DBAS 6004 – Quantitative Research Methods I
Spring 2024

INSTRUCTOR :	Dr. Arunachalam Narayanan (Chalam)
OFFICE:	BLB 379J (@ Denton campus)
OFFICE HRS:	**At Denton/ Zoom :**

- Monday (In Office) - 10:30 – Noon
- Tuesday (Zoom) – 6 – 7pm
- Wednesday (In Office) 10:30 – 11:30 am
- Thursday (Zoom) – 7:30 – 8:30 pm or by appointment

At Frisco:
During in person meeting days

Zoom link (When needed):   https://unt.zoom.us/my/chalamunt
E-MAIL (preferred):   chalam@unt.edu

About Instructor
I am the Farrington Professor and Assistant Chair in the department of Information Technology and Decision Sciences. I earned my PhD in Operations Management and MS in Industrial Engineering from Texas A&M University. I also earned a BE in Mechanical Engineering from College of Engineering, Guindy in India. Prior to my appointment at University of North Texas, he was a faculty member in the Industrial Distribution Program in College of Engineering at Texas A&M University (tenured in 2012) and a faculty member in the Bauer College of Business at University of Houston. I have consulted with several firms including Schlumberger, Gulf States Toyota, Lyondell Basell, Lufkin, Brenntag, Wilson (now NOV), HEB, Baker Hughes and non-profits like Salvation Army and Capital Area Food Bank. My dissertation was recognized by DSI and CSCMP in 2007 and has published in journals including POMS, JOM, DSJ, EJOR, Omega, IJPE, IJPR among others. I also created of a popular version of online beergame, which is now available at www.scgames.org

Textbooks:
1. Discovering Statistics Using IBM SPSS Statistics: North American Edition by Andy Field
2. HBR Guide to Data Analytics Basics for Managers (HBR Guide Series)

Software
Preferred: Excel, and IBM SPSS**; Good to have:** STATA, R, SAS, Minitab or JMP most are available through UNT.

Learning Management System (Canvas)
The course is on Canvas. Please check frequently for updates.

Course Description
The concepts and tools needed to design and analyze quantitative-studies. Specifically, how to collect, evaluate and examine quantitative data (both primary and secondary data) are introduced in this course. Students are also exposed to empirical data collection methods, such as surveys and covers sampling techniques, several types of data and appropriate analytical techniques. These include an introduction to univariate and bivariate statistics (i.e., chi-square, t- and z-

tests, the ANOVA family, correlation, and regression). In addition, the course helps students gain proficiency in using SPSS software to analyze and interpret empirical results.

Learning Goals
At the end of the course, you should:
1. Read and communicate in the language of statistics in quantitative studies
2. Interpret common probability distributions, statistical tables and articulate the role of experimental designs.
3. Understand the role of regression analysis, hypothesis testing and other parametric analysis in decision making:
4. Understand how Regression models can be used to analyze research data and test research hypotheses.
5. Understand how regression coefficients establish testable relationships between variables.
6. Understand when to use non-parametric testing
7. Become familiar with some major statistical packages, such as Excel and IBM SPSS. Exposure to other tools such as Minitab and JMP.

Class Attendance
Regular class attendance and informed participation are expected at a cohort-based course, since all are senior-level executives. Two or more absences will result in failing grade.

Teaching Philosophy
This is a cohort-based DBA course and as such much of the learning responsibility falls upon the student. However, as an instructor – I will act as a facilitator in help you achieve the stated goal of this course. In the canvas and during lecture, you will find lecture materials, videos and useful links to help you understand the various topics discussed in this course. The discussion boards, assignments (problems with data) will be provided to run and interpret the software output. I encourage questions from the class, at the same time – I would also want you to use all the available resources in canvas and reference materials to achieve your objective.

In order to ensure you understand the material, we will have two projects for this course. For one of them – I will provide the data with specific questions and you will analyze, interpret and write a report about the results. The second one is self-directed, where you bring the data, ask the right questions and provide the answers using the statistical skills learnt in this course. This is the best way to ensure you assimilate the topics covered in this class. Remember, every business decision needs justification, for that we need data and the next step is to use analytics (statistics) to examine it.

Course Technology & Skills
Minimum Technology Requirements, please ensure access to the following:
• Computer and Reliable internet access
• Communication tools such as Zoom or Teams
• Microsoft Office Suite
• Canvas Technical Requirements (https://clear.unt.edu/supported-technologies/canvas/requirements)

Computer Skills & Digital Literacy
Provide a list of course-specific technical skills learners must have to succeed in the course, like
- Sending and receiving email
- Creating, sending, and receiving Microsoft Word documents
- Create, edit and do analysis (using simple formulas) in Microsoft Excel
- Posting to discussion boards
- Printing Word documents or opening and printing PDF files, using free Adobe Acrobat Reader
- Navigating Canvas

UIT Help Desk:
UIT Student Help Desk site (http://www.unt.edu/helpdesk/index.htm)
Email: helpdesk@unt.edu
Phone: 940-565-2324; In Person: Sage Hall, Room 130
For additional support, visit Canvas Technical Help
(https://community.canvaslms.com/docs/DOC-10554-4212710328)

