

# MULTIVARIATE STATISTICS

Spring 2016

**Instructor:** Dr. Doug Grisaffe

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**Office Hours:** Thursdays 12:45 - 1:45pm

**Section Information:** BSAD 6314 - 001

**Time and Place of Class Meetings:** College of Business 138, Thursday 2:00PM - 4:50PM

**Description of Course Content:** Focuses on methods of analyzing mean and covariance structures. Topics include commonly applied multivariate methods such as multiple analysis of variance, repeated measures, discriminant analysis, profile analysis, canonical correlations and factor analytic methods. The use of matrix algebra and available computer packages will be stressed.

**Student Learning Outcomes:** Based on active participative learning, lab work, and analysis assignments students will be able to:

- + explain the conceptual basis of each multivariate technique covered
- + explain technical working of each technique at a level appropriate for Ph.D.s in COB disciplines
- + make the correct choice of multivariate techniques most appropriate for particular data/questions
- + execute analyses via statistical software
- + correctly interpret software outputs
- + translate statistical interpretations to discipline-specific and context-specific substantive meaning

## **Required Textbooks and Other Course Materials:**

Multivariate Data Analysis (Seventh Edition). (ISBN 0-13-813263-1)  
Hair, J.F., Black, W.C., Babin, B.J., Anderson, R.E. © 2010 Pearson Prentice Hall

Supplemental material may be assigned in class TBD.

***\*\*\*NOTE: THIS IS AN INTENSE CLASS! Chapters and topics tend to be long and dense with detail. Allow sufficient time and keep up with your reading! We will also be conducting applied analyses with the techniques, so on top of the reading you will have analysis assignments. I urge you to manage your time and keep up to date throughout the class.***

## Descriptions of major assignments and examinations:

<u>Dates</u>	<u>Chapters / Topics</u>
Jan 21	Chapter 1 – Intro to Multivariate & Data Foundations
Jan 28	Chapter 2 – Data Foundations & Examining data
Feb 4	Chapter 3 – Exploratory Factor Analysis Part 1
Feb 11	Chapter 3 – Exploratory Factor Analysis Part 2*
Feb 18	Chapter 4 – Multiple Regression Part 1
Feb 25	Chapter 4 – Multiple Regression Part 2*
Mar 3	Mid-Term Exam
Mar 10	Chapter 6 – Logistic Regression
Mar 17	SPRING BREAK
Mar 24	Chapter 5 – Discriminant Analysis Part 1
Mar 31	Chapter 5 – Discriminant Analysis Part 2*
Apr 7	Chapter 7 – MANOVA Analysis Part 1
Apr 14	Chapter 7 – MANOVA Analysis Part 2*
Apr 21	To Be Determined
Apr 28	Chapters 12 & 13 – SEM Analysis Part 1
May 6	Chapters 13 & 14 – SEM Analysis Part 2*
May 13	Final Exam

(Schedule subject to changes/substitutions/assignments as deemed necessary)

**Attendance:** At The University of Texas at Arlington, taking attendance is not required. Rather, each faculty member is free to develop his or her own methods of evaluating students' academic performance, which includes establishing course-specific policies on attendance. As the instructor of this section, I do however encourage you to be active in attendance and participation. Tests include concepts from in-class notes/discussion points. It is to your advantage to avoid absences.

**Other Requirements:** The norm will be to assign a graded analysis problem for each technique. A paper/ hard copy of your assignment must be turned in, not an electronic copy. This output will be due on the class following the assignment of the analysis exercise. In addition, I'll be requesting you to find example applications in journal articles preferably from your discipline or a related discipline.

All assignments should be assumed to be INDIVIDUAL-level work without discussion or collaboration from others. Severe grading penalties will be applied if found to be in violation of this policy. Unless an assignment is specifically designated as a team activity, or it is specifically stated that collaboration is permissible, all assignments should be considered individual.

(This policy does not preclude group-level study prior to tests).

**Grading:** Students are expected to keep track of their performance throughout the semester and seek guidance from available sources (including the instructor) if their performance drops below satisfactory levels; see "Student Support Services," below.

