



TENTATIVE SYLLABUS - ECO 578 – 01W, 02W

Statistical Methods

Summer – I 2016

Instructor: Dr. Chuck Arize
Office Location: BA 212
Office Hours: T & F 2.00 P.M. – 3.00 P.M.
Office Phone: (903) 886-5691
Office Fax: (903) 886-5601
University Email Address: chuck.arize@tamuc.edu

Preferred Form of Communication: Web Based Class
Communication Response Time: Meets 06/06/2016 through 07/07/2016

COURSE INFORMATION

Textbook(s) Required: This semester edition of *“Statistics Classnotes by Economics and Finance Department”*

****Must have this classnote, Available only in the university bookstores**

Optional but not required text: Since you have had BA541 or BA302, you may find a book in the library as supplement.

PowerPoint: In order to gain more understanding in the class note book, all of you **must go through the PowerPoint of each chapter thoroughly**. See course-home in eCollege for more information.

IMPORTANT NOTICE

***Net Profit from the sales of classnotes is used to fund the department’s scholarships or excellence awards. Since 1994, we have given over 215 scholarships from this fund.

*** Note that this is a tentative syllabus meaning that I can change (a) certain dates for the exams and (b) certain topics to be covered.

*** Since this is a graduate statistics course, I will constantly assume that students have mastered undergraduate statistics work. My classnote covers the most relevant materials, so a student may refer to other texts, if necessary. However, I believe that a student can make an “A” using only the classnote book.

***** If you have not taken any statistics course in the last two years, my suggestion is that you borrow a statistics book from the nearest library to aid your understanding of my classnotes or take the first pre course BA 501. However, I will focus on the classnotes in teaching the class.**

***** Also, note that I do not return your graded paper, but upon request I will be able to tell you what you missed on a test via e-mail. (Request period is 2 days after receiving exam grade)**

***** Although you have your classnote book as well as other books, available in the library, you are not permitted to copy from your textbook due to copyright protection for author and publishers.**

Course Description: A course dealing with statistical concepts including measures of central tendency and dispersion, probability distributions, the Central Limit Theorem, sampling, estimation, hypothesis testing, analysis of variance, correlation and regression analysis.

Additional Course Description: Course Prerequisite BA 302/ BA 501/ ECO 302 / ECO 502 or acceptable undergraduate course in statistics.

Student Learning Outcomes

Course Objectives: The objective of this course is to provide a foundation for the graduate business student on basic principles of statistics to include measurements of location and dispersion, probability, probability distributions, sampling, estimation, hypothesis testing, regression and correlation analysis, and multiple regression. The following are specific objectives for the course that the student will:

- 1) Learn how to calculate and apply measures of location and measures of dispersion -- grouped and ungrouped data cases.
- 2) Learn how to apply discrete and continuous probability distributions to various business problems.
- 3) Understand the hypothesis testing:
 - 3.1 Be able to perform Test of Hypothesis
 - 3.2 calculate confidence interval for a population parameter for single sample and two sample cases.
 - 3.3 Understand the concept of p-values.
- 4) Learn non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.
- 5) Understand regression analysis:
 - 5.1 Be able to compute and interpret the results of Bivariate Regression
 - 5.2 Be able to compute and interpret the results of Multivariate Regression.
 - 5.3 Be able to compute and interpret Correlation Analysis
 - 5.4 Be able to perform ANOVA and F-test.
 - 5.5 Be able to understand both the meaning and applicability of a dummy variable.
 - 5.6 Be able to understand the assumptions which underline a regression model.
 - 5.7 Be able to perform a multiple regression using computer software.

*****For more details concerning the above course objectives, see the last page.**

COURSE REQUIREMENTS

Materials we provide for the Class:

1. We provide Power Point Presentation for each lecture. You can go to myleo and visit eCollege you will find the Module on the left hand and then click lecture, then you can listen to the video for the specific chapter. If you want to print out a specific Power Point, you can go to Doc-sharing, and click Power Point version and scroll down to see the downloadable documents so you can print it out.
2. In classnotes, there are lots of examples and exercises to learn and practice.
3. In Doc-sharing, we also provide the solutions for each homework so that you can check your work after finished. You can download the solutions of the homework and use them to practice.
4. We do have class-live sessions, and you will be informed before each class-live session.
5. In welcome email which we sent you at the beginning of the semester, we have two attachments, one is Class Live Handout and another one is the arithmetic mean. You can review these documents before your book arrives so that you do not get behind the class.

