University of North Texas
Toulouse Graduate School
Advanced Data Analytics
INSD 5140
Data Analytics 2

Course Information

INSD 5130 – Data Analytics 1
Spring 2018 –January 16 – May 11, 2018
Class Meeting Time/Location – Tuesday, 6:00-7:20 pm, FRSC 111

Instructor Contact

Denise R Philpot, PhD, MBA
New College at Frisco, Room 106
Office hours: Tuesdays, 3:30 pm – 5:30 pm
Denise.Philpot@unt.edu

About the Professor / Instructor

Welcome to INSD 5130 Data Analytics 1. I am Dr. Denise Philpot, the instructor for this course and the Advanced Data Analytics program advisor. Prior to earning my doctoral degree in Applied Technology and Performance Improvement with a minor in Management Science, I was a systems analyst/customer account manager for Xerox Corporation. While teaching high school business courses I earned my MBA in Organizational Behavior/Human Resource Management. Like many of my students, I have a not followed the traditional academic path. The variety of career and academic experiences that we all have provide the foundation for interesting course discussions.

I am excited to have you in this course and look forward to learning more about you and your career goals. Together we will explore a variety of statistical analysis tools, learn about how and when to use them, interpret the outputs of the analysis, and describe the results in ways that will help us or others take appropriate actions to achieve the desired outcomes or goals. Together we will do great things!

Course Pre-requisites, Co-requisites, and/or Other Restrictions

This course requires that the student has successfully completed INSD 5130 Data Analytics 1, DSCI 5180 Introduction to Business Decision Process, or equivalent college graduate-level statistics course prior to enrollment.

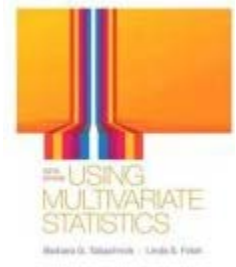
Required Materials

One textbook is required for this course. Other supplemental materials will be provided via a link to the UNT Willis Library website or included in the Content folders on Blackboard. Students will also need to have access to Microsoft Excel and IBM SPSS for data analysis assignments.

Hair, J. F., Jr., Black, W. C., Babin, B. J., and Anderson, R. E., (2010). *Multivariate Data Analysis, 7th ed.,* Upper Saddle River, NJ: Pearson Education, Inc.

Recommended Materials

One book is recommended for this course.



Tabachnick, B. G. and Fidell, L. S., (2013). *Using Multivariate Statistics (6th ed.).* Upper Saddle River, NJ: Pearson Education, Inc.

Additional Resources

Online textbook - Electronic Statistical Textbook (from StatSoft) go to the site at **http://www.statsoft.com/textbook/stathome.html**

Online tutorials and lectures - how2stats at http://www.youtube.com/user/how2stats/videos

Course Description

This course extends the concepts developed in Data Analytics 1 to multivariate and unstructured data analysis. Modern techniques of multivariate analysis, including association rules, classification methods, time series, text analysis and machine learning methods are explored and implemented with real-world business and industry data. The course will provide a hands-on introduction to state-of-practice technology and tools. The focus of the course is on the application and interpretation of the methods discussed.

Course Objectives

By the end of the course, students should be able to:

1. Understand and be able to apply a variety of multivariate data analysis techniques.
2. Apply advanced time series methods in context.
3. Understand and be able to apply techniques for analysis of text and unstructured data.
4. Apply advanced tools, such as Hadoop.
5. Apply in-database analysis tools.
6. Apply concepts learned in course to real world case studies.

Course Topics

1. Survey of multivariate interdependence and dependence analysis methods
2. Overview of classification methods
3. Discriminant analysis

4. Decision trees
5. Naïve Bayes
6. Time series analysis
7. Text Analysis
8. Advanced tools: MapReduce, Hadoop
9. In-database analytics
10. Team projects and presentations

Teaching Philosophy

It is my goal to create a learning environment in which students feel respected, are engaged in the activities, and bring their questions, experiences, and ideas to the classroom. For real learning to occur, we must work together to achieve a common goal: mastery of the curriculum and the ability to apply what is learned to future activities both in and out of the classroom. In support of the learning objective, I commit to you, to be fully engaged in the classroom, to be available outside of the classroom, and to share my knowledge and experiences with you to enhance the learning process. I believe that learning should be fun (not necessarily easy or without hard work) and that I can learn from you, too. I expect each student to work at their full capacity, respect others, and participate in the classroom so that their experiences can add to the overall learning experience. Lifelong learning is the foundation of my commitment to you for ensuring that the ideas, concepts, theories, and practices I bring to the classroom are current, relevant, and of value to you.

TECHNICAL REQUIREMENTS / ASSISTANCE

The following information is provided to assist you in preparation for the technological aspect of the course.

