UNIVERSITY OF TEXAS ARLINGTON

Introduction to Structural Equation Modeling
(BSAD 6321 - 001 – SPRING 2019)

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Office Hours:	*By appointment*
Class Location:	COBA 141
Class Time:	Tuesdays 2:00 PM – 5:00 PM
Faculty Profile:	https://mentis.uta.edu/explore/profile/wayne-crawford

Required Text:

Muthén, L. K., & Muthén, B. O. (1998-2012). *Mplus user's guide*. Seventh Edition. Los Angeles, CA: Muthén & Muthén.

Free download: http://www.statmodel.com/download/usersguide/MplusUserGuideVer_8.pdf
If you want a hard copy (I don't recommend getting one), the cost is $75 from www.statmodel.com.

Optional Text:

I also want to make you aware of texts that I have that you may find valuable on your SEM journey either now or in the future (in alphabetical order):

Byrne, B. M. (2012). *Structural equation modeling with Mplus: Basics, concepts, applications, and programming*. Routledge.
Geiser, C. (2012). *Data analysis with Mplus*. Guilford press.
Kline, R. B. (2015). *Principles and practice of structural equation modeling*. Guilford publications.
Kelloway, E. K. (2015). *Using Mplus for Structural Equation Modeling.* 2nd edition. Sage.
Newsom, J. T. (2015). *Longitudinal structural equation modeling: A comprehensive introduction*. Routledge.

Software:

I will be using Mplus Version 8.0 throughout the course. This will be the only SEM software that I will be using, and also may conduct analyses through two other programs that you probably have access to (SPSS and Microsoft Excel). In an attempt to minimize the costs that incur for taking this course, I do not require a textbook, as I recognize that getting access to Mplus may require you to incur some financial expense. While you can purchase a single-user license for Mplus at a substantially reduced rate for students ($195), I have arranged for a computer equipped with Mplus to be placed in the Management Ph.D. student office. However, if you want your own copy for your own work computer, or a personal computer, you will need to purchase a copy. Similarly, if you are interested in categorical outcomes or multilevel analyses for future analyses, you will need to purchase the add-on version of the program. However, the folks at Mplus will allow you to pay the difference if you ever choose to upgrade to that version at a later time.

Alternatively, SEM analyses can also be done in other programs (EQS, AMOS, R, LISREL, etc.), some of which you may already have access to or may be offered free of charge (e.g., R). I will certainly allow you to use these other softwares should that be your preference. However, you should be aware that I will not be able to assist with syntax errors for programs other than Mplus. Thus, Mplus is the most important component for you to have access to for this course. One other note, the demo version of Mplus largely restricts the number of variables you can use in a model, and thus, won't be enough to get you through the course.

Course Objectives:

The major purpose of this course is to provide a foundation into structural equation modeling (SEM) techniques and issues. Underlying this purpose is my sincere hope to demystify SEM. That is, SEM is largely a "glorified" regression procedure, and in that vein, if you have a good grasp of multiple regression, you already have an understanding of some of the basics underlying SEM. Unlike ordinary regression, though, SEM: (a) doesn't assume that measurement error is zero; and (b) can simultaneously estimate parameters representing the whole model rather than just pieces of the model. The use of the term "foundation" in the first sentence is purposeful in that this is an introductory course in SEM. The outcome that I wish to achieve is to give you the knowledge and skills to test ordinary models. To really learn about testing more complex models, such as multilevel models, or latent growth models, would be part of an advanced SEM course or require further reading on your own (that should be manageable after the knowledge gained from this course – and we will likely introduce these types of models at some point).

Learning Outcomes:

Upon the conclusion of this course, it is expected that you will:

- Be familiar with foundational concepts underlying structural equation modeling
- Have a professional, working knowledge of Mplus, which you can utilize for future analyses
- Understand the approach that SEM takes to data analysis (as opposed to regression) and be able to use that approach to answer questions appropriately in your own research

Course Requirements:

Readings. Each class, there are readings assigned which are either on blackboard or consist of pages from the Mplus user's guide. You are required to read the assigned readings **before** the day they are assigned. Also, the readings are listed in order of importance. The class is very discussion-based. Thus, it's important that you have a grasp of the readings before coming to class and make note of questions to ask me for clarification. For empirical articles, it is not important that you know (or read) the conceptual information in the article; just read for discussion of the method or statistical technique. Readings that are assigned as "suggested readings" are solely to supplement your knowledge of the topic, and can serve as a guide for future reference if you are doing these analyses in your own research.