Student Responsibilities: Classroom Demeanor --“All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment.” See Student’s Guide Book.

GRADING

Final grades in this course will be based on the following scale:

A = 90%-100%

B = 80%-89%

C = 70%-79%

D = 60%-69%

F = 59% or Below

Grading Policy: Grade Component

Online Class	
	Weight %
Midterm Exam	30%
Final Exam	50%
Journal Article & Project	20%
Total	100%

Assessments:

Grade explanation by assessment type (percentage or points toward final grade)

NOTE THE FOLLOWING

1. This syllabus is tentative for the semester. It is meant to be a guide. Certain topics may be stressed more or less than indicated in the class note books and, depending on class progress, certain topics may be omitted.
2. Homework problems will be recommended on a regular basis.
3. Missed examination: A missed examination will be considered as 'F'.

TECHNOLOGY REQUIREMENTS

- To fully participate in online courses you will need to use a current Flash enabled browser. For PC users, the suggested browser is Google Chrome or Mozilla Firefox. For Mac users, the most current update of Firefox is suggested.
- You will need regular access to a computer with a broadband Internet connection. The minimum computer requirements are:
 - 512 MB of RAM, 1 GB or more preferred
 - Broadband connection required courses are heavily video intensive
 - Video display capable of high-color 16-bit display 1024 x 768 or higher resolution
- You must have a:
 - Sound card, which is usually integrated into your desktop or laptop computer
 - Speakers or headphones.
 - *For courses utilizing video-conferencing tools and/or an online proctoring solution, a webcam and microphone are required.
- Both versions of Java (32 bit and 64 bit) must be installed and up to date on your machine. At a minimum Java 7, update 51, is required to support the learning management system. The most current version of Java can be downloaded at: [JAVA web site](http://www.java.com/en/download/manual.jsp)
<http://www.java.com/en/download/manual.jsp>
- Current anti-virus software must be installed and kept up to date.
- Run a browser check through the Pearson LearningStudio Technical Requirements website. [Browser Check](http://help.college.com/LS_Tech_Req_WebHelp/en-us/#LS_Technical_Requirements.htm#Browsert) http://help.college.com/LS_Tech_Req_WebHelp/en-us/#LS_Technical_Requirements.htm#Browsert

Running the browser check will ensure your internet browser is supported.

Pop-ups are allowed.

JavaScript is enabled.

Cookies are enabled.

- You will need some additional free software (plug-ins) for enhanced web browsing. Ensure that you download the free versions of the following software:
 - [Adobe Reader](https://get.adobe.com/reader/) <https://get.adobe.com/reader/>

- [Adobe Flash Player](https://get.adobe.com/flashplayer/) (version 17 or later)
 - [Adobe Shockwave Player](https://get.adobe.com/shockwave/)
 - [Apple Quick Time](http://www.apple.com/quicktime/download/)
- At a minimum, you must have Microsoft Office 2013, 2010, 2007 or Open Office. Microsoft Office is the standard office productivity software utilized by faculty, students, and staff. Microsoft Word is the standard word processing software, Microsoft Excel is the standard spreadsheet software, and Microsoft PowerPoint is the standard presentation software. Copying and pasting, along with attaching/uploading documents for assignment submission, will also be required. If you do not have Microsoft Office, you can check with the bookstore to see if they have any student copies.
 - For additional information about system requirements, please see: [System Requirements for LearningStudio](https://secure.college.com/tamuc/index.learn?action=technical)

ACCESS AND NAVIGATION

Pearson LearningStudio (eCollege) Access and Log in Information

This course will be facilitated using Pearson LearningStudio, the learning management system used by Texas A&M University-Commerce. To get started with the course, go to [myLeo](http://www.tamuc.edu/myleo.aspx).

You will need your CWID and password to log in to the course. If you do not know your CWID or have forgotten your password, contact Technology Services at 903.468.6000 or helpdesk@tamuc.edu.

It is strongly recommended that you perform a “Browser Test” prior to the start of your course. To launch a browser test, login to Pearson LearningStudio, click on the “My Courses” tab, and then select the “Browser Test” link under Support Services.