The final course grade will be a weighted average of the exams and assignments, as follows:

Final grade = (.25 x Midterm) + (.25 x Final) + (.35 Analysis Assignments) + (.15 Article Examples)

90.000% or higher = A  
60.000-69.999% = D

80.000%-89.999% = B  
less than 60.000% = F

70.000-79.999% = C

PLEASE NOTE THE PRECISION IN THESE VALUES. Be informed in advance that you must meet or exceed a grade threshold to earn that particular grade. For example if you earn 89.97, your grade will be a B. I do not negotiate or give extra credit assignments after the final exam. At that point, your course grade is assigned simply by doing the math on the points you have earned from your efforts in the course.

**Make-up Exams:** NO “convenience” make-ups will be provided on exams and assignments. Make-ups may be permitted for official university-approved reasons (e.g., medical with doctor’s note).

**Grade Grievances:** Any appeal of a grade in this course must follow the procedures and deadlines for grade-related grievances as published in the current University Catalog. For more information, refer to the following: <http://catalog.uta.edu/academicregulations/grades/#graduatetext>

**Drop Policy:** Students may drop or swap (adding and dropping a class concurrently) classes through self-service in MyMav from the beginning of the registration period through the late registration period. After the late registration period, students must see their academic advisor to drop a class or withdraw. Undeclared students must see an advisor in the University Advising Center. Drops can continue through a point two-thirds of the way through the term or session. It is the student's responsibility to officially withdraw if they do not plan to attend after registering. **Students will not be automatically dropped for non-attendance.** Repayment of certain types of financial aid administered through the University may be required as the result of dropping classes or withdrawing. For more information, contact the Office of Financial Aid and Scholarships (<http://wweb.uta.edu/aao/fao/>).

**Disability Accommodations:** UT Arlington is on record as being committed to both the spirit and letter of all federal equal opportunity legislation, including *The Americans with Disabilities Act (ADA)*, *The Americans with Disabilities Amendments Act (ADAAA)*, and *Section 504 of the Rehabilitation Act*. All instructors at UT Arlington are required by law to provide “reasonable accommodations” to students with disabilities, so as not to discriminate on the basis of disability. Students are responsible for providing the instructor with official notification in the form of a letter certified by the **Office for Students with Disabilities (OSD)**. Students experiencing a range of conditions (Physical, Learning, Chronic Health, Mental Health, and Sensory) that may cause diminished academic performance or other barriers to learning may seek services and/or accommodations by contacting: **The Office for Students with Disabilities, (OSD)** [www.uta.edu/disability](http://www.uta.edu/disability) or calling 817-272-3364. **Counseling and Psychological Services, (CAPS)** [www.uta.edu/caps/](http://www.uta.edu/caps/) or calling 817-272-3671.

Only those students who have officially documented a need for an accommodation will have their request honored. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at [www.uta.edu/disability](http://www.uta.edu/disability) or by calling the Office for Students with Disabilities at (817) 272-3364.

**Title IX:** *The University of Texas at Arlington does not discriminate on the basis of race, color, national origin, religion, age, gender, sexual orientation, disabilities, genetic information, and/or veteran status in its educational programs or activities it operates. For more information, visit [uta.edu/eos](http://uta.edu/eos). For information regarding Title IX, visit [www.uta.edu/titleIX](http://www.uta.edu/titleIX).*

**Academic Integrity:** Students enrolled all UT Arlington courses are expected to adhere to the UT Arlington Honor Code:

*I pledge, on my honor, to uphold UT Arlington’s tradition of academic integrity, a tradition that values hard work and honest effort in the pursuit of academic excellence.*

*I promise that I will submit only work that I personally create or contribute to group collaborations, and I will appropriately reference any work from other sources. I will follow the highest standards of integrity and uphold the spirit of the Honor Code.*

UT Arlington faculty members may employ the Honor Code as they see fit in their courses, including (but not limited to) having students acknowledge the honor code as part of an examination or requiring students to incorporate the honor code into any work submitted. Per UT System *Regents’ Rule* 50101, §2.2, suspected violations of university’s standards for academic integrity (including the Honor Code) will be referred to the Office of Student Conduct. Violators will be disciplined in accordance with University policy, which may result in the student’s suspension or expulsion from the University.

**Electronic Communication:** UT Arlington has adopted MavMail as its official means to communicate with students about important deadlines and events, as well as to transact university-related business regarding financial aid, tuition, grades, graduation, etc. All students are assigned a MavMail account and are responsible for checking the inbox regularly. There is no additional charge to students for using this account, which remains active even after graduation. Information about activating and using MavMail is available at <http://www.uta.edu/oit/cs/email/mavmail.php>.