PLEASE NOTE, starting 1/29, I will use an online random sequence generator and call on the first person in the random sequence to tell me the three key learning points from the first assigned reading. I will subsequently call on the next person from the sequence to do the same for the second reading, and so forth and so on until we've covered the readings I feel are important for that day. For example, on 1/29 there are 5 readings and I will call on up to 5 people that day to each give me three key learning points for a particular reading. This is truly random each and every time. Thus, you could be called upon multiple times during the semester or not at all.

Examinations. There is one examination (see schedule below) worth 40% of your final grade. The exam will primarily be of the essay variety, but could vary from this format. It will assess both conceptual understanding and application of SEM (e.g., interpreting M*plus* results).

Homework. There are numerous homework assignments throughout the course accounting for 25% of your total grade. Homework will be assigned on Tuesday and due on Sunday at 9am to give me time to review. Then, we'll discuss them the following Tuesday class. The intent is to get you to conduct the analyses yourselves and stimulate discussion about any problems. Homework will be graded on a scale of 1-10, depending on a) the level of effort put forth to conduct the analyses, b) the level of knowledge exhibited, and c) the correctness of the results. The former two components will be weighed more heavily than the latter. I openly encourage you to consult other students to help you writing syntax and for problems you incur with M*plus*. I feel that is the best way for you to learn the program. However, **each student's results and interpretation of results should be their own work. Duplicates of other's work will result in a grade of "0" for both parties involved.** Further, the excuse, "I couldn't get M*plus* to run my model" will not be acceptable and I encourage you to not wait until Saturday night to do your homework because you inevitably will run into programming problems due to human error. Late homeworks will not be accepted unless there are documented, extenuating circumstances.

Course Project. This is the remaining 35% of your course grade. Given the diversity of students taking this course, I am willing to negotiate project structure with each student individually. No matter the structure of the project, the objective must require applying SEM to a data set.

In-class Participation. One other note about participation – as this is a doctoral course, which is discussion based, I expect your participation in my course. There is no participation grade, as participation is the expectation. However, should I find you not participating (e.g., not having read the readings prior to class, not completing/turning in assignments on time, not participating in discussions, etc.), I reserve the right to deduct up to 10% of your overall grade.

The project and accompanying paper report involves **much more** than simply doing a SEM analysis. The student's report must begin with a short review and discussion of the theoretical rationale of the focal paper in the context of other work in the field. The report will examine the extent to which the use of SEM to test that theoretical model is either appropriate or inappropriate. Students will examine the properties and development of the measures used in the paper (**Note: the majority of your measures must be multi-item scales, and your measures will need to be REFLECTIVE, not FORMATIVE)**, in light of methods discussed in this course. Further, students will undertake the analyses by themselves. I expect the report to focus on the steps involved in the analyses and proper presentation of results as well as discussion of those results. If students have no access to their own data, or data from a faculty member they are working with, UTA is an affiliated member of ICPSR which gives students access to a public database full of data (http://www.icpsr.umich.edu/icpsrweb/ICPSR/). I strongly encourage you to explore the public access data, as there are many interesting questions to be answered with public access data that can lead to a high quality publication. **Also, please note that NO "Incomplete" grades will be given for this course.**

Schedule of Events

Topic 1 – Introduction to SEM

T 1/15 & T *1/22*

Readings:

Chapter 3: Correlation (pp. 37- 60). In Schumacker, R.E., & Lomax, R.G. (2004), *A beginner's guide to structural equation modeling* (2nd Edition). Mahwah, NJ: Lawrence Erlbaum.

Rigdon, E. E. (1998). Chapter 9: Structural equation modeling. In G.A. Marcoulides (ed.), *Modern Methods for Business Research* (pp. 251-294). Mahwah, NJ: Lawrence Erlbaum.

