

STAT 480 Fall 2009

Instructor: Trent Gaugler

Course syllabus

This course introduces students to basic knowledge in programming, data management, and exploratory data analysis using SAS software. Students are provided the opportunity to learn a comprehensive set of SAS data-related techniques through lessons, demonstrations, and homework assignments. The material covered in Stat 480, in conjunction with the material covered in the sequel course Stat 481, is designed to prepare students for taking the [SAS Version 9 Base Programming Certification Exam](#).

Course prerequisites

Although Stat 480 is designed for all students, students are expected to have knowledge at least at the elementary statistics level (*e.g.*, STAT 200). Although the primary focus of this course is to learn how to use the SAS programming language to manage and manipulate data, the course also addresses the computation of some descriptive statistics.

Note: Students who have not had prior experience with a computer programming language should expect to spend more time on this course than those who have had prior experience.

Course format

This section is being offered to World Campus students enrolled at Penn State's University Park campus in Fall 2009. It is a "**web-only, paced**" course, which means:

- there is an established start date (24 August 2009) and end date (28 September 2009)
- you will access all of the course material through an Angel-based web site

- there are no class meetings; however, you will interact with the instructor and other students throughout the semester in our on-line learning community

All of your engagement in the course will happen through the course web site, which contains the on-line lessons, communication tools (message boards and e-mail), homework problems, and lesson quizzes.

In addition to the preliminary **Ready, Set, Go! Lesson**, the course consists of 12 content lessons. We will in general work together through one lesson every two days. Two days in the middle of the course will be reserved for a midterm exam, and two days at the end of the course will be reserved for the final exam. Deadlines for each required activity will be announced at the beginning of the course.

Completing each lesson entails:

- **Working through the core content of the lesson.** Almost all of the lessons are a blend of some written text to read, some viewlets to view, and some interactive SAS activities to perform.
- **Discussing the material with others.** General discussion boards — in which the students and instructor can interact — will be used extensively for each lesson.
- **Completing the homework problems.** The homework problems are intended to give you immediate practice with the materials that you just read. In some cases, the exercises "walk you through" new material that was not covered in the reading. Solutions will be provided to you after you submit your completed homework.
- **Assessing your knowledge by completing a lesson quiz.** Each lesson quiz will directly assess your understanding of the lesson's material. Your best preparation for the lesson quizzes is to read the lesson's material, to participate in the class discussions, to complete the homework assignments, to review the posted

solutions, and to ask questions as necessary.

Most students will spend, on average, about 4 hours working through each content lesson.

Your workload may be more (or less) depending on your prior experience in statistics, computing, and programming.

The remainder of this course syllabus discusses the finer details of the conduct of the course.

Course goals

The goals of the course are:

- to prepare students (in conjunction with Stat 481) for taking the [SAS Version 9 Base Programming Certification Exam](#)
- to introduce you to basic programming constructs, such as assignment statements and if/then/else statements
- to learn how to program in the SAS software application
- to provide you with an understanding of how the SAS application can be used effectively to manage, manipulate and analyze data
- to learn a basic set of good programming practices

Required course materials

In order to take this course, you need:

- an active Penn State Access Account ID and password
- access to a Windows PC that has internet access, SAS, and Microsoft Word

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- you will need (or at least want!) to purchase your own copy of SAS. [SAS 9.1.3 Windows Student License & Media](#) (or [SAS 9.2 Windows Student License & Media](#)) can be purchased through [Penn State's Microcomputer Order Center](#) for \$30. You will need to have your 9 digit PSU ID number handy when you make this order.

A Note to MAC users. You could attempt to use a MAC computer and Virtual PC software to run SAS. However, SAS does not guarantee the outcome. You are, therefore, strongly discouraged from using anything but a Windows PC for this course.

There is **no required textbook** for this course. The lesson pages of the course will be the major source of materials used in this class. However, you may find that the following books would serve as a good reference in the future:

Delwiche, Lora D. and Susan J. Slaughter (2003), *The Little SAS Book*, Third Edition. Cary, NC: SAS Institute, Inc. ISBN: 1-59047-333-7

Cody, Ronald P. and Jeffrey K. Smith (2006), *Applied Statistics and the SAS Programming Language*, Fifth Edition, Upper Saddle River, NJ: Pearson Prentice Hall. ISBN 0-13-146532-5

SAS Institute Inc. (2006), *SAS Certification Prep Guide: Base Programming for SAS 9*. Cary, NC: SAS Institute, Inc. ISBN: 978-1-59047-922-3

If you come across another book that you are considering buying, and you want my opinion of the book, please don't hesitate to ask. Additionally, online material of SAS documentation (SAS 9.1) can be found at <http://support.sas.com/91doc/>.

