Course Information
ADTA 5130 – Data Analytics 1
Fall 2019 – Aug 26, 2019 – Dec 13, 2019
Class Meeting Time/Location – Wednesday, 6:00 - 7:20 pm. Frisco Room 111

Instructor Contact
Abdulrahman Habib, PhD
New College at Frisco, Room 106
Office hours: Wednesday, 4:30 pm – 5:30 pm
Habib@unt.edu

About the Professor / Instructor
Welcome to ADTA 5130 Data Analytics 1. I am Dr. Abdulrahman Habib, you can call me Habib. I will be your instructor for this course. I joined UNT advance data analytics program after 13 years of industry experience in IT project management. Like many of you, I have a not followed the traditional academic path. My interdisciplinary education enabled me to gain substantial work experience as an IT project manager. I have a bachelor’s degree in computer science, a master’s in engineering management, and PhD in information science.

I am passionate about Information systems role in human development. I led projects in e-government, ERP, IT infrastructure, security, mobile applications, HRIS implementations, and entrepreneurship projects. I directed diverse project teams from 42 nationalities and dealt effectively with all levels of stakeholders. I am recognized as a competent leader and communicator by Toastmaster International. I am also an entrepreneur with many lessons learned and a dream to convert some of my research into a viable business. I enjoy doing practical research in smart cities, mobility, open data, technology evaluation, and technology adoption.

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 college level mathematics and a basic statistics course prior to enrollment or have relevant current work experience that will enable them to be successful in an introductory graduate-level statistics course.
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 Module folders on Canvas. Students will also need to have access to Microsoft Excel for data analysis assignments.


Suggested Materials

One book is suggested for this course.


Course Description

This course provides an overview of quantitative methods essential for analyzing data, with an emphasis on business and industry applications. Topics include identification of appropriate metrics and measurement methods, descriptive and inferential statistics, experimental design, parametric and non-parametric tests, simulation, and linear and logistic regression, categorical data analysis, and select unsupervised learning techniques. Standard and open source statistical packages will be used to apply techniques to real-world problems.

Course Objectives

By the end of the course, students should be able to:
1. Understand and apply experimental design and sampling methodologies.
2. Understand and apply appropriate parametric and non-parametric tests.
3. Develop and articulate results from linear regression models.
4. Apply categorical data analysis methods.
5. Apply statistical software tools to perform data analysis projects.
6. Apply concepts learned in course to real world case studies.

Course Topics

1. Review of fundamentals of data analysis
2. Review of probability
3. Parameter estimates
4. Testing hypotheses and goodness of fit
5. ANOVA
6. Analysis of categorical data
7. Linear and multiple regression
8. Logistic regression

TECHNICAL REQUIREMENTS / ASSISTANCE

Access and Log in Information
This course was developed and will be facilitated utilizing the CANVAS Learning Management System. To get started with the course, please go to: https://unt.instructure.com/login/ldap

You can access student guides on Canvas at this site. You will need your EUID and password to log in to the course. If you do not know your EUID or have forgotten your password, please go to: https://ams.unt.edu/

The Canvas Student app has a mobile version of Canvas that helps students stay current with their courses anywhere. Download the Canvas Student app on Android and iOS devices.

For iOS devices, see:
How do I download the Canvas Student app on my iOS device?
https://community.canvaslms.com/docs/DOC-9831-18561185379

For Android devices, see: How do I download the Canvas Student app on my Android device?
https://community.canvaslms.com/docs/DOC-9758-18555199445

Student Academic Support Services

Links to all these services can be found on the Online Student Resources tab within the Canvas Help function.

- Academic Resource Center: buy textbooks and supplies, access academic catalogs and programs, register for classes, and more.
- Center for Student Rights and Responsibilities: provides Code of Student Conduct along with other useful links.
- Office of Disability Accommodation: ODA exist to prevent discrimination on the basis of disability and to help students reach a higher level of independence. https://disability.unt.edu/
- Counseling and Testing Services: CTS provides counseling services to the UNT community as well as testing services; such as admissions testing, computer-based testing, career testing and other tests. http://studentaffairs.unt.edu/counseling-and-testing-services
- UNT Libraries: online library services http://www.library.unt.edu/services
- Online Tutoring: chat in real time, mark up your paper using drawing tools and edit the text of your paper with the tutor's help.
- The Learning Center Support Programs: various program links provided to enhance the student experience. https://learningcenter.unt.edu/
• Supplemental Instruction: program for every student, not just for students that are struggling.
• UNT Writing Lab: offers free writing tutoring to all UNT students, undergraduate and graduate. http://writingcenter.unt.edu/
• Math Tutor Lab: http://math.unt.edu/mathlab/
• Succeed at UNT: how to be a successful student information. https://success.unt.edu/

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

UIT Help Desk: http://it.unt.edu/help-desk-resources-students

Browser requirements: You need a browser that interfaces well with Canvas, such as Microsoft Internet Explorer or Mozilla Firefox. https://clear.unt.edu/supported-technologies/canvas/requirements

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 Canvas 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-5pm
• Sunday 8am-midnight

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 Canvas 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.


