**SAS - BASE**

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| **TECH VISION**  **IT TRAINING AND PLACEMENT SERVICES**  [**www.techvisionit.com**](http://www.techvisionit.com) |

**Course Duration:** 40 hours

**Sessions:** Weekdays; Weekends; Crash Course

**Course Content:**

**INTRODUCTION TO SAS**

* WHAT IS SAS?
* OVERVIEW OF BASE SAS SOFTWARE
* DATA MANAGEMENT FACILITY
* STRUCTURE OF SAS DATASET
* PROGRAMMING LANGUAGE
* ELEMENTS OF THE SAS LANGUAGE
* RULES FOR SAS STATEMENTS
* RULES FOR MOST SAS NAMES
* SPECIAL RULES FOR VARIABLE NAMES
* TYPES OF VARIABLES

**READING RAW DATA INTO SAS**

* WHAT IS RAW DATA
* DATA VALUES
* NUMERIC VALUE
* CHARACTER VALUE
* STANDARD DATA
* NONSTANDARD DATA
* NUMERIC DATA
* CHARACTER DATA
* CHOOSING AN INPUT STYLE // separator : space , ,
* COLUMN INPUT
* FORMATTED INPUT // format , currency
* NAMED INPUT
* INSTREAM DATA
* CREATING MULTIPLE RECORDS FROM SINGLE INPUT ROW
* READING DATA FROM EXTERNAL FILES
* READING BLANK SEPARATED VALUES (LIST OR FREE FORM DATA):
* READING RAW DATA SEPARATED BY COMMAS (.CSV FILES):
* READING IN RAW DATA SEPARATED BY TABS (.TXT FILES):
* READING COLUMN DATA THAT IS ON MORE THAN ONE LINE
* MIXED-STYLE INPUT:
* INFILE OPTIONS FOR SPECIAL SITUATIONS
* CONDITIONAL SAS STATEMENTS
* LOGICAL AND SPECIAL OPERATORS
* THE SAS SUPERVISOR AND THE SET STATEMENT
* EFFICIENCY AND THE SET STATEMENT
* KNOW YOUR DATA
* SET STATEMENT DATA SET OPTIONS
* DROP AND KEEP OPTIONS
* WHERE OPTION -
* OTHER SET STATEMENT OPTIONS
* END OPTION
* KEY OPTION
* NOBS OPTION
* POINT OPTION
* DO LOOPS AND THE SET STATEMENT
* INTRODUCTION TO RETAIN STATEMENT
* CARRY OVER VALUES FROM ONE OBSERVATION TO ANOTHER
* COMPARE VALUES ACROSS OBSERVATIONS
* ASSIGN INITIAL VALUES
* DETERMINING COLUMN ORDER IN OUTPUT DATASET

**READING DATA FROM A DATASET**

* INPUT SAS DATA SET FOR EXAMPLE
* SELECTING OBSERVATIONS FOR A NEW SAS DATA SET
* DELETING OBSERVATIONS BASED ON A CONDITION
* ACCEPTING OBSERVATIONS BASED ON A CONDITION
* COMPARING THE DELETE AND SUBSETTING IF STATEMENTS
* METHODS OF CREATING NEW DATA SETS WITH A SUBSET
* SUBSETTING RECORDS FROM AN EXTERNAL FILE WITH A SUBSETTING IF STATEMENT
* SUBSETTING OBSERVATIONS IN A DATA STEP WITH A WHERE STATEMENT
* SUBSETTING OBSERVATIONS IN A PROC STEP WITH A WHERE STATEMENT
* SUBSETTING OBSERVATIONS IN PROC SQL
* DIFFERENCE BETWEEN IF AND WHERE

**SAS INFORMATS AND FORMATS**

* OVERVIEW
* USING SAS INFORMATS
* INPUT STATEMENT
* INPUT FUNCTION
* INPUTN AND INPUTC FUNCTIONS
* ATTRIB AND INFORMAT STATEMENTS
* USING SAS FORMATS
* FORMAT STATEMENT IN PROCEDURES
* PUT STATEMENT
* PUT FUNCTION
* PUTN AND PUTC FUNCTIONS
* BESTw. Format
* ADDITIONAL COMMENTS