Technical requirements

For this course, for "frustration free" computing, we recommend that you have access to a computer with the following technical requirements:

Operating System	Windows XP Professional with the latest service packs (The SAS Institute does not support the installation of SAS 9.1.3 on Windows XP Home Edition). Windows Vista will work providing you buy SAS 9.2.
Processor	Pentium 4, 2-GHz or higher
Memory	512 MB of RAM or higher
Hard Drive Space	2 GB free disk space
Browser	Windows: Internet Explorer 6 or higher, Opera, or Firefox Mac OS X: Firefox 1.0 or higher Note: Cookies, Java and JavaScript must be enabled. AOL users should upgrade to the latest version or connect through AOL and then use one of the browsers listed above. Pop-up blockers should be configured to permit new windows from Penn State web sites.
Plug-ins	Acrobat Reader [Download from Adobe] Quicktime Player [Download from Apple] Adobe Flash Player [Download from Adobe]
Software	SAS 9.1.3 (or 9.2) Microsoft Word
Modem	broadband (cable or DSL) connection recommended
Printer	graphics-capable (inkjet or laser printer)
Monitor/Video Card	15" monitor; SVGA or better (1024 X 768, 16-bit graphics)

Course requirements

The following is a summary of the requirements for the course, and the weight each requirement plays in the determination of your final grade.

- 12 homework assignments (12 points each for a total of 144 points)

- 12 lesson quizzes (10 points each for a total of 120 points)
- Midterm exam (78 points)
- Final exam (78 points)

Tentative course calendar and topics

Changes to any of the details appearing in the following **tentative** course calendar will be advertised in the weekly lesson "to do" lists:

Activities	Open	Closed	Topics
Ready, set, go!	24 August 12:05 am	30 August 11:55 pm	Introduction to the course
Lesson #1	24 August 12:05 am	30 August 11:55 pm	Getting started in SAS
Lesson #2	24 August 12:05 am	30 August 11:55 pm	Reading data into temporary SAS data sets
Lesson #3	31 August 12:05 am	6 September 11:55 pm	Options, libraries, and reading data into permanent SAS data sets
Lesson #4	31 August 12:05 am	6 September 11:55 pm	Assignment statements
Lesson #5	31 August 12:05 am	6 September 11:55 pm	If/then/else statements
Lesson #6	7 September 12:05 am	13 September 11:55 pm	The PRINT procedure
Midterm Exam	7 September 12:05 am	13 September 11:55 pm	
Lesson #7	7 September	13 September	Understanding data step processing

	12:05 am	11:55 pm	
Lesson #8	14 September 12:05 am	20 September 11:55 pm	Editing and debugging SAS programs
Lesson #9	14 September 12:05 am	20 September 11:55 pm	The FORMAT procedure
Lesson #10	14 September 12:05 am	20 September 11:55 pm	The REPORT procedure
Lesson #11	21 September 12:05 am	27 September 11:55 pm	The MEANS procedure
Lesson #12	21 September 12:05 am	27 September 11:55 pm	The FREQ procedure
Final	21 September 12:05 am	27 September 11:55 pm	

See the section above titled "Course format" to review what completing each lesson entails. The date and time appearing in the "Open" column is the time at which the lesson or assignment will be made available to students. The date and time appearing in the "Closed" column is the time after which submissions to the relevant quizzes and dropboxes will no longer be accepted.

Homework assignments

At the end of each lesson, students will be asked to write a SAS program (or more!) in order to assess the student's understanding of the lesson's material. A student will receive 12 points for each homework submission that is complete, on-time, mostly correct, and adequately formatted and commented. A student will receive 0 points if the submission is late, plagiarized, or not submitted at all. The instructor will *not* provide individual feedback to every student for the homework problems. Instead, solutions to the homework problems will be posted. The 12 homework assignments throughout the semester will count 12 points each for a total of 144 points towards your overall final

grade.

