SAS PROGRAMMING 2
COURSE CODE: 5328

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 be able to successfully complete all of the following core competencies for a course granting one unit of credit.

RECOMMENDED GRADE LEVELS: 10–12

COURSE CREDIT: 1 unit

PREREQUISITE: SAS Programming 1

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. SAS PROGRAMMING FUNDAMENTALS

Introduction to SAS Base Programming

1. Explore fundamental concepts of SAS programs.
2. Define libraries using programming statements.
3. Referencing files and setting options.
4. Enhance the readability of SAS programs.
5. Edit and debug SAS programs.

SAS Basic Reports

1. Create list reports using PROC PRINT.
2. Apply selecting and sorting data (DATE=, OUT= options, BY statement).
3. Demonstrate formatting output.

SAS Data Sets

1. Reference a SAS library or a raw data file.
2. Create a SAS data set from a SAS library or a raw data file.
3. Design and write a DATA step program.

4. Differentiate the two phases of DATA step processing.
5. Debug SAS DATA steps.

Advanced SAS Reports

1. Create and apply user-defined formats using PROC FORMAT.
2. Create enhanced list and summary reports using PROC REPORT.
3. Generate descriptive statistics using PROC MEANS, SUMMARY, and FREQ.
4. Utilize Output Delivery System (ODS) to create, customize and manage HTML output.

E. ADVANCED DATA MANIPULATIONS

Advanced Data Sets

1. Create and manage variables.
2. Utilize the IF-Then statement to conditionally assign values.
3. Read SAS data sets using the DTA step.
4. Manipulate data using the DATA step using BY, DROP=, KEEP=, POINT=, OUTPUT= and END=.
5. Understand the phases of how data sets are read.
6. Combine data sets using one-to-one reading (multiple SET. statements), concatenation (SET), interleaving (SET with BY) and match-merge (MERGE with BY).
7. Manipulate combined data sets.

Advanced Data Manipulation

1. Manipulate and convert data with SAS functions.
2. Perform iterative processing with DO loops.
3. Process variables with arrays.

Reading Data into SAS

1. Compare and Contrast standard and non-standard numeric data.
2. Read standard fixed-field data.
3. Read non-standard fixed-field data.
4. Utilize the INPUT statement with list input to read data.
5. Distinguish SAS date and time values.
6. Apply SAS in formats.
7. Manipulate SAS date and time values.

Advanced Record Manipulation

1. Use INPUT to read multiple records sequentially and non-sequentially and create a single observation.
2. Create multiple observations from a single record.
3. Reading Hierarchical Files using RETAIN.
4. Reading Hierarchical Files Conditionally.

Introduction to Graphics

1. Producing bar and pie charts.
2. Enhancing output with titles, footnotes, color, and fonts.
3. Producing plots.
4. Controlling appearance of the axes.

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