UIT Help Desk: http://www.unt.edu/helpdesk/index.htm
Hardware and software necessary to use Blackboard Learn:
http://www.unt.edu/helpdesk/bblearn/
Browser requirements: You need a browser that interfaces well with Blackboard Learn, such as Microsoft Internet Explorer or Mozilla Firefox.
http://kb.blackboard.com/pages/viewpage.action?pageId=84639794.
Word Processor
Creating and submitting files in Microsoft Office, the standard software for this course.

STUDENT TECHNICAL SUPPORT

The University of North Texas UIT Student Helpdesk provides student technical support in the use of Blackboard and supported resources. The student help desk may be reached at:
Email: helpdesk@unt.edu Phone: 940.565-2324
In Person: Sage Hall, Room 130
Our hours are:

- Monday-Thursday 8am-midnight
- Friday 8am-8pm
- Saturday 9am-5p
- Sunday 8am-midnight

IMPORTANT NOTE about Blackboard Downtime: **Bb Learn is unavailable every Saturday night from 11:00pm until 2:00am CDT Sunday morning for system maintenance.** Please remember this when planning your work in the course for the week.

Technical Skill Requirements

Students should be able to upload and download files, perform data analysis using Microsoft Excel, and access the Internet for course support materials. Effective navigation of Blackboard is necessary as course assignments and support materials will be made available through this application. Email will be used to communicate to students via the UNT provided student email accounts.

Netiquette

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. This includes but is not limited to comments made on discussion boards or other unacceptable communications between students in an online or blended learning environment. Inappropriate behaviors will be handled based upon the UNT Student Conduct and Discipline Policy which can be found at deanofstudents.unt.edu/conduct.

For those students that are new to online learning or assignments on a Learning Management System like Canvas, you may find these guidelines developed by Albion and Seth T. Ross to be very helpful.

"The Core Rules of Netiquette": http://www.albion.com/netiquette/corerules.html.

Course Requirements

Your final grade will be determined based on weekly analysis assignments, in-depth research projects and class participation: Class participation 20%; weekly analysis assignments 30%; research project phase 1 20%; and, the final research project/presentation 30%. The total number of points received will be divided by the total possible number of points.

Assignments	***Points Possible***	***Percentage of Final Grade***
Class Participation • ***Class discussion – 100 points*** • ***5 Journal assignments @ 20 points each***	*200 points*	*20%*
Weekly Assignments • ***10 homework assignments @ 30 points each***	*300 points*	*30%*
Data Analytics Research Project-Part 1	*200 points*	*20%*
Data Analytics Research Project-Final	*300 points*	*30%*
Total Points Possible	***1000 points***	***100%***

Grading

Course grades will be assigned based on this percentage with a standard 10-point grading scale (100% – 90%, A; 89% – 80%, B; 79% – 70%, C; 69% – 60%, D; 59% – 0%, F).

Course Assignment, Examination, and or Project Policies

Data Analytics Research Project
Part #1
Each student will complete an individual research project for this course. Part 1 of the project will be due mid-semester and consist of an outline of your proposed project including a problem statement or hypothesis that you would like to analyze. You will be required to acquire a data set of sufficient size to complete your analysis. Details for this assignment will be contained in the Course Project folder in our Blackboard course. A rubric will be provided along with suggestions and links to resources. The best project are ones that have meaning to you personally. Work related projects are highly encouraged. Part 1 is worth 200 points.

Part #2
The final project and presentation are due at the end of the course. Each student will submit a research paper that includes an introduction, brief literature review/industry analysis/history of the organization, problem statement/hypothesis, methods/analysis section, results, and discussion. Also part of the final project is a brief presentation which should include visual aids such as a PowerPoint presentation. Total points for the final project/presentation will be 300 points. It is expected that the paper be free from grammatical errors and appropriately use APA style for citations and reference list. The minimum requirement for the paper will be 6 pages of content, double-spaced, 1-inch margins, using Arial or Times Roman 12 point font. The submitted research paper should also include a separate cover page that includes your name and the title of your paper as well as a reference list formatted using the current APA style guide. You are not required to include an abstract for this paper. A rubric for the project will be provided. The paper and presentation are due on March 6th, 2018, at 10:00 pm CST. *Late papers will not be accepted*. The paper will be submitted for grading via software that checks for plagiarism. Plagiarism is a violation of the Student Code of Conduct and will be handled per university policy.

In Class Discussion (100 points)
I expect all students to participate in the class discussions. We learn more deeply when we are engaged in the learning activity. Your peers may offer thoughts and explanations that resonate with you better than the way I can describe the concept. Your questions may inspire others and take our learning experience to a more profound level of understanding. While you will not receive a weekly participation grade, your overall participation will be evaluated based upon your engagement in class. .