Weston, R. & Gore, P. A. (2006). A brief guide to structural equation modeling. *The Counseling Psychologist, 34*, 719 – 751.

Chapter 1: Data Management in SPSS (pp. 1–8). In Geiser, C. (2013), *Data analysis with Mplus.* New York: Guilford press.

Topic 2 – Mplus

T 1/29

Readings:

Chapter 1: Introduction (pp. 1-12) & Chapter 2: Getting Started with Mplus (pp. 13-18). In Muthén, L. K., & Muthén, B. O. (1998-2012), *Mplus user's guide*. Seventh Edition. Los Angeles, CA: Muthén & Muthén.

Chapter 15: Matrix Approach to Structural Equation Modeling (pp. 406- 456). In Schumacker, R.E., & Lomax, R.G. (2004), *A beginner's guide to structural equation modeling* (2nd Edition). Mahwah, NJ: Lawrence Erlbaum. **[Even though this chapter details LISREL output, it's important to understand the matrix notation. Understanding the LISREL output is secondary.]**

Appendix: Introduction to Matrix Operations (pp. 425-437). In Schumacker, R.E., & Lomax, R.G. (2004), *A beginner's guide to structural equation modeling* (2nd Edition). Mahwah, NJ: Lawrence Erlbaum.

Chapter 2: Using the Mplus Program (pp. 19-39). In Byrne, B. M. (2012), *Structural equation modeling with Mplus: Basics, concepts, applications and programming*. New York: Routledge.

Chapter 2: Reading Data into Mplus (pp. 9-23). In Geiser, C. (2013), *Data analysis with Mplus.* New York: Guilford press.

Suggested Readings:

Appendix A: Matrix Algebra Reviw (pp. 449-465). In Loehlin, J. C. (2004). *Latent variable models: An introduction to factor, path, and structural equation models* (4th Edition). Mahwah, NJ: Lawrence Erlbaum.

Homework 1:

You will be given some matrices and models to diagram using Matrix and Mplus syntax.

Topic 3 – SEM Basics: Common Practices & Concerns

T 2/5

Readings:

Chapter 4: SEM Basics (pp. 61-78). In Schumacker, R.E., & Lomax, R.G. (2004), *A beginner's guide to structural equation modeling* (2nd Edition). Mahwah, NJ: Lawrence Erlbaum.

Anderson, J.C., & Gerbing, D.W. (1988). Structural equation modeling in practice: A review and recommended two-step approach. *Psychological Bulletin*, *103*, 411-423.

Landis, R.S., Edwards, B.D., & Cortina, J.M. (2009). On the practice of allowing correlated residuals among indicators in structural equation modeling. In C.E. Lance & R.J. Vandenberg (eds.), *Statistical and Methodological Myths and Urban Legends: Received Doctrine, Verity, and Fable in the Organizational and Social Sciences* (pp. 193-218). New York, NY: Routledge.

Edwards, J. R. (2011). The fallacy of formative measurement. *Organizational Research Methods, 14*, 370-388.

Suggested Readings:

Chen, F., Bollen, K. A., Paxton, P., Curran, P. J., & Kirby, J. B. (2001). Improper solutions in structural equation models: Causes, consequences, and strategies. *Sociological Methods & Research, 29*, 468-508.

Topic 4 – Model Fit & Modification

T 2/12

Readings:

Chapter 3: Testing the Factorial Validity of a Theoretical Construct (pp. 43-93). In Byrne, B. M. (2012), *Structural equation modeling with Mplus: Basics, concepts, applications and programming*. New York: Routledge.

Hu, L.T., & Bentler, P. (1999). Cutoff criteria for fit indexes in covariance structure analysis: Conventional criteria versus new alternatives. *Structural Equation Modeling*, *6*, 1-55.

Suggested Readings:

Chapter 6: Evaluating and Modifying Structural Equation Models (pp. 109-132). In Kaplan, D. (2009), Structural equation modeling: Foundations and extensions (2nd edition). Thousand Oaks, CA: Sage.

