

STAT 441 - SAS Advanced Certification Preparation

Winter 2016

I. Catalog Description

STAT 441 SAS Advanced Certification Preparation (2)

Programming topics in preparation for the Certified Advanced Programmer Exam offered by the SAS Institute. Accessing data using PROC SQL, macro processing, applications for indexes, data look-up techniques including array processing, hash objects, and combining/merging. 2 lectures.
Prerequisite: STAT 440 or equivalent.

II. Required Background and/or Experience

Prerequisite: STAT 440 or equivalent.
Basic knowledge of statistics and the use of computers.

III. Expected Outcomes

The student should:

- A. Develop an understanding of advanced data step syntax, proc SQL, macro coding, and programming efficiency techniques to solve complex programming problems with SAS.
- B. Master the programming syntax of topics covered on the Advanced SAS certification exam.
- C. Prepare to take the professionally administered Advanced SAS certification exam.

IV. Text and References

Text: *SAS Certification Prep Guide: Advanced Programming for SAS 9, Fourth Edition*, SAS Institute Inc., 2014

References:

SAS Certification Prep Guide: Base Programming for SAS 9, Third Edition, SAS Institute Inc., Cary, NC, 2011
Delwiche, L.D. and Slaughter, S.J., *The Little SAS Book: A Primer, Fifth Edition*, SAS Institute, Cary, NC, 2012.
SAS OnLine Documentation, Version 9, SAS Institute Inc.

V. Minimum Student Materials

None.

VI. Minimum University Facilities

Availability of computing facilities.

VII. Expanded Description of Content and Method

Content	Number of lectures
A. Processing data with proc SQL.....	6
1. Subsetting, subqueries	
2. Conditional operators	
3. Joins and set operations	
4. Managing tables, indexes	
5. Creating views	
C. SAS macros.....	4
1. Automatic and user defined macros	
2. Macro functions	
3. Variables and parameters	
4. Storing definitions	
D. Processing data with a data step.....	3
1. Combining data sets vertically and horizontally	
2. Lookup tables	
3. Multidimensional arrays	
4. Hash objects	
B. Functions in SAS.....	1
1. SAS functions	
2. User defined functions, proc FCMP	
E. Formatting data.....	1
1. Value and picture statements	
2. Creating formats from data	
3. Creating data from formats	
F. Modifying data sets and change tracking.....	1
1. Integrity constraints	
2. Audit trails	
3. Tracking resources and benchmarks	
G. Optimizing SAS programs.....	2
1. Computing resources, memory usage, and storage	
2. Best practices, debugging	
3. Where processing	
4. Condition optimization	
	Total 18

Method

Lecture with computer demonstrations of methods and problems, class discussion, supervised computer lab work, and in-class exercises. Material from references and additional problems supplementing the text.

VIII. Method of Evaluating Outcome

Programming homework assignments, quizzes, and examinations.