-on opportunities with real clinical trial data. Three real-case projects are included, plus the general introduction of Clinical Trial process and FDA requirement, in addition, practical statistics training is also included in this 28 hour training session.
  - Individuals possess basic SAS knowledge, data step programming, SQL and macros, and want to develop a career in Clinical Data Analysis and Reporting area. Some background or knowledge of biology and chemistry, or previous biotech, public health and/or pharmaceutical industry experience would be a good plus.