Homework 2:

You will be given a series of model fit indices and parameter estimates from real data. You will write a short paragraph telling me which models fit the best from a statistical and practical perspective and any potential problems you see.

Topic 5 – Measurement Models and Confirmatory Factor Analysis

T 2/19

Readings:

Chapter 9: Measurement Models and Confirmatory Factor Analysis (pp. 230-264). In Kline, R. B. (2010), *Principles and Practice of Structural Equation Modeling* (3rd Ed.). New York: Guilford Publications.

Lance, C.E., & Vandenberg, R.J. (2001). Confirmatory factor analysis. In F. Drasgow & N. Schmitt (Eds.), *Measuring and Analyzing Behavior in Organizations: Advances in Measurement and Data Analysis* (pp. 221-256), Volume in the *Organizational Frontier Series*. San Francisco: Jossey-Bass.

Hurley, A.E., Scandura, T.A., Schriesheim C.A., Brannick, M.T., Seers, A., Vandenberg, R.J., & Williams, L.J. (1997). Exploratory and confirmatory factor analysis: Guidelines, issues, and alternatives. *Journal of Organizational Behavior*. *18,* 667-683.

Suggested Readings:

Chapter 5: Confirmatory Factor Analysis and Structural Equation Modeling (pp. 55-80). In Muthén, L. K., & Muthén, B. O. (1998-2012), *Mplus user's guide.* Seventh Edition. Los Angeles, CA: Muthén & Muthén.

Homework 3:

You will be given data to conduct an EFA in SPSS, multiple 1st order CFAs, and a 2nd order CFA in M*plus* – compare and contrast results.

Topic 6 – Construct Validity: MTMM & Effects of Common Method Variance

T 2/26

Readings:

Podsakoff, P.M., MacKenzie, S. B., & Lee, J. (2003). Common method biases in behavioral research: A critical review of the literature and recommended remedies. *Journal of Applied Psychology, 88,* 879-903.

Kenny, D. A., & Kashy, D. A. (1992). Analysis of the multitrait-multimethod matrix by confirmatory factor analysis. *Psychological Bulletin, 112,* 165-172.

Homework 4:

Students will be assigned to groups and given data to investigate construct validity using one of the techniques discussed. We will then compare results of the various techniques.

T 3/4 – **Topic 6 Continued – Group presentations, midterm review, & 5 minute project update**

T 3/18 – **MIDTERM EXAM (IN CLASS)**

Topic 7 – **Path Models & Latent Models with Structural and Measurement Components (Full Structural Models)**

T 3/25

Readings:

Rigdon, E.E. (1994). Calculating degrees of freedom for a structural equation model. *Structural Equation Modeling, 1*, 274-278.

Chapter 5: Specification (pp. 91-123) & Chapter 10: Structural Regression Models (pp. 265-294). In Kline, R. B. (2010), *Principles and Practice of Structural Equation Modeling* (3rd Ed.). New York: Guilford Publications.

Suggested Readings:

Chapter 6: Testing the Validity of a Causal Structure: Full Structural Equation Model (pp. 147-189). In Byrne, B. M. (2012), *Structural equation modeling with Mplus: Basics, concepts, applications and programming*. New York: Routledge.

Homework 5:

You will calculate degrees of freedom and run a full structural model.

Topic 8 – Testing for Mediation in SEM

T 4/2

Readings:

Preacher, K. J., & Hayes, A. F. (2008). Asymptotic and resampling strategies for assessing and comparing indirect effects in multiple mediator models. *Behavior Research Methods, 40*, 879-891.

Lau, R. S., & Cheung, G. W. (2012). Estimating and comparing specific mediation effects in complex latent variable models. *Organizational Research Methods, 15*, 3-16.

Cole, D. A., & Maxwell, S. E. (2003). Testing mediational models with longitudinal data: Questions and tips in the use of structural equation modeling. *Journal of Abnormal Psychology*, 112, 558-577.

Suggested Readings:

MacKinnon, D. P., Lockwood, C. M., Hoffman, J. M., West, S. G., & Sheets, V. (2002). A comparison of methods to test mediation and other intervening variable effects. *Psychological Methods, 7*, 83-104.