Journals (20 points each)
There will be four journal assignments. These are reflective in nature and are designed for you to share your thoughts and experiences related to the topic presented. There will be pre-reading assigned with each journal assignment that will be provided by your professor or come from the textbook. As graduate students, it is expected that your responses be thoughtful, grammatically correct, and show your understanding of the topic being discussed. Journal assignments are not seen by your peers and do not require responses to their entries.

Homework Assignments (10 assignments at 30 points each)
There will be 10 homework assignments given during the course that are related to material covered in the chapters. Assignments may include questions to be answered about a specific concept, analysis using provided data sets, interpretation of the results of the analysis, or questions related to the course material and how it was used or misused in a recent news story. There will be an assignment submission link provided in the appropriate folder for all homework assignments. Written responses are expected to be free of grammatical errors. Data analysis should include a brief discussion of the steps you used to complete the analysis.

Course Expectations

It is my goal to create a learning environment in which students feel respected, are engaged in the activities, and bring their questions, experiences, and ideas to the classroom. For real learning to occur, we must work together to achieve a common goal: mastery of the curriculum and the ability to apply what is learned to future activities both in and out of the classroom. In support of the learning objective, I commit to you, to be fully engaged in the classroom, to be available outside of the classroom, and to share my knowledge and experiences with you to enhance the learning process. I believe that learning should be fun (not necessarily easy or without hard work) and that I can learn from you, too. I expect each student to work at their full capacity, respect others, and participate in the classroom so that their experiences can add to the overall learning experience. Lifelong learning is the foundation of my commitment to you for ensuring that the ideas, concepts, theories and practices I bring to the classroom are current, relevant, and of value to you.

Policies

Assignment Policy / Late Work
All work for this course is due no later than 11:59 pm on the designated due date (Sundays, throughout the semester, unless specifically noted). **Any assignment submitted after that time will receive a highest possible score of 50%.** Additional points may be deducted when the assignment is graded based on the quality of the work submitted. **Work submitted more than 48 hours after the due date will not be accepted, and the student will receive a zero for that assignment.** Please don't lose valuable points this semester by turning in work late**.**

****Late work is subject to penalty described above unless previously approved by the instructor****

Instructor Responsibilities and Feedback

- As the instructor, it is my responsibility to help students grow and learn; provide clear instructions for projects and assessments, answer questions about assignments, identify additional resources as necessary, provide rubrics, and continually review and update course content based upon learning outcomes and changes in the field of study.

- Feedback on assignments will be provided in a timely manner. Students can expect responses to emails within 24 hours. Grades for weekly assignments will be posted the following week. Project grades will be posted as they are completed.

Turnitin Notice
All works submitted for credit must be original works created by the scholar uniquely for the class. It is considered inappropriate and unethical, particularly at the graduate level, to make duplicate submissions of a single work for credit in multiple classes, unless specifically requested by the instructor. Work submitted at the graduate level is expected to demonstrate higher-order thinking

skills and be of significantly higher quality than work produced at the undergraduate level. Turnitin is used as a tool to assist students in their scholarly writing to address plagiarism issues. It is recommended that students use this resource to ensure their work is free of copyright issues prior to final submission of their projects.

Class Participation
Students are required to login regularly to the online class site. The instructor will use the tracking feature in Blackboard to monitor student activity. Students are also required to participate in all class activities such as discussion board, chat or conference sessions and group projects.

Virtual Classroom Citizenship
The same guidelines that apply to traditional classes should be observed in the virtual classroom environment. Please use proper netiquette when interacting with class members and the professor.

Incompletes
Incompletes will only be given per university policy.

http://registrar.unt.edu/grades/incompletes

UNT POLICIES

Student Conduct and Discipline:
You are encouraged to become familiar with the University's Code of Student Conduct and the Policy of Academic Integrity found on the Dean of Students website. The policies contained on this website apply to this course. If you have questions regarding any of the information presented regarding academic integrity, please feel free to contact me. I will be happy to review any of your work prior to final submission for grading.

The UNT Code of Student Conduct can be found here:
http://deanofstudents.unt.edu/conduct

The UNT policy regarding Academic Integrity can be found here:
http://policy.unt.edu/policy/06-003

ADA Policy

The University of North Texas makes reasonable academic accommodation for students with disabilities. Students seeking reasonable accommodation must first register with the Office of Disability Accommodation (ODA) to verify their eligibility. If a disability is verified, the ODA will provide you with a reasonable accommodation letter to be delivered to faculty to begin a private discussion regarding your specific needs in a course. You may request reasonable accommodations at any time, however, ODA notices of reasonable accommodation should be provided as early as possible in the semester to avoid any delay in implementation. Note that students must obtain a new letter of reasonable accommodation for every semester and must meet with each faculty member prior to implementation in each class. Students are strongly encouraged to deliver letters of reasonable accommodation during faculty office hours or by appointment. Faculty members have the authority to ask students to discuss such letters during their designated office hours to protect the privacy of the student. For additional information see the Office of Disability Accommodation website at http://www.unt.edu/oda. You may also contact them by phone at 940.565.4323.