**SAS FUNCTIONS**

* CATEGORIES OF FUNCTIONS
* SAS CHARACTER FUNCTIONS
* UPCASE
* LOWCASE
* PROPCASE
* FUNCTION: COMPRESS
* FUNCTIONS THAT SEARCH FOR CHARACTERS
* FUNCTION: NOTDIGIT
* FUNCTION: NOTUPPER
* FUNCTIONS THAT EXTRACT PARTS OF STRINGS
* FUNCTION: SUBSTR (ON THE LEFT-HAND SIDE OF THE EQUAL SIGN)
* FUNCTIONS THAT JOIN TWO OR MORE STRINGS TOGETHER
* FUNCTION: CAT
* FUNCTION: CATS
* FUNCTION: LEFT
* FUNCTION: RIGHT
* FUNCTION: TRIM : to remove extra space
* FUNCTION: TRIMN
* FUNCTION: STRIP
* FUNCTIONS THAT COMPARE STRINGS
* FUNCTION: COMPARE
* FUNCTIONS THAT DIVIDE STRINGS INTO "WORDS"
* FUNCTION: SCAN
* FUNCTION: SCANQ
* FUNCTIONS THAT SUBSTITUTE LETTERS OR WORDS IN STRINGS
* FUNCTIONS THAT COMPUTE THE LENGTH OF STRINGS
* FUNCTION: LENGTH
* FUNCTIONS THAT COUNT THE NUMBER OF LETTERS OR SUBSTRINGS IN A STRING
* FUNCTION: COUNT
* FUNCTION: COUNTC
* MISCELLANEOUS STRING FUNCTIONS
* FUNCTION: MISSING
* FUNCTION: REPEAT
* FUNCTION: REVERSE
* SAS DATE AND TIME FUNCTIONS
* INTRODUCTION
* WHAT IS A SAS DATE AND TIME LITERAL?
* DATE AND TIME FUNCTIONS
* FUNCTINS TO CREATE DATE AND TIME VALUES
* FUNCTIONS TO TAKIE DATETIME VALUES APART
* FUNCTIONS TO GET QUARTER ,YEAR OR DAY OF THE DATE
* FUNCTIONS THAT WORK WITH INTERVALS
* USING FORMATS FOR DATE AND TIME
* SYSTEM OPTIONS FORDATE AND TIME

**AN INTRODUCTION TO ARRAYS AND ARRAY PROCESSING**

* WHY DO WE NEED ARRAYS? : collection data , multiple values can be hold or stored on single variable
* BASIC ARRAY CONCEPTS
* ARRAY STATEMENT
* ONE DIMENSION ARRAYS
* MULTI-DIMENSION ARRAYS
* TEMPORARY ARRAYS
* SORTING ARRAYS
* WHEN TO USE ARRAYS
* COMMON ERRORS AND MISUNDERSTANDINGS
* INVALID INDEX RANGE
* FUNCTION NAME AS AN ARRAY NAME
* ARRAY REFERENCED IN MULTIPLE DATA STEPS, BUT DEFINED IN ONLY ONE

**SAS PROCEDURES**

* INTRODUCTION
* THE ANATOMY OF A PROC
* THE PROC STATEMENT
* TITLE AND FOOTNOTE STATEMENTS
* BY STATEMENT
* LABEL STATEMENT
* FORMAT STATEMENT
* RUN OR QUIT STATEMENT
* DESCRIPTION OF DATA USED IN REPORTS
* SAS REPORTING PROCEDURES
* USING PROC PRINT
* USING PROC SQL
* PROC REPORT
* PROCS THAT SUMMARIZE
* USING PROC CHART
* USING PROC FREQ
* USING PROC MEANS
* USING PROC UNIVARIATE
* INTRODUCTION TO PROC TABULATE
* DATA MANIPULATION AND MANAGEMENT PROCEDURE
* PROC SORT
* PROC DATASETS
* PROC FORMAT
* PROC CONTENTS
* OTHER IMPORTANT PROCS
* PROC TRANSPOSE
* PROC PRINTTO
* COMPARE PROCEDURE
* PROC APPEND
* HOW TO IMPORT AN EXCEL FILE INTO SAS