Pearson Learning Studio Student Technical Support

Texas A&M University-Commerce provides students technical support in the use of Pearson LearningStudio.

Technical assistance is available 24 hours a day/ 7 days a week.

If at any time you experience technical problems (e.g., you can't log in to the course, you can't see certain material, etc.) please contact the Pearson LearningStudio Help Desk, available 24 hours a day, seven days a week.

The student help desk may be reached by the following means 24 hours a day, seven days a week.

- **Chat Support:** Click on *'Live Support'* on the tool bar within your course to chat with a Pearson Learning Studio Representative.

- **Phone:** 1-866-656-5511 (Toll Free) to speak with Pearson Learning Studio Technical Support Representative.
- **Email:** helpdesk@online.tamuc.org to initiate a support request with Pearson LearningStudio Technical Support Representative.

Accessing Help from within Your Course: Click on the *'Tech Support'* icon on the upper left side of the screen inside the course. You then will be able to get assistance via online chat, email or by phone by calling the Help Desk number noted below.

Note: Personal computer problems do not excuse the requirement to complete all course work in a timely and satisfactory manner. Each student needs to have a backup method to deal with these inevitable problems. These methods might include the availability of a backup PC at home or work, the temporary use of a computer at a friend's home, the local library, office service companies, an Internet cafe, or a bookstore, such as Barnes & Noble, etc.

Policy for Reporting Problems with Pearson LearningStudio

Should students encounter Pearson LearningStudio based problems while submitting assignments/discussions/comments/exams, the following procedure **MUST** be followed:

1. Students must report the problem to the help desk. You may reach the helpdesk at helpdesk@online.tamuc.org or 1-866-656-5511
2. Students **MUST** file their problem with the helpdesk and obtain a helpdesk ticket number
3. Once a helpdesk ticket number is in your possession, students should email me to advise me of the problem and to provide me with the helpdesk ticket number
4. At that time, I will call the helpdesk to confirm your problem and follow up with you

PLEASE NOTE: Your personal computer/access problems are not a legitimate excuse for filing a ticket with the Pearson LearningStudio Help Desk. You are strongly encouraged to check for compatibility of your browser **BEFORE** the course begins and to take the Pearson LearningStudio tutorial offered for students who may require some extra assistance in navigating the Pearson LearningStudio platform. **ONLY** Pearson LearningStudio based problems are legitimate.

Internet Access

An Internet connection is necessary to participate in discussions and assignments, access readings, transfer course work, and receive feedback from your professor. View the requirements as outlined in Technology Requirements above for more information.

myLeo Support

Your myLeo email address is required to send and receive all student correspondence. Please email helpdesk@tamuc.edu or call us at 903-468-6000 with any questions about setting up your myLeo email account. You may also access information at [myLeo](https://leo.tamuc.edu). <https://leo.tamuc.edu>

Learner Support

Go to the following link [One Stop Shop](http://www.tamuc.edu/admissions/onestopshop/)- created to serve you by attempting to provide as many resources as possible in one location. <http://www.tamuc.edu/admissions/onestopshop/>


Go to the following link [Academic Success Center](http://www.tamuc.edu/campusLife/campusServices/academicSuccessCenter/)- focused on providing academic resources to help you achieve academic success.

<http://www.tamuc.edu/campusLife/campusServices/academicSuccessCenter/>

FREE MOBILE APPS

The Courses apps for phones have been adapted to support the tasks students can easily complete on a smaller device. Due to the smaller screen size course content is not presented.

The Courses app is free of charge. The mobile Courses Apps are designed and adapted for different devices.

	App Title:	iPhone – Pearson LearningStudio Courses for iPhone Android – LearningStudio Courses - Phone
	Operating System:	iPhone - OS 6 and above Android – Jelly Bean, Kitkat, and Lollipop OS
	iPhone App URL:	https://itunes.apple.com/us/app/pearson-learningstudio-courses/id977280011?mt=8
	Android App URL:	https://play.google.com/store/apps/details?id=com.pearson.lsphone

Once downloaded, search for Texas A&M University-Commerce, and it should appear on the list. Then you will need to sign into the myLeo Mobile portal.