Homework 6:

You will run a mediation SEM model and interpret the results.

Topic 9 – Testing for Moderation, Moderated Mediation, Mediated Moderation, and Beyond

T 4/9

Readings:

Marsh, H.W., Wen, Z. & Hau, K-T. (2004). Structural equation models of latent interactions: Evaluation of alternative estimation strategies and indicator construction. *Psychological Methods, 9,* 275-300.

Little, T. D., Bovaird, J. A., & Widaman, K. F. (2006). On the merits of orthogonalizing powered and product terms: Implications for modeling interactions among latent variables. *Structural Equation Modeling, 13,* 497-519.

Preacher, K. J., Rucker, D. D., & Hayes, A. F. (2007). Addressing moderated mediation hypotheses: Theory, methods, and prescriptions. *Multivariate Behavioral Research, 42,* 185-227. [Including Mplus Syntax Appendix on Blackboard]

Edwards, J. R., & Lambert, L. S. (2007). Methods for integrating moderation and mediation: A general analytical framework using moderated path analysis. *Psychological Methods, 12,* 1-22.

Suggested Readings and a Video:

Edwards, J.R. (2009). Seven deadly myths of testing moderation in organizational research. In C.E. Lance & R.J. Vandenberg (eds.), *Statistical and Methodological Myths and Urban Legends: Received Doctrine, Verity, and Fable in the Organizational and Social Sciences* (pp. 143-164). New York, NY: Routledge.

"Moderated Mediation" CARMA video by Jose Cortina from Spring 2013. Found at http://alexanderstreet.com and accessible by registering with your uta.edu email address.

Homework 7:

You will run a series of SEMs to test for moderation and interpret the results.

Topic 10 – Multisample Analyses, Tests of Mean Structures, & Measurement Invariance/Equivalence

T 4/16

Readings:

Vandenberg, R.J., & Lance, C.E. (2000). A Review and synthesis of the measurement invariance literature: Suggestions, practices and recommendations for organizational research. *Organizational Research Methods, 3,* 4-70.

Ployhart, R.E., & Oswald, F.L. (2004). Applications of mean and covariance structure analysis: Integrating correlational and experimental approaches. *Organizational Research Methods, 7,* 27-65.

Suggested Readings:

Meade, A. W., Johnson, E. C., & Braddy, P. W. (2008). Power and sensitivity of alternative fit indices in tests of measurement invariance. *Journal of Applied Psychology, 93,* 568-592.

Homework 8:

You will test for ME/I in a measurement model across groups and interpret the results.

Topic 11 – Considering Time Within & Between Individuals: Latent Growth Modeling, Latent Change Scores, & Introduction to Multilevel Modeling

T 4/23

Readings:

Chapter 8: Latent Growth Curve Modeling (155-180). In D. Kaplan (2009), *Structural equation modeling: Foundations and extensions*. 2nd Edition. Thousand Oaks, CA: Sage.

Selig, J. P., & Preacher, K. J. (2009). Mediation models for longitudinal data in developmental research. *Research in Human Development, 6,* 144-164.

Chapter 7: Multilevel structural equation modeling (pp. 133-154). In D. Kaplan (2009), *Structural equation modeling: Foundations and extensions*. 2nd Edition. Thousand Oaks, CA: Sage.

Chapter 9: Multilevel Modeling (pp. 185 – 224). In E. Kelloway (2015), *Using Mplus for Structural Equation Modeling.* 2nd edition. Thousand Oaks, CA: Sage.

Topic 12 – Open Class – Topic TBD

T 4/30

Suggested Readings: TBD

T 5/6 – **COURSE PROJECT DUE IN MY BOX (2:00pm)**

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). Only those students who have officially documented a need for an accommodation will have their request honored. 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 or calling 817-272-3364. Information regarding diagnostic criteria and policies for obtaining disability-based academic accommodations can be found at www.uta.edu/disability.

Counseling and Psychological Services (CAPS) www.uta.edu/caps/ or calling 817-272-3671 is also available to all students to help increase their understanding of personal issues, address mental and behavioral health problems and make positive changes in their lives.