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 40%; research project phase 1 15%; and, the final research project/presentation 25%. The total number of points received will be divided by the total possible number of points.

<table>
<thead>
<tr>
<th>Assignments</th>
<th>Points Possible</th>
<th>Percentage of Final Grade</th>
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<tbody>
<tr>
<td>Class Participation</td>
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<tr>
<td>• Class attendance and participation – 100 points</td>
<td>200 points</td>
<td>20%</td>
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<tr>
<td>• 5 journal assignments @ 20 points each</td>
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<tr>
<td>Weekly Assignments</td>
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<tr>
<td>• 14 chapters quizzes @ 10 points each</td>
<td>400 points</td>
<td>40%</td>
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<tr>
<td>• 12 homework assignments @ 20 points each</td>
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<tr>
<td>Individual Data Analytics Research Project-Part 1</td>
<td>150 points</td>
<td>15%</td>
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<tr>
<td>Individual Data Analytics Research Project-Final</td>
<td>250 points</td>
<td>25%</td>
</tr>
<tr>
<td>Total Points Possible</td>
<td>1000 points</td>
<td>100%</td>
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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

Individual 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 Final Project folder in our Canvas 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 150 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 250 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. Make sure to check the paper due date. *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.

Class Participation and Attendance (100 points)
Learning happens when students are actively engaged. You are expected to come prepared to class, share your thoughts, ask questions, and contribute to the overall learning environment. It is expected that you will attend regularly and communicate with the professor if you are unable to be in class.

Journals (20 points each)
There will be five 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.

Chapter Quizzes
There will be a quiz for each Lind textbook chapter. Quizzes will be worth 10 points each and may be taken up to two (2) times with the highest earned grade counted toward your point total. The quizzes will be multiple questions designed to reinforce the textbook content. Quizzes need to be completed by the due date. Quizzes will be due as indicated on the course schedule. Times listed are Central Standard Time

Homework Assignments
(H#1 – 60 points; H#2 – 50 points; H#3 – 50 points; H#4 – 50 points; H#5 – 50 points)
There will be five (5) 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
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. Any assignment submitted after that time will receive a highest possible score of 60%. Additional points may be deducted when the assignment is graded based on the quality of the work submitted. 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 except in weekends. 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 Canvas 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.

**Sexual Assault Prevention**

UNT is committed to providing a safe learning environment free of all forms of sexual misconduct, including sexual harassment, sexual assault, domestic violence, dating violence, and stalking. Federal laws (Title IX and the Violence Against Women Act) and UNT policies prohibit discrimination on the basis of sex, and therefore prohibit sexual misconduct. If you or someone you know is experiencing sexual harassment, relationship violence, stalking, and/or sexual assault, there are campus resources available to provide support and assistance. UNT’s Survivor Advocates can assist a student who has been impacted by violence by filing protective orders, completing crime victim’s compensation applications, contacting professors for absences related to an assault, working with housing to facilitate a room change where appropriate, and connecting students to other resources available both on and off campus. The Survivor Advocates can be reached at SurvivorAdvocate@unt.edu or by calling the Dean of Students Office at 940-565-2648. Additionally, alleged sexual misconduct can be non-confidentially reported to the Title IX Coordinator at oeo@unt.edu or at (940) 565 2759.