The Courses App for Android and iPhone contain the following feature set:

- View titles/code/Instructor of all Courses enrolled in online
- View and respond to all discussions in individual Courses
- View Instructor Announcements in individual Courses
- View Graded items, Grades and comments in individual Courses
- Grade to Date
- View Events (assignments) and Calendar in individual Courses
- View Activity Feed for all courses
- View course filters on activities
- View link to Privacy Policy
- Ability to Sign out
- Send Feedback

COMMUNICATION AND SUPPORT

Students can email to communicate with Professor. The email will be responded during the week day.

COURSE AND UNIVERSITY PROCEDURES/POLICIES

Course Specific Procedures

Attendance/Lateness, Late Work, Missed Exams and Quizzes and Extra Credit

Syllabus Change Policy

The syllabus is a guide. Circumstances and events, such as student progress, may make it necessary for the instructor to modify the syllabus during the semester. Any changes made to the syllabus will be announced in advance.

University Specific Procedures**Student Conduct**

All students enrolled at the University shall follow the tenets of common decency and acceptable behavior conducive to a positive learning environment. (See current Student Guidebook).

Students should also consult the Rules of Netiquette for more information regarding how to interact with students in an online forum: [Netiquette](#)

<http://www.albion.com/netiquette/corerules.html>

ADA Statement**Students with Disabilities**

The Americans with Disabilities Act (ADA) is a federal anti-discrimination statute that provides comprehensive civil rights protection for persons with disabilities. Among other things, this legislation requires that all students with disabilities be guaranteed a learning environment that provides for reasonable accommodation of their disabilities. If you have a disability requiring an accommodation, please contact:

Office of Student Disability Resources and Services

Texas A&M University-Commerce

Gee Library- Room 132

Phone (903) 886-5150 or (903) 886-5835

Fax (903) 468-8148

Email: Rebecca.Tuerk@tamuc.edu

Website: [Office of Student Disability Resources and Services](#)

<http://www.tamuc.edu/campusLife/campusServices/studentDisabilityResourcesAndServices/>

Nondiscrimination Notice

Texas A&M University-Commerce will comply in the classroom, and in online courses, with all federal and state laws prohibiting discrimination and related retaliation on the basis of race, color, religion, sex, national origin, disability, age, genetic information or veteran status. Further, an environment free from discrimination on the basis of sexual orientation, gender identity, or gender expression will be maintained.

COURSE OUTLINE / CALENDAR

EXAMS SCHEDULE:

Exams	Exams Uploaded by Noon (CST)	Due Date by Noon (CST)	Chapters Covered
Midterm Exam	June 16, 2016	June 19, 2016	2, 3, 4, 5, 6, 7
Final Exam	June 30, 2016	July 3, 2016	Comprehensive

JOURNAL PROJECT:

The information about the project will be communicated to the class before it is uploaded.

Uploaded by Noon (CST)	Due Date by Noon (CST)
June 20, 2016	June 30, 2016

Rubric:

Criteria (Course Objectives)	1 (Unsatisfactory)	2 (Emerging)	3 (Proficient)	4(Exemplary)
1) Learn how to calculate and apply measures of location and measures of dispersion -- grouped and ungrouped data cases.	Student cannot and apply any measures of location and measures of dispersion for grouped and ungrouped data.	Student can and apply some measures of location and measures of dispersion for grouped and ungrouped data.	Student can and apply most measures of location and measures of dispersion for grouped and ungrouped data.	Student can and apply all measures of location and measures of dispersion for grouped and ungrouped data.
2) Learn how to apply discrete and continuous probability distributions to various business problems.	Student cannot apply discrete and continuous probability distributions to any business problems.	Student can apply discrete and continuous probability distributions to some business problems.	Student can apply discrete and continuous probability distributions to most of business problems.	Student can apply discrete and continuous probability distributions to all of business problems.
3)Understand the hypothesis testing: 3.1 Be able to perform Test of Hypothesis 3.2 calculate confidence interval for a population parameter for single sample and two sample cases. 3.3 Understand the concept of p-values.	3.1 Student cannot perform the test of hypothesis 3.2 Student cannot calculate confidence interval for a population parameter for single sample and two sample cases. 3.3 Student doesn't understand the concept of p-value.	3.1 Student can perform some test of hypothesis 3.2 Student can calculate some confidence interval for a population parameter for single sample and two sample cases. 3.3 Student understands some part of the concept of p-value.	3.1 Student can perform most test of Hypothesis 3.2 Student can calculate most confidence interval for a population parameter for single sample and two sample cases. 3.3 Student understands most part of the concept of p-values.	3.1 Student can perform all test of Hypothesis 3.2 Student can calculate all confidence interval for a population parameter for single sample and two sample cases. 3.3 Student understands the entire concept of p-values.
4) Learn non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.	4) Student doesn't know non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.	4) Student knows some parts of non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.	4) Student knows most parts of non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.	4) Student knows all parts of non-parametric test such as the Chi-Square test for Independence as well as Goodness of Fit.

