ST 555: Statistical Programming I

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Office Hours: Tues 2:00 – 3:00 pm or By Appointment

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Office Hours: Wed 9:00 – 10:00 am, Thurs 3:30 – 4:30 pm

Course Web Site: Course notes, homework, SAS programs, datasets, course policies, and supplemental materials will be available on the course website https://wolfware.ncsu.edu/ Students should insure that they have their Unity password to log into Moodle. Students also will submit course assignments via Moodle.

Course Prerequisite: an introductory course in statistical methods. Further training in Statistics will help in providing a perspective on why we may want to prepare the data in a particular fashion.

Course Goal: The first goal of this course will be the mastery of Base SAS programming, especially the DATA step. The second goal of this course is an introduction to R programming. In addition, the intention of this class is that you learn enough SAS for it to be helpful to you in your coursework and in your own research projects.

Required Software: SAS and R. As an NCSU student, you can obtain *SAS* for free at the following website http://software.ncsu.edu/vendor/sas/package/sas. This website will direct you on how to install SAS to your machine or access it via the Virtual Computing Lab (VCL). You can download and install R onto your machine via the following website http://cran.us.r-project.org/ . Both SAS and R will be available on the classroom machines in SICL.

Textbooks: For the SAS portion of the class, we will follow materials in the following books:

- SAS Institute, SAS Programming 1: Essentials Course Notes, 2013.
- SAS Institute, SAS Programming 2: Data Manipulation Techniques, 2013.

In addition the following textbooks may be helpful:

- Lora Delwiche & Susan Slaughter, *The Little SAS Book*. SAS Institute (The third edition of this book is available online at http://www2.lib.ncsu.edu/catalog/record/NCSU1858431)
- Rebecca J. Elliott, *Learning SAS in the Computer Lab*. Second Ed. Duxbury.
- Norman Matloff, *The Art of R Programming*. No Starch Press.
- SAS Institute, *SAS Certification Prep Guide* (2nd ed).
- SAS Institute, *Step-By-Step Programming with Base SAS Software*.
- Phil Spector. *Data Manipulation with R*. Springer.

Useful Websites: see above for links to download Required Software. The links below provide supplemental information on SAS, including information and discount on taking the SAS Basic Exam Certification:

http://www.stat.ncsu.edu/working_groups/sas/

http://software.ncsu.edu/vendor/sas/package/sas

http://support.sas.com/training/discounts/acad.html

Grades: It is the student's responsibility to be aware of his/her grades in the course and the appropriate level of work required. Your final grade in this course will depend on the following:

Item	**Percentage**
Assignments, Quizzes, Discussion Postings	45
Exam I: Oct 1 -3	15
Exam II: Nov 5 - 7	15
Final Exam: Dec 8 - 10	25
Total	100

Guaranteed course grades will be assigned as follows:

Grade	F	D	C-	C	C+	B-	B	B+	A-	A	A+
Score	<60%	60-70%	70-73%	73-77%	77-80%	80-83%	83-87%	87-90%	90-93%	93-98%	≥ 98%

Incomplete (IN) are given only as specified in university regulations.

Exams: All exams are closed book. For midterm and final exams students may use one 8 ½ X 11 page of notes (front and back). Students who are unable to attend the midterm exam for a legitimate unavoidable reason may take a make-up exam only if the student provides suitable documentation of the absence within 2 calendar days of the exam and takes the make-up within the time frame designated by Dr. Moore. The final exam must be taken at the University designated day and time; there are no make-ups.

Exam Proctoring: Students must arrange to take their exams during the assigned three day window. Students may take exams in their choice of two possible methods.

- Through the Distance Education Proctoring Offices. Students who are in Wake and adjoining counties may arrange to take their exams at the DE Proctoring offices on a walk in basis. For more information see http://distance.ncsu.edu/students/localproctor.html
- Off campus proctoring. Students who are not in Wake County or the adjoining counties or have extenuating circumstances may take exams through an approved proctor. All remote proctoring should be arranged through the Distance Education Proctoring Office For more information on arranging proctors see http://distance.ncsu.edu/students/remoteproctor.html

Regardless of the location, students should plan their exam location well in advance and verify arrangements at least one week in advance of the exam.

Communication: Students are expected to check their NCSU email regularly to receive course announcements. Students who do not use their NCSU email should arrange to have this email forwarded to an account they do use. Due to university regulations the instructor can send course announcements only to NCSU email addresses.

Support mechanisms: Since this course is online the instructor will have virtual office hours. Students who cannot attend the posted times may make an appointment via email for other times. Additionally, a general discussion board on the course website will allow students to ask questions of each other.

Assignments: There will be assignments throughout the course. **Late homework assignments will not be accepted**. The lowest homework grade will be dropped. All SAS and R programs should follow the programming standards guidelines. Assignments can be in the form of written response to questions, SAS or R programming, online quizzes, and discussion postings.

Discussion Board Postings: Student in this course will be broken into small groups of 3 to 5 students. Each week these groups will answer questions and discuss course content using the online discussion board. These discussion questions will be keyed to the specific weeks material and will have specific due dates. Due dates are firm and your fellow group members will be counting on your contributions to be submitted by the due date. Discussion postings will be graded based on quality of responses. Students are expected to treat each other with respect on the boards.

Auditing: Students may register for auditor credit. Auditors must accumulate at least 80% on the assignments.

Academic Misconduct: Cheating, plagiarism and other forms of academic dishonesty will not be tolerated. To create a fair and equitable environment, the instructor aggressively enforces the universities policies on academic misconduct. All exams are to be completed individually. Although working together on written assignments to overcome obstacles is encouraged, each student must compose and write his/her own analysis and reports. All cases of academic misconduct will be handled as set out in university policies. For additional information see: http://policies.ncsu.edu/policy/pol-11-35-01

Students with disabilities: Reasonable accommodations will be made for students with verifiable disabilities. Any student who feels they may need an accommodation based on the impact of a disability should contact the instructor privately to discuss your specific needs. In order to take advantage of available accommodations, students must register with Disability Services for Students at 1900 Student Health Center, Campus Box 7509, 515-7653. http://www.ncsu.edu/provost/offices/affirm_action/dss/ . For more information on NC State's policy on working with students with disabilities, please see http://policies.ncsu.edu/regulation/reg-02-20-01

Feedback: Online class evaluations will be available for students to complete during the last two weeks of class. Students will receive an email message directing them to a website where they can login using their Unity ID and complete evaluations. All evaluations are confidential; instructors will never know how any one student responded to any question, and students will never know the ratings for any particular instructors. Evaluation website:

https://classeval.ncsu.edu. Student help desk: classeval@ncsu.edu. Informal feedback provided to the teaching team during the course of the semester is encouraged.

Tentative Course Content:

SAS

Basics of SAS: data step and procs, SAS Programs, SAS datasets
Reading data: SAS, spreadsheets, raw data files
Data step language elements & structure, PDV< basic procs
Manipulating Data
Combining Data Sets
Producing Detail and Summary Reports
Data Transformations
Loops & Arrays
Creating & Maintaining Formats

R

Basics of R
Reading & Writing Data
Reshaping Data
Basic Matrix Calculations & Functions

Calendar of Events:

10/1/14 to 10/3/14 – Exam I

10/9/14 to 10/10/14 – Fall break.

10/17/14 – Last day to drop without a grade

11/5/14 to 11/7/14 – Exam II

11/26/14 to 11/28/14 – Thanksgiving break

12/8/14 to 12/10/14 – Final exam