Rules of Engagement
Rules of engagement refer to the way students are expected to interact with each other and with their instructors. Here are some general guidelines:
- While the freedom to express yourself is a fundamental human right, any communication that utilizes cruel and derogatory language on the basis of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law will not be tolerated.
- Treat your instructor and classmates with respect in any communication online or face-to-face, even when their opinion differs from your own.
- Ask for and use the correct name and pronouns for your instructor and classmates.
- Speak from personal experiences. Use "I" statements to share thoughts and feelings. Try not to speak on behalf of groups or other individual's experiences.
- Use your critical thinking skills to challenge other people's ideas, instead of attacking individuals.
- Avoid using all caps while communicating digitally. This may be interpreted as "YELLING!"
- Be cautious when using humor or sarcasm in emails or discussion posts as tone can be difficult to interpret digitally.
- Avoid using "text-talk" unless explicitly permitted by your instructor.
- Proofread and fact-check your sources.
- Keep in mind that online posts can be permanent, so think first before you type. See these Engagement Guidelines (https://clear.unt.edu/online-communication-tips) for more information.

Other Course policies
Academic Integrity
This course adheres to the UNT policy on academic integrity. The policy can be found at http://policy.unt.edu/sites/default/files/06.003.pdf . If you engage in academic dishonesty

related to this class, you will receive a failing grade on the test or assignment, and a failing grade in the course. In addition, the case will be referred to the Dean of Students (for graduate courses, also the Dean of Toulouse Graduate School) for appropriate disciplinary action. The term "cheating" includes, but is not limited to,

(1) use of any unauthorized assistance in taking quizzes, tests, or examinations;

(2) dependence upon the aid of sources beyond those authorized by the instructor in writing papers, preparing reports, solving problems, or carrying out other assignments;

(3) the usage, without permission, of tests or other academic material belonging to a faculty member or staff of the university; or

(4) dual submission of a paper or a project without express permission from the instructor.

The term "plagiarism" includes, but is not limited to, the use, by paraphrase or direct quotation, of the published or unpublished work of another person without full or clear acknowledgment, or proper citation and reference. It also includes the unacknowledged use of materials prepared by another person or agency in the selling of term papers or other academic materials. (Source: Code of Conduct and Discipline at the University of North Texas; please check online for the most updated version and related definitions.)

Students with Disabilities
UNT complies with the Americans with Disabilities Act in making reasonable accommodations. Please see your instructor as soon as possible to discuss.

Student Perceptions of Teaching (SPOT)
Student Perceptions of Teaching (SPOT) is a requirement for all organized classes at UNT. This short Web-based survey will be available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in this feedback from my students, as I work to continually improve my teaching. I consider SPOT to be an important part of your class participation.

Campus Closures
Should UNT close campus, it is your responsibility to keep checking your official UNT e-mail account to learn if your instructor plans to modify class activities, and how.

Course Materials for Remote Instruction
Remote instruction may be necessary in some instances. Students will need access to a webcam, microphone and laptop with Office 365 and access to UNT VPN to participate in fully remote portions of the class. Additional required classroom materials for remote learning include: access to UNT VPN so that software like SPSS could be accessed without interruptions. Information on how to be successful in a remote learning environment can be found at https://online.unt.edu/learn

ADA Policy
UNT makes reasonable academic accommodation for students with disabilities. Students seeking accommodation must first register with the Office of Disability Access (ODA) to verify their eligibility. If a disability is verified, the ODA will provide a student with an accommodation letter to be delivered to faculty to begin a private discussion regarding one's specific course needs. Students may request accommodations at any time; however, ODA

notices of 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 accommodation for every semester and must meet with each faculty member prior to implementation in each class. For additional information see the ODA website (https://disability.unt.edu/). The College of Business Administration complies with the Americans with Disabilities Act in making reasonable accommodations for qualified students with disability. If you have an established disability as defined in the "Act" and would like to request accommodation, please contact the ODA and your instructor (Dr. Chalam) as soon as possible: the instructor's office hours and phone number are in the syllabus.

Prohibition of Discrimination, Harassment, and Retaliation (Policy 16.004)
The University of North Texas (UNT) prohibits discrimination and harassment because of race, color, national origin, religion, sex, sexual orientation, gender identity, gender expression, age, disability, genetic information, veteran status, or any other characteristic protected under applicable federal or state law in its application and admission processes; educational programs and activities; employment policies, procedures, and processes; and university facilities. The University takes active measures to prevent such conduct and investigates and takes remedial action when appropriate.

Retention of Student Records
Student records pertaining to this course are maintained in a secure location by the instructor of record. All records such as exams, answer sheets (with keys), and written papers submitted during the duration of the course are kept for at least one calendar year after course completion. Course work completed via the Canvas online system, including grading information and comments, is also stored in a safe electronic environment for one year. Students have the right to view their individual record; however, information about student's records will not be divulged to other individuals without proper written consent. Students are encouraged to review the Public Information Policy and the Family Educational Rights and Privacy Act (FERPA) laws and the University's policy. See UNT Policy 10.10, Records Management and Retention for additional information.

