note: From the top of http://www.math.utep.edu/Faculty/lesser/schedule.html or our Bb course shell, you can access this syllabus if you misplace yours, want to explore its many links or see any addendums. Syllabus is subject to change by the instructor to meet new mandates or course needs, especially for unexpected school disruptions or big changes in class size, resources, etc.

Course Number: STAT 1380-005 (CRN# 11485)
Course Title: Basics of Descriptive and Inferential Statistics
Credit Hours: 3
Term: Fall 2018
Prerequisite: adequate score on a placement examination or MATH 0311. (see http://catalog.utep.edu/search/?P=STAT+1380)
Course Fee: none

Course Meetings & Location: TTh 1:30-2:50pm (except Nov. 22) in LART 305. In a disruption (e.g., H1N1 epidemic, subzero weather, etc.), be prepared to maintain course progress via alternative means (e.g., Internet, our Blackboard course shell, Bb Collaborate Ultra, etc.). and check email (especially your UTEP account) regularly. UTEP set our finals week exam on Thurs., Dec. 13, 1-3:45pm.

Instructor: Dr. Larry Lesser (rhymes with ‘Professor’, spelled like < ). See background on my homepage http://www.math.utep.edu/Faculty/lesser/ or hear my introductory rap at https://www.youtube.com/watch?v=sFizdFK09l8
Office Location: Bell Hall 213 (by the second-floor water fountain)
Contact Info: Phone: (915) 747-6845

Email Lesser (at) utep.edu (please include 1:30 in the subject line) also, emailing me from your miners.utep.edu address is best because it provides more security and minimizes the chance the UTEP server rejects it
Homepage: http://www.math.utep.edu/Faculty/lesser/
Fax: (915) 747-6502 (note: this is a departmental fax, so be sure to have my name clearly on it; be aware that staff are not available to relay faxes to me outside the math dept’s hours of M-F 8-12, 1-5
Emergency Contact: (915) 747-5761 (during math dept office hours)
Office hours: by Bell 213 T 3-4pm and additional hours or changes will be announced or posted later; you are welcome to try emailing, calling, or stopping by without an appointment for readily answered questions; for questions requiring longer live conversation, just email me several possible times that would work for an appointment and I will reply with which option works in my schedule for a meeting whether it would be in-person, by phone, or via Blackboard Collaborate Ultra (instructions are posted in Announcements in our course Bb shell); I expect to be assigned a graduate TA who can offer some office hours at yet additional times; also there are a number of tutors at http://math.utep.edu/marcs who can offer help related to our material

Textbook(s), Materials:

Subject to change based on timing, resources and interest, here’s the main material we plan to (un)cover: **chapters 1-11 (in order) then 14**, including supplementary probability material from the handout [http://www.math.utep.edu/Faculty/lesser/probabilitysupplement(forUtts).pdf](http://www.math.utep.edu/Faculty/lesser/probabilitysupplement(forUtts).pdf) on topics such as simulation, sample space, counting rules, the binomial distribution, and the geometric distribution. Then there will be exposure to concepts from a couple of remaining chapters as announced.

You are expected to read each chapter and try the selected HW problems for that chapter (see below) before the class meeting we discuss that chapter (so that you are able to understand more and offer more to the discussion) and to **bring your book to each class.** For each chapter, there will be some subset or combination of: (1) in-class informal formative assessment, (2) having you turn in (with at least 2-3 calendar days’ advance notice) the exercises on paper, or (3) a quiz (with or without advance notice).

Ch. 1 (1,3,4,5,8,10,18,19,21); Ch. 2 (3,5,6,10,14,15,18); Ch. 3 (1,2,6,8,9,13,18,21-26,32,33,36); Ch. 4 (1-3, 6, 10-12, 17-19, 21,26,28,33); Ch. 5 (1,4-6,9,19,24,27,30,35-37,39,42); Ch. 6(TBA); Ch. 7 (1-3,6,9-16,18,21,24,27,29-31,34,36,38); Ch. 8 (1,3,7,gb,10,13,15,18,20,24,25); Ch. 9 (1,3,6,8,gb,11,14,17-19,21,27); Ch. 10 (2-4,7-11,13-15,18,20,21,24,29); Ch. 11 (1,3-7,10-12,15,16,18,21,23,30,31); Ch. 14 (1,3,6,9-14,16a,17,19-22,24,28d,34); a few additional exercises will be announced later

Required technology:

- **“low-tech” clicker (ABCD Card), brought to each class, starting Aug. 30:** [http://www.math.utep.edu/Faculty/lesser/ABCDclassResponseCard.pdf](http://www.math.utep.edu/Faculty/lesser/ABCDclassResponseCard.