**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:
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.
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<thead>
<tr>
<th>Week</th>
<th>Topic / Required Reading (Lind)</th>
<th>Suggested Reading (Salkind)</th>
<th>Assignments</th>
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<tbody>
<tr>
<td>Week 2</td>
<td>Overview of basic statistics &lt;br&gt;Read Ch2. Describing Data: Frequency Tables, Frequency Distributions, and Graphic Presentation</td>
<td>Chap 1: Statistics or sadistics? It’s up to you</td>
<td>1. Read Chapter 2 &lt;br&gt;2. Complete Chapter 2 Quiz by Sept 8 &lt;br&gt;3. Complete Homework #2 by Sept 8</td>
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<td>Week 3</td>
<td>Overview of basic statistics &lt;br&gt;Read Ch3. Describing Data: Numerical Measures &lt;br&gt;Read Ch4. Describing Data: Displaying and Exploring Data</td>
<td>Chap 2 Computing and understanding averages: means to an end &lt;br&gt;Chap 3 Vive la difference: understanding variability</td>
<td>1. Read Chapters &lt;br&gt;2. Complete Chapters Quizzes by Sept 15 &lt;br&gt;3. Complete Homework #3 by Sept 15</td>
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<td>Week 4</td>
<td>Probability &lt;br&gt;Read Ch5. A Survey of Probability Concepts</td>
<td>Chap 4 A picture is worth a thousand words</td>
<td>1. Read Chapters &lt;br&gt;2. Complete chapter 5 Quiz by Sept 22 &lt;br&gt;3. Complete Homework #4 by Sept 22</td>
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<td>Week 6</td>
<td>Sampling Methods and Central Limit Theorem &lt;br&gt;Read Ch.8 Sampling Methods and the Central Limit Theorem</td>
<td>Chap 10: Only the lonely: the one-sample z-test (interpreting z-test)</td>
<td>1. Read Chapters &lt;br&gt;2. Complete Quiz by Oct 6 &lt;br&gt;3. Complete Homework #6 by Oct 6</td>
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<td>Week</td>
<td>Topic / Required Reading (Lind)</td>
<td>Suggested Reading (Salkind)</td>
<td>Assignments</td>
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| Week 7     | Confidence Intervals                              | Chap 5 Ice cream and crime: computing correlation coefficients                               | 1. Read Chapters  
2. Complete Quiz by Oct 13  
3. Complete Journal #2– Due Oct 13  
4. Complete Homework #7 by Oct 13 |
| Oct 7      | Read Ch9. Estimation of Confidence Intervals      | Chap 6 Just the truth: an introduction to understanding reliability and validity             |                                                                            |
| Week 8     | One and Two Sample Tests of Hypotheses           | Chap 7 Hypotheticals and you: testing your questions                                         | 1. Read Chapter 10  
2. Complete the Quiz by Oct 20  
3. Complete Homework #8 by Oct 20 |
| Oct 14     | Read Ch10. One-Sample Tests of Hypothesis        |                                                                                            |                                                                            |
| Week 9     | One and Two Sample Tests of Hypotheses           |                                                                                            |                                                                            |
| Oct 21     | Read Ch11. Two-Sample Tests of Hypothesis        |                                                                                            |                                                                            |
| Week 10    | ANOVA                                            | Chap 11 T(ea) for two: tests between the means of different groups  
Chap 12 T(ea) for two (again): tests between the means of related groups | 1. Read Chapter  
2. Complete Quiz by Nov 3  
3. Complete Homework #10 by Nov 3 |
| Oct 28     | Read Ch.12 Analysis of Variance                  |                                                                                            |                                                                            |
| Week 11    | Correlation, Linear, and Multiple Regression     | Chap 15 Cousins or just good friends? Testing relationships and the significance of the correlation coefficient | 1. Read Chapter  
2. Complete Quiz by Nov 10  
3. Complete Homework #11 by Nov 10 |
| Nov 4      | Read Ch13. Correlation and Linear Regression      |                                                                                            |                                                                            |
| Week 12    | Correlation, Linear, and Multiple Regression     | Chap 15 Cousins or just good friends? Testing relationships and the significance of the correlation coefficient | 1. Read Chapter  
2. Complete Quiz by Nov 17  
3. Complete Homework #12 by Nov 17 |
<p>| Nov 11     | continued                                        |                                                                                            |                                                                            |</p>
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<th>Week</th>
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<th>Suggested Reading (Salkind)</th>
<th>Assignments</th>
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<tr>
<td>Week 13</td>
<td>Read Article– Organization Design Challenges Resulting from Big Data</td>
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<td>1. Complete Journal #4 – Due Nov 24</td>
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<td>Nov 18</td>
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<tr>
<td>Week 14</td>
<td><strong>Correlation, Linear, and Multiple Regression</strong></td>
<td>Chap 16 Predicting who’ll win the super bowl: using linear regression</td>
<td>2. Read Chapters</td>
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<tr>
<td>Nov 25</td>
<td>Read Ch14. Multiple Regression Analysis</td>
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<td>3. Complete Quiz by Dec 1</td>
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<td></td>
<td>Complete Reflection Journal</td>
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<td>4. Complete Journal #5</td>
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<tr>
<td>Week 15</td>
<td><strong>Presentations</strong></td>
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<td>Data Analytics Project and Presentation and Paper Due Dec 4</td>
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<td>Dec 2</td>
<td>Project Presentations and Paper</td>
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**Chap 17 What to do when you’re not normal: chi-square and some other non-parametric tests**

**Chap 18 Some other (important) statistical procedures you should know about**