**INTRODUCTION TO PROC SQL**

* INTRODUCTION
* WHY LEARN PROC SQL?
* SELECT STATEMENT
* THE SELECT STATEMENT SYNTAX
* A SIMPLE PROC SQL
* A COMPLEX PROC SQL
* LIMITING INFORMATION ON THE SELECT
* CREATING NEW VARIABLES
* THE CALCULATED OPTION ON THE SELECT
* USING LABELS AND FORMATS
* THE CASE EXPRESSION ON THE SELECT
* ADDITIONAL SELECT STATEMENT CLAUSES
* REMERGING
* REMERGING FOR TOTALS
* CALCULATING PERCENTAGE
* SORTING THE DATA IN PROC SQL
* SORT ON NEW COLUMN
* SUBSETTING USING THE WHERE
* INCORRECT WHERE CLAUSE
* WHERE ON COMPUTED COLUMN
* SELECTION ON GROUP COLUMN
* USE HAVING CLAUSE
* CREATING NEW TABLES
* JOINING DATASETS USING PROC SQL
* INNER JOIN
* JOINING THREE OR MORE TABLES
* OUTER JOINS
* INCLUDING NONMATCHING ROWS WITH THE RIGHT OUTER JOIN
* SELECTING ALL ROWS WITH THE FULL OUTER JOIN
* CONCATENATING QUERY RESULTS

**AN INTRODUCTION TO SAS MACROS**

* INTRODUCTION
* SAS MACRO OVERVIEW
* TRADITIONAL SAS PROGRAMMING
* THE SAS MACRO LANGUAGE
* MACRO LANGUAGE COMPONENTS
* MACRO VARIABLES
* MACRO STATEMENTS
* MACRO PROCESSOR FLOW
* AUTOMATIC MACRO VARIABLES
* MACRO DEBUGGING OPTIONS
* WHAT IS A MACRO?
* DEFINING AND USING MACROS
* POSITIONAL MACRO PARAMETERS
* KEYWORD MACRO PARAMETERS
* CONDITIONAL MACRO COMPILATION
* THE %DO STATEMENT
* SAS DATA STEP INTERFACES

**THE OUTPUT DELIVERY SYSTEM (ODS) AND DASHBOARD**

* INTRODUCTION
* CREATING VARIOUS TYPES OF REPORTS LISTING OUTPUT
* OTHER DESTINATIONS
* HTML
* PDF AND POSTSCRIPT
* RTF FILES
* MICROSOFT EXCEL
* ADDING STYLE TO YOUR REPORTS
* LOCATE EXISTING STYLES
* ODS STYLE= OPTION
* CUSTOMIZE YOUR REPORTS
* ODS SELECT; AND ODS EXCLUDE;
* OTHER CUSTOMIZATIONS
* ODS PROCLABEL= ;
* ODS PROCTITLE; AND ODS NOPROCTITLE;
* ADVANCED TECHNIQUES
* ODS DOCUMENT
* PROC TEMPLATE

**INTRODUCTION TO DIAGNOSING AND AVOIDING ERRORS**

* INTRODUCTION
* UNDERSTANDING HOW THE SAS SUPERVISOR CHECKS A JOB
* UNDERSTANDING HOW SAS PROCESSES ERRORS
* DISTINGUISHING TYPES OF ERRORS .SAS RECOGNIZES FOUR KINDS OF ERRORS:
* SYNTAX ERRORS
* EXECUTION-TIME ERRORS
* DATA ERRORS
* SEMANTIC ERRORS
* DIAGNOSING ERRORS
* DIAGNOSING SYNTAX ERRORS
* DIAGNOSING DATA ERRORS
* USING A QUALITY CONTROL CHECKLIST