5) Understand regression analysis:				
5.1 Be able to compute and interpret the results of Bivariate Regression	5.1 Student cannot compute and interpret the results of Bivariate Regression	5.1 Student can compute and interpret some of the results of Bivariate Regression	5.1 Student can compute and interpret most of the results of Bivariate Regression	5.1 Student can compute and interpret all of the results of Bivariate Regression
5.2 Be able to compute and interpret the results of Multivariate Regression.	5.2 Student cannot compute and interpret the results of Multivariate Regression	5.2 Student can compute and interpret some of results of Multivariate Regression	5.2 Student can compute and interpret most of results of Multivariate Regression	5.2 Student can compute and interpret all of results of Multivariate Regression
5.3 Be able to compute and interpret Correlation Analysis	5.3 Student cannot compute and interpret Correlation Analysis	5.3 Student can compute and interpret some parts of Correlation Analysis	5.3 Student can compute and interpret most parts of Correlation Analysis	5.3 Student can compute and interpret all parts of Correlation Analysis
5.4 Be able to perform ANOVA and F-test.	5.4 Student cannot solve any questions regarding ANOVA and F-test.	5.4 Student can solve easy questions regarding ANOVA and F-test.	5.4 Student can solve medium-hard questions regarding ANOVA and F-test.	5.4 Student can solve difficult questions regarding ANOVA and F-test.
5.5 Be able to understand both the meaning and applicability of a dummy variable.	5.5 Student cannot apply the dummy variable to solve any questions.	5.5 Student cannot apply the dummy variable to solve some questions.	5.5 Student cannot apply the dummy variable to solve most questions.	5.5 Student cannot apply the dummy variable to solve all the questions.
5.6 Be able to understand the assumptions which underline a regression model.	5.6 Student does not understand the assumptions which underline a regression model.	5.6 Student understands some parts of the assumptions which underline a regression model.	5.6 Student understands most parts of the assumptions which underline a regression model.	5.6 Student understands all parts of the assumptions which underline a regression model.
5.7 Be able to perform a multiple regression using computer software.	5.7 Student is unable to perform a multiple regression using computer software.	5.7 Student is able to perform a multiple regression using computer software for easy questions.	5.7 Student is able to perform a multiple regression using computer software for medium-hard questions.	5.7 Student is able to perform a multiple regression using computer software for difficult questions.

ECO 578

Chapter	Suggested Problems	Objective
Chapter 1 A First Look at Statistics		<p>Define descriptive and inferential statistics.</p> <p>Differentiate between a quantitative and a qualitative variable.</p> <p>Differentiate between a discrete and a continuous variable.</p> <p>Know the four levels of measurement – nominal, ordinal, interval, and ratio.</p>
Chapter 2 Ungrouped Data	2-9(2) 2-10(3) 2-11(4) 2-13(8) 2-18(2) 2-22(3) 2-23(2) 2-25(3) 2-27(5)	<p>Construct a frequency distribution and define mean, mode and median.</p> <p>Define and calculate percentile and percentile Rank.</p> <p>Measure variability for ungrouped data.</p>
Chapter 3 Grouped Data	3-6(3) 3-7(1) 3-16(1) 3-20(5) 3-24(2) 3-38(1) 3-38(2) 3-46(2) 3-46(5)	<p>Construct a frequency distribution.</p> <p>Determine and compute relative frequencies, and distribution cumulative frequencies of a frequency.</p> <p>Differentiate between GAP in class and Non-GAP in class of a frequency distribution.</p> <p>Measure central tendency.</p> <p>Measure variability for grouped data.</p> <p>Define and calculate percentile and percentile Rank.</p> <p>Understand and calculate Chebychef theorem.</p>
Chapter 4 Simple Regression	4-09(4) 4-09(5)	<p>Understand why we use sample instead of population</p> <p>Understand, interpret and calculate regression analysis.</p>
Chapter 5 Probability	5-13(06) 5-14(14) 5-16(23) 5-17(27) 5-20(36)	<p>Define probability.</p> <p>Define marginal, conditional, and joint probabilities.</p> <p>Use the special and general rules of multiplication and addition in probability computation.</p> <p>Calculate marginal, conditional, and joint probabilities.</p>
Chapter 6 Discrete Probability Distribution	6-13(1) 6-13(4) 6-21(1) 6-28(9)	<p>Describe the characteristics and compute probabilities using the binomial probability distribution both use of binomial Formula and use of tables.</p> <p>Define probability distribution and random variable.</p> <p>Calculate the mean, variance, and standard deviation of a discrete distribution.</p> <p>Define and compute Hypergeometric Distribution</p>

