

**STAT 547      Multivariate Analysis and Advanced Linear Modeling  
Spring, 2020**

Time: 2:00–3:15

Site: SMLC–352

Professor: Ronald Christensen

Office: SMLC 304

e-mail: [fletcher@stat.unm.edu](mailto:fletcher@stat.unm.edu)

web: [www.stat.unm.edu/~fletcher](http://www.stat.unm.edu/~fletcher) (Click on course title under teaching.)

Phone: They removed it in a pseudo budget cut.

Office Hours: T, Th, 12:45–1:45 and by appointment.

Text: Christensen, *Plane Answers to Complex Questions: The Theory of Linear Models (PA-V)*, Fifth Edition and Christensen *Advanced Linear Modeling: Statistical Learning and Dependent Data (ALM-III)*, Third Edition. **Do not buy ALM unless the 3rd Edition is out!.**

Prerequisites: Stat 546.

Material: This year, because I am teaching a topics course on Statistical Learning we will focus on the dependent data chapters of *ALM*. These start with Chapter 4 and continue for the rest of the book. We won't be able to cover it all. We may also need to pick up topics that I didn't have time for in 546.

We will cover general methods for parameterized covariance matrices after which we will examine the special cases of mixed models, spatial data, and multivariate linear models. As time permits we will also cover discriminant analysis, principal components, and other topics. (We will not do the time series chapters.)

Homework: Homework will be assigned but not graded. You are encouraged to form groups to work together on homework to solidify your knowledge of the material.

Grading: There will be quizzes. **You are required to keep legible copies of all work**, except in-class examinations.

## Virus Update

Hello:

I have intentionally left you alone this week so as not to interfere with your ability to enjoy spring break. With the rest of the world doing its best to interfere, I thought that I would resist the temptation.

Me being a contemporary of Homer and Telemachus, you will probably not be surprised if I am not on the cusp of online teaching technology. My vision for the near future is pretty simple. Lots of reading assignments and lots of exercises. I've been working on producing a series of "Quizzes" for you to perform. But I am really planning them as learning exercises more than quizzes. Because of the current situation, it will be acceptable for you to discuss these quizzes with your classmates (as long as you do not get within 6 ft of them). You should, however, write up your answers yourself, i.e., **no copying**.

I will probably just post the quizzes on the course website AS I GET THEM DONE. (Go to [www.stat.unm.edu/~fletcher](http://www.stat.unm.edu/~fletcher) and figure it out.) Also, if/when I can figure out how to do it, I will try to hold open our usual class times for something like a chat room where you can come online and ask any questions that you have. Of course you can always email me BUT if I start getting inundated with email, I will probably start getting unresponsive to email. Hence my desire to do something like a chat room. If I become aware of better technology, I will let you know.

My current idea is that there will be one quiz for each chapter of the book that I want to cover. Quiz 1 covers Chapter 1 (Those in Stat Learning have already done that one) and all quizzes will be numbered by the chapter they cover. If I decide I need more than one quiz for a chapter, the number will still agree with the chapter but I will add extra identifiers, e.g. Quiz 4a would relate to Chapter 4. Remember that the online computing book also has its chapters and sections set up to agree with the text. Once I get all of the quizzes up, you can work at your own speed to finish the class. When you finish the quizzes, you will be done with the class. (In my youth this was called "programmed learning.")

For now, I don't know of a better way for you to hand in your work than to email it to me. I want to have the answers written in the spaces provided for the answers on the quiz form. Normally I would require that but I'm not sure if you all have appropriate technology. Ideally, you could type/add your answers to the pdf file and return it. I know that would be inconvenient for me to do. I would probably handwrite the answers on a printed copy of the pdf and either scan it or take a clear photo of it. Let me know if you have problems. (If worse comes to worse you can snail mail them.)

Frankly, I think you are going to learn a lot more from reading and doing exercises than you would from just listening to me spout off.

Good Luck, Ron