Important Notice for F-1 Students taking Distance Education Courses

Federal Regulation

To read detailed Immigration and Customs Enforcement regulations for F-1 students taking online courses, please go to the Electronic Code of Federal Regulations website at http://ecfr.gpoaccess.gov. The specific portion concerning distance education courses is located at "Title 8 CFR 214.2 Paragraph (f)(6)(i)(G)" and can be found buried within this document: http://frwebgate.access.gpo.gov/cgi-bin/get-cfr.cgi?TITLE=8&PART=214&SECTION=2&TYPE=TEXT

The paragraph reads:
(G) For F–1 students enrolled in classes for credit or classroom hours, no more than the equivalent of one class or three credits per session, term, semester, trimester, or quarter may be counted toward the full course of study requirement if the class is taken on-line or through distance education and does not require the student's physical attendance for classes, examination or other purposes integral to completion of the class. An on-line or distance education course is a course that is offered principally through the use of television, audio, or computer transmission including open broadcast, closed circuit, cable, microwave, or satellite, audio conferencing, or computer conferencing. If the F–1 student's course of study is in a language study program, no on-line or distance education classes may be considered to count toward a student's full course of study requirement.

University of North Texas Compliance

To comply with immigration regulations, an F-1 visa holder within the United States may need to engage in an on-campus experiential component for this course. This component (which must be approved in advance by the instructor) can include activities such as taking an on-campus exam, participating in an on-campus lecture or lab activity, or other on-campus experience integral to the completion of this course.

If such an on-campus activity is required, it is the student's responsibility to do the following:

(1) Submit a written request to the instructor for an on-campus experiential component within one week of the start of the course.
(2) Ensure that the activity on campus takes place and the instructor documents it in writing with a notice sent to the International Student and Scholar Services Office. ISSS has a form available that you may use for this purpose.

Because the decision may have serious immigration consequences, if an F-1 student is unsure about his or her need to participate in an on-campus experiential component for this course, s/he should contact the UNT International Student and Scholar Services Office (telephone 940-565-2195 or email internationaladvising@unt.edu) to get clarification before the one-week deadline.

Course Calendar – Spring 2018

Week	Topic / Required Reading	Recommended Reading	Assignments
Week 1 Jan 16	*Course overview and Syllabus review* *Chap 1: Overview of Multivariate Methods*	*Tabachnick – chaps 1-3*	*Complete student profile* *Complete discussion board*
Week 2 Jan 23	*Preparing to Apply Multivariate Analysis* *Chap 2: Examining your Data*	*Tabachnick – chap 1-3*	*Homework #1*
Week 3 Jan 30	*Preparing to Apply Multivariate Analysis* *Chap 3: Exploratory Factor Analysis*	*Tabachnick – chap 4*	*Homework #2*
Week 4 Feb 6	*Dependence Techniques* *Chap 4: Multiple Regression Analysis*	*Tabachnick – chap 5*	*Homework #3*
Week 5 Feb 13	*Dependence Techniques* *Chap 5: Multiple Discriminant Analysis*	*Tabachnick – chap 9*	*Homework #4*
Week 6 Feb 20	*Dependence Techniques* *Chap 6: Logistic Regression: Regression with a Binary Dependent Variable* *Chap 7: MANOVA and GLM*	*Tabachnick – chap 10, 7, 17*	*Homework #5*
Week 7 Feb 27	*Dependence Techniques* *Chap 8: Conjoint Analysis*		*Homework #6*

Week	Topic / Required Reading	Recommended Reading	Assignments
Week 8 Mar 5	*Project review and discussion*		*Submit initial project plan*
Spring Break March 12-16			
Week 9 Mar 20	*Interdependence Techniques* *Chap 9: Cluster Analysis*		*Homework #7*
Week 10 Mar 27	*Interdependence Techniques* *Chap 10: Multidimensional Scaling* *Chap 11: Analyzing Nominal Data with Correspondence Analysis*		*Homework #8*
Week 11 Apr 3	*Moving Beyond the Basic Techniques* *Chap 12: Structural Equations Modeling Overview*	*Tabachnick – chap 14*	*Homework #9*
Week 12 Apr 10	*Moving Beyond the Basic Techniques* *Chap 13: Confirmatory Factor Analysis* *Chap 14: Testing Structural Equation Models*	*Tabachnick – chap 13*	*Homework #10*
Week 13 Apr 17	*Overview of Text Mining*		
Week 14 Apr 24	*Overview of Decision Trees*		
Week 15 May 1	*Project review and discussion*		*Submit final project and presentation*
Week 16 May 8	*Project Presentation*		