Non-Discrimination Policy: *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.*

Title IX Policy: The University of Texas at Arlington ("University") is committed to maintaining a learning and working environment that is free from discrimination based on sex in accordance with Title IX of the Higher Education Amendments of 1972 (Title IX), which prohibits discrimination on the basis of sex in educational programs or activities; Title VII of the Civil Rights Act of 1964 (Title VII), which prohibits sex discrimination in employment; and the Campus Sexual Violence Elimination Act (SaVE Act). Sexual misconduct is a form of sex discrimination and will not be tolerated. *For information regarding Title IX, visit* www.uta.edu/titleIX or contact Ms. Jean Hood, Vice President and Title IX Coordinator at (817) 272-7091 or jmhood@uta.edu.

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 in their courses by 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. Additional information is available at https://www.uta.edu/conduct/.

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.

Campus Carry: Effective August 1, 2016, the Campus Carry law (Senate Bill 11) allows those licensed individuals to carry a concealed handgun in buildings on public university campuses, except in locations the University establishes as prohibited. Under the new law, openly carrying handguns is not allowed on college campuses. For more information, visit http://www.uta.edu/news/info/campus-carry/

Student Feedback Survey: At the end of each term, students enrolled in face-to-face and online classes categorized as "lecture," "seminar," or "laboratory" are 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 via the SFS database is aggregated with that of other students enrolled in the course. Students' anonymity will be protected to the extent that the law allows. UT Arlington's effort to solicit, gather, tabulate, and publish student feedback is required by state law and aggregate results are posted online. Data from SFS is also used for faculty and program evaluations. For more information, visit http://www.uta.edu/sfs.

Final Review Week: for semester-long courses**,** 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 located at the end of the hall, south end of the building, near the stairs. 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.

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, or view the information at http://www.uta.edu/universitycollege/resources/index.php.

University Tutorial & Supplemental Instruction (Ransom Hall 205): UTSI offers a variety of academic support services for undergraduate students, including: 60 minute one-on-one tutoring sessions, Start Strong Freshman tutoring program, and Supplemental Instruction. Office hours are Monday-Friday 8:00am-5:00pm. For more information visit www.uta.edu/utsi or call 817-272-2617.

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

SPRING 2019 Academic Calendar

SPRING 2019	
Nov. 9	Registration Begins for Spring Term - Regular Session
Jan. 1	New Year's Day Holiday
Jan. 14	First day of classes
Jan. 14	Late registration
Jan. 15	Late registration
Jan. 16	Late registration
Jan. 17	Late registration
Jan. 21	Martin Luther King Jr. Day holiday
Jan. 30	Census date
March 11	Spring Vacation
March 12	Spring Vacation
March 13	Spring Vacation
March 14	Spring Vacation
March 15	Spring Vacation
March 16	Spring Vacation
March 29	Last day to drop classes; submit requests to advisor prior to 4:00 pm
April 1	Registration begins for Summer and Fall 2019 Terms
May 3	Last day of classes
May 4	Final exams (dept.)
May 6	Final exams
May 7	Final exams
May 8	Final exams
May 9	Commencement ceremonies
May 9	Final exams
May 10	Commencement ceremonies
May 10	Final exams
May 11	Commencement ceremonies

RESOURCES FOR STUDENTS

LIBRARY library.uta.edu
Research or General Library Help
Academic Plaza Consultation Services library.uta.edu/academic-plaza
Ask Us ask.uta.edu/
Library Tutorials library.uta.edu/how-to
Subject and Course Research Guides libguides.uta.edu
Librarians by Subject library.uta.edu/subject-librarians
Research Coaches http://libguides.uta.edu/researchcoach
Resources
A to Z List of Library Databases libguides.uta.edu/az.php

Course Reserves pulse.uta.edu/vwebv/enterCourseReserve.do
FabLab fablab.uta.edu/
Scholarly Communications (info about digital humanities, data management, data visualization, copyright, open educational resources, open access publishing, and more) http://library.uta.edu/scholcomm
Special Collections library.uta.edu/special-collections
Study Room Reservations openroom.uta.edu/
Environmental Health & Safety (http://www.uta.edu/ehsafety)