Acceptable Student Behavior
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. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Dean of Students to consider whether the student's conduct violated the Code of Student Conduct. The University's expectations for student conduct apply to all instructional forums, including University and electronic classroom, labs, discussion groups, field trips, etc. Visit UNT's Code of Student Conduct (https://policy.unt.edu/policy/07-012) to learn more.

Emergency Notification & Procedures
UNT uses a system called Eagle Alert to quickly notify students with critical information in the event of an emergency (i.e., severe weather, campus closing, and health and public safety emergencies like chemical spills, fires, or violence). In the event of a university closure, please refer to Canvas for contingency plans for covering course materials.

Course Main components and Grading
Your total grade in the course is on a 1000-point grading scale. There are 4 components to it –
class attendance and informed participation, discussion boards and assignments, two projects
(one provided by instructor and another self-directed)

Class attendance and informed participation (200 points)
As a cohort-based course and since all the students are senior-level executives, attendance for
this course will be expected. Two or more absences will result in a failing grade. At the end of
each class meeting, students will be awarded up to 50 points based on their respective
participation level.

Discussion boards and assignments (200 points)
As part of your learning experience in this course, you will be required to participate in several
discussions board. You are responsible for writing a 200-word response regarding the week's
readings or assignments. In your post, you will respond to the materials for the week. Do not
summarize what you have read or analyze. Instead, respond to implied ideas in the reading, plus
evaluate and elaborate on the main points.

Project 1 (Instructor provided data) (250 points)
This will be most likely be a secondary data – related to ESG values of the companies. This data
will be provided during 3rd month of our meeting and the analysis and report are expected to be
delivered between the 3rd and 4th meeting – that is around April 10th. The report should not be
more than 3-4 pages and analysis files and details can be attached as appendix.

Project 2 (with your own data) (350 points)
The project should involve data you collected personally, including survey data, company
data, personal data, or archival data from any source (public and private) – proper
acknowledgement must be given for the source. You may expand on work you started in
your previous semester, as long as you perform some original data analysis. Project status
updates will take place throughout the semester. Ideally, the project choice and data
collection should be complete (near completing) around March 23-24 time frame. Results of
your analysis will be presented to class during the last day of the semester.

Deliverables include
(1) your **data set** in Excel format or csv format,
(2) your **presentation slides** in PowerPoint format, and (3) your **methods write-up** in
Word/pdf format.

Grading Rubric for this project 2:
Data – 30%, Analysis – 30%, Report – 20%, Presentation – 20%

Course schedule (topics may be tentative and modified as needed)

Module 1 (in person meeting day – Saturday – Jan 20, 2024)
Textbook chapters
Discovering Statistics:
Chapter 1: Why is my evil lecturer forcing me to learn statistics?
Chapter 2: The spine of statistics (portion)
Chapter 4: The IBM SPSS statistics environment
Chapter 5: Exploring Data with Graphs

HBR Guide to Data Analytics Basics for Managers
Introduction and Chapters 1 to 4.

With basic introduction to construct design and development and introduction to different data types.

Three Discussion boards and assignments will be given between Jan 20th and Feb 17th – with appropriate time for completion.

Module 2 (in person meeting day – Saturday – Feb 24, 2024)
Textbook chapters
Discovering Statistics:
Chapter 2: The spine of statistics (remaining portion)
Chapter 3: The Phoenix of statistics
Chapter 6: The Beast of bias
Chapter 10: Comparing two means
Chapter 7: Non-parametric models (Portion – what, when and how to use)

HBR Guide to Data Analytics Basics for Mangers
Chapters 13 and 16, Discussion board-based chapters – 5 and 18

Three Discussion boards and assignments will be given between Feb 24th and Mar 23rd – with appropriate time for completion.

Module 3 (in person meeting days – Saturday and Sunday – March 23-24, 2024)
Textbook chapters
Discovering Statistics:
Chapter 8: Correlation
Chapter 9: The Linear Regression
Chapter 11: Moderation and Mediation
Chapter 19: Categorical outcome: Chi-square (alone)
Chapter 20: Categorical outcomes: Logistic Regression

HBR Guide to Data Analytics Basics for Mangers
Chapters 9,10, 11 and 14

Two discussion boards and Project 1 will be given between March 24th and April 17th –

with appropriate time for completion.

Module 4 (in person meeting day – Saturday April 27, 2024)
Textbook chapters
Discovering Statistics:
Chapter 12: GLM1: Comparing several independent means (ANOVA part alone)
Chapter 13: GLM2: Comparing means adjusted for other predictors (ANCOVA)
Chapter 14: Exploring Factor analysis

HBR Guide to Data Analytics Basics for Mangers
Chapters 12, 15, 17, 19 and 20 (last 3 chapters help you in communicating the results of the analysis)

Most likely – there will be delay and modification in analysis of your project 2. Expected submission on April 28th will the initial presentation of results, and at least 2 weeks will be given to fine tune the report and analysis.

Looking forward to an engaging semester ahead!