Lesson quizzes

Because the use of SAS requires the development of cumulative knowledge, it is important that students master the material in one lesson before moving on to the material in the next lesson. Therefore, at the end of each lesson, students will be asked to complete an on-line lesson quiz that will assess the student's understanding of the lesson's material. Each student will be allowed only one attempt at each lesson quiz, and each student will be given up to 20 minutes to complete each quiz. The 12 lesson quizzes throughout the semester will count 10 points each for a total of 120 points towards your overall final grade.

Midterm exam

The midterm exam will be made available on Monday, September 7th and will be due on Sunday, September 13th. The midterm exam will count for 78 points towards your overall final grade.

Final exam

The final exam will be made available on Monday, September 21st and will be due on Sunday, September 27th. Of course, the most effective way to ensure success on the final exam is to successfully complete the lessons, quizzes, and homework assignments throughout the semester. The final exam will count for 78 points towards your overall final grade.

Grading Policy

Late work will **not be accepted**.

For the determination of final course grades, students will be ranked on the basis of the total score obtained from all of their course work. Course grades will be tentatively awarded based on the following lower bounds of the total points accumulated throughout the semester:

F	D	C	C+	B-	B	B+	A-	A
0	250	290	320	335	345	365	375	390

Some of these advertised lower bounds may be adjusted downward if the course work is judged to warrant it.

My commitment to you

My instructional designer and I have worked very hard to make this the most effective, helpful, and convenient educational experience possible. I will continue to work hard throughout the course to do whatever it takes to help you learn the material. I am willing and eager to hear any feedback you have about the course — materials, conduct, format, etc. — any time throughout the semester. I am committed to making the course a good experience for all of us.

Contact information

DISCUSSION BOARDS and E-MAIL: Questions that would normally be asked by raising your hand in class should be posted on the appropriate discussion board. If you have a question, then no doubt several other students do as well. If instead you have a question or concern that is personal in nature, then e-mail the instructor using the **course e-mail system** (accessed by way of the "**Communicate**" tab). I would like to emphasize the importance of all e-mail communication taking place within the course e-mail system. I unfortunately cannot reply to students who send me e-mail to my external mail accounts.

AVAILABILITY: Students are welcome to post to the discussion boards or to contact me by email any time — I am usually able to respond within 24 hours. I will check e-mail and the discussion boards regularly — *at least* once in the morning and once in the evening — throughout the work week (Monday through Friday).

If you need to talk to me by phone, please e-mail me your phone number and the time that you would like me to call you. I will do my best to get in touch with you as quickly as requested.

Your commitment to the course

Learning material on-line is a novel learning environment, but in one sense it is no different than a traditional college class: how much and how well one learns is ultimately up to the student. You will succeed if you are diligent about keeping up with the class schedule, and if you take advantage of opportunities to communicate with me, as well as with your fellow students. An added bonus of you completing this course successfully — and in so doing, learning how to learn on-line — is that on-line learning is becoming the standard approach to continuing adult education.

Academic Integrity Policy

All Penn State policies regarding ethics and honorable behavior apply to this course. Academic integrity is the pursuit of scholarly activity free from fraud and deception and is an educational objective of this institution. All University policies regarding academic integrity apply to this course. Academic dishonesty includes, but is not limited to, cheating, plagiarizing, fabricating of information or citations, facilitating acts of academic dishonesty by others, having unauthorized possession of examinations, submitting work of another person or work previously used without informing the instructor, or tampering with the academic work of other students.

For any material or ideas obtained from other sources, such as the text or things you see on the web, in the library, etc., a source reference must be given. Direct quotes from any source must be identified as such.

All exam answers must be your own, and you must not provide any assistance to other students during exams. Any instances of academic dishonesty WILL be pursued under the [University and Eberly College of Science regulations](#) concerning academic integrity. For more information on academic integrity, see [Penn State's statement on plagiarism and academic dishonesty](#).

Disabilities

It is Penn State's policy not to discriminate against qualified students with documented disabilities in its educational programs. If you have a disability-related need for modifications in this course, contact your instructor and the Office for Disability Services (located in 116 Boucke Building). Instructors should be notified as early in the semester as possible. You may refer to the Nondiscrimination Policy in the Student Guide to University Policies and Rules 1997. See the website <http://www.equity.psu.edu/ods/> for details.