SAS PROGRAMMING 1
COURSE CODE: 5327

COURSE DESCRIPTION: This course is designed to increase student skills in business analytical software and services through the use of SAS for qualitative analysis. SAS knowledge can assist students with careers in technology, marketing, financial services, insurance, and pharmaceutical sectors. This course teaches the SAS programming language concepts and principles required for the SAS Base programming certification exam.

OBJECTIVE: Given the necessary equipment, supplies, and facilities, the student will complete all of the following core standards successfully.

RECOMMENDED GRADE LEVELS: 10–12

COURSE CREDIT: 1 unit

PREREQUISITE: Algebra 1 and at least one other programming language (Visual Basic, C^{++}, or Java)

COMPUTER REQUIREMENT: One computer per student

RECOMMENDED SOFTWARE: SAS

RESOURCES

www.mysctextbooks.com

A. SAFETY AND ETHICS

1. Identify major causes of work-related accidents in offices.
2. Describe the threats to a computer network, methods of avoiding attacks, and options in dealing with virus attacks.
3. Identify potential abuse and unethical uses of computers and networks.
4. Explain the consequences of illegal, social, and unethical uses of information technologies, e.g., piracy; illegal downloading; licensing infringement; and inappropriate uses of software, hardware, and mobile devices.
5. Differentiate between freeware, shareware, and public domain software copyrights.
6. Discuss computer crimes, terms of use, and legal issues such as copyright laws, fair use laws, and ethics pertaining to scanned and downloaded clip art images, photographs, documents, video, recorded sounds and music, trademarks, and other elements for use in Web publications.

7. Identify netiquette including the use of email, social networking, blogs, texting, and chatting.
8. Describe ethical and legal practices in business professions such as safeguarding the confidentiality of business-related information.

B. EMPLOYABILITY SKILLS

1. Identify positive work practices, e.g., appropriate dress code for the workplace, personal grooming, punctuality, time management, and organization.
2. Demonstrate positive interpersonal skills, e.g., communication, respect, and teamwork.

C. STUDENT ORGANIZATIONS

1. Explain how related student organizations are integral parts of career and technology education courses.
2. Explain the goals and objectives of related student organizations.
3. List opportunities available to students through participation in related student organization conferences/competitions, community service, philanthropy, and other activities.
4. Explain how participation in career and technology education student organizations can promote lifelong responsibility for community service and professional development.

D. UNDERSTANDING DATA PROCESSING CONCEPTS

1. Explain the use of computers in data processing.
2. Define data processing terms.
3. Develop a program.
4. Differentiate file organizations in various operating systems.

E. LEARNING THE CONCEPTS OF SAS PROGRAMMING

1. Explain the basic functionality of SAS.
2. Identify the file types used in SAS.
3. Identify a SAS program file and its components.

F. READING A RAW DATA FILE WIT THE DATA STEP

1. Plan to read a raw data file.
2. Code to read a raw data file with column input.

G. NAVIGATING THE SAS WINDOWING ENVIRONMENT

1. Define the SAS windowing environment.
2. Identify the three primary SAS programming windows.

3. Navigate SAS programming windows.
4. Edit and executing SAS code.
5. Save and retrieving SAS code.
6. Use the Help facility.

H. CREATING A LIST REPORT WITH A PROC STEP

1. Plan to create a list report.
2. Code to create a list report.

I. CREATING A VARIABLE WITH THE DATA STEP

1. Define an assignment statement.
2. Plan and code to create a variable.

J. PERFORMING CONDITIONAL LOGIC WITH THE DATA STEP

1. Define conditional logic.
2. Plan and code to perform conditional logic to create a variable.

K. CREATING STATISTICAL REPORTS WITH PROC STEPS

1. Define a statistical report.
2. Plan and code to create a summary report.
3. Plan and code to create a frequency report.

L. GETTING FAMILIAR WITH SAS DATA SETS

1. Explain the concept of a SAS data library.
2. Differentiate between a permanent library and a temporary library.
3. Investigate a SAS data library using the CONTENTS procedure.

M. PRODUCING LIST REPORTS

1. Generate simple list reports using the PRINT procedure.
2. Display selected columns and rows in a list report.
3. Display a list report with column totals.
4. Sort observations in a SAS data set.
5. Control page breaks for subgroups.
6. Identify observations using the ID statement.

N. PROGRAMMING WITH THE DATA STEP

1. Read SAS data sets and create variables.
2. Execute statements conditionally using IF-THEN logic.
3. Control the length of character variables explicitly with the LENGTH statement.

4. Select rows to include in a SAS data set.
5. Select variables to include in a SAS data set.
6. Use SAS date constants.
7. Read date fields from Microsoft Excel spreadsheets (self-study).

O. ENHANCING OUTPUT

1. Customize report appearance.
2. Format data values.
3. Create HTML reports.

P. CREATING SAS DATA SETS

1. Read raw data files using column input and formatted input.
2. Examine data errors.
3. Assign variable attributes.
4. Read Microsoft Excel spreadsheets (self-study).

Q. COMBINING SAS DATA SETS

1. Use the SET statement to concatenate two or more SAS data sets.
2. Use the RENAME=data set option to change the names of variables.
3. Use the SET and BY statements to interleave two or more SAS data sets.

R. PRODUCING SUMMARY REPORTS

1. Create one-way and two-way frequency tables using the FREQ procedure.
2. Generate simple descriptive statistics using the MEANS procedure.
3. Use the REPORT procedure to create a listing report.
4. Use the RBREAK statement to produce a grand total.
5. Create tabular summary reports using the TABULATE procedure (self-study).

OPTIONAL

A. INTRODUCTION TO GRAPHICS

1. Produce bar and pie charts.
2. Enhance output with titles, footnotes, color, and fonts.
3. Produce plots.
4. Control appearance of the axes.

Reviewed February 2010