Chapter	Suggested Problems	Objective
Chapter 7 The Normal Distribution	7-23(6) 7-23(7) 7-24(11) 7-25(23) 7-26(31) 7-49(20) 7-68(2) 7-69(7)	Define probability. Define marginal, conditional, and joint probabilities. Use the special and general rules of multiplication and addition in probability computation. Calculate marginal, conditional, and joint probabilities. Describe the characteristics and compute probabilities using the binomial probability distribution both use of binomial Formula and use of tables. Define probability distribution and random variable. Calculate the mean, variance, and standard deviation of a discrete distribution. Define and compute Hypergeometric Distribution Describe the characteristics and compute standard normal distribution by using formula and normal curve table. Describe the characteristics and compute normal approximation to the Binomial distribution. Differentiate between standard normal distribution and normal approximations to the Binomial distribution. Describe various sampling techniques. Explain the Central Limit Theorem. Describe interval estimate and the confidence level. Define and compute interval estimates of mean. Define and compute estimates of the population proportion Identify Type I and Type II errors. Conduct a test of hypothesis about a population mean and a population proportion. Conduct the test of hypothesis using one and two tail tests. Conduct the test of hypothesis regarding one population mean with a small sample. Define and compute hypothesis testing for comparing two means.
Chapter 8 Statistical Estimation	8-11(11)	Describe interval estimate and the confidence level. Define and compute interval estimates of mean. Define and compute estimates of the population proportion

Chapter	Suggested Problems	Objective
Chapter 9 Hypothesis Testing	9-17(34) 9-18(8) 9-20(14) Exercises (1-59) on page 9-53 to 9-58	Identify Type I and Type II errors. Conduct a test of hypothesis about a population mean and a population proportion. Conduct the test of hypothesis using one and two tail tests. Conduct the test of hypothesis regarding one population mean with a small sample. Define and compute hypothesis testing for comparing two means.
Chapter 10 Simple Regression	10-23(1) 10-27(1) 10-30(9) 10-31(11) 10-32(13) 10-32(14)	Understand the differences between various experiment designs and when to use them. Compute and interpret the results of ANOVA. Compute the growth rate. Define whether the regression equation makes sense.
Chapter 11 Multiple Regression	11-8(1)	Understand linear regression model. Describe the relationship between two or more independent variables and the dependent variable using a multiple regression equation. Compute and interpret the multiple standard error of the estimate and the coefficient of determination.
Chapter 12 Time-Series Forecasting		Understand the factor influencing time series data. Define and compute the classical multiplicative time-series model. Describe the characteristics and compute the using of smoothing method is forecasting. Define and compute linear trend. Describe the characteristics and compute autoregressive modeling for fitting and forecasting.
Chapter 13 Co integration and Error-Correction Modeling		Understand the nature of conintegration and be able to derive conintegrating equation through error correction modeling. Differentiate between stationary time series and non-stationary time series.
Chapter 14 Analysis of Variance	14-09(1) 14-09(2) 14-09(3)	Define and analyze variance. Understand regression approach to ANOVA
Chapter 15 Chi-Square Tests	15-8(1) 15-8(2) 15-8(3)	Understand and interpret interaction. Understand the chi-square goodness-of-fit test and how to use it. Analyze data by using the chi-square test of independence.
Chapter 16 Proportions		Define and compute test for differences between proportions for large samples sizes. Define and compute test for differences between proportions of a multinomial population.