**Student Feedback Survey:** At the end of each term, students enrolled in classes categorized as “lecture,” “seminar,” or “laboratory” shall be directed to complete an online Student Feedback Survey (SFS). Instructions on how to access the SFS for this course will be sent directly to each student through MavMail approximately 10 days before the end of the term. Each student’s feedback enters the SFS database anonymously and is aggregated with that of other students enrolled in the course. UT Arlington’s effort to solicit, gather, tabulate, and publish student feedback is required by state law; students are strongly urged to participate. For more information, visit <http://www.uta.edu/sfs>.

**Final Review Week:** A period of five class days prior to the first day of final examinations in the long sessions shall be designated as Final Review Week. The purpose of this week is to allow students sufficient time to prepare for final examinations. During this week, there shall be no scheduled activities such as required field trips or performances; and no instructor shall assign any themes, research problems or exercises of similar scope that have a completion date during or following this week *unless specified in the class syllabus*. During Final Review Week, an instructor shall not give any examinations constituting 10% or more of the final grade, except makeup tests and laboratory examinations. In addition, no instructor shall give any portion of the final examination during Final Review Week. During this week, classes are held as scheduled. In addition, instructors are not required to limit content to topics that have been previously covered; they may introduce new concepts as appropriate.

**Emergency Exit Procedures:** Should we experience an emergency event that requires us to vacate the building, students should exit the room and move toward the nearest exit, [which is in a location to be noted the first class session](#). When exiting the building during an emergency, one should never take an elevator but should use the stairwells. Faculty members and instructional staff will assist students in selecting the safest route for evacuation and will make arrangements to assist individuals with disabilities.

Faculty members are required to be fully aware of the exits nearest their classrooms and to explain how best to exit the building. See the official university document at: <http://www.uta.edu/police/EvacuationProcedures.pdf>

**Student Support Services:** UT Arlington provides a variety of resources and programs designed to help students develop academic skills, deal with personal situations, and better understand concepts and information related to their courses. Resources include tutoring, major-based learning centers, developmental education, advising and mentoring, personal counseling, and federally funded programs. For individualized referrals, students may visit the reception desk at University College (Ransom Hall), call the Maverick Resource Hotline at 817-272-6107, send a message to [resources@uta.edu](mailto:resources@uta.edu), or view the information at <http://www.uta.edu/universitycollege/resources/index.php>

**The English Writing Center (411LIBR):** Hours are 9 am to 8 pm Mondays-Thursdays, 9 am to 3 pm Fridays and Noon to 5 pm Saturdays and Sundays. Walk In **Quick Hits** sessions during all open hours Mon-Thurs. Register and make appointments online at <http://uta.mywconline.com>. Classroom Visits, Workshops, and advanced services for graduate students and faculty are also available. Please see [www.uta.edu/owl](http://www.uta.edu/owl) for detailed information.

**Course Schedule:** *Per House Bill 2504*, a schedule / timetable for the course, including a general description of the subject matter of each lecture/ discussion, and dates for all major work to be completed, are provided to follow. However, *As the instructor for this course, I reserve the right to adjust this schedule in any way that serves the educational needs of the students enrolled in this course.* – Douglas B. Grisaffe.

Schedule / timetable for the course per House Bill 2504

<u>Dates</u>	<u>Chapters / Topics</u>
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**ADDITIONAL RESOURCES**

Library Home Page .....	<a href="http://www.uta.edu/library">http://www.uta.edu/library</a>
Subject Guides .....	<a href="http://libguides.uta.edu">http://libguides.uta.edu</a>
Subject Librarians.....	<a href="http://www.uta.edu/library/help/subject-librarians.php">http://www.uta.edu/library/help/subject-librarians.php</a>
Course Reserves.....	<a href="http://pulse.uta.edu/vwebv/enterCourseReserve.do">http://pulse.uta.edu/vwebv/enterCourseReserve.do</a>
Library Tutorials .....	<a href="http://www.uta.edu/library/help/tutorials.php">http://www.uta.edu/library/help/tutorials.php</a>
Connecting from Off- Campus .....	<a href="http://libguides.uta.edu/offcampus">http://libguides.uta.edu/offcampus</a>
Ask A Librarian .....	<a href="http://ask.uta.edu">http://ask.uta.edu</a>

**Emergency Phone Numbers:** In case of an on-campus emergency, call the UT Arlington Police Department at **817-272-3003** (non-campus phone), **2-3003** (campus phone). You may also dial 911. Non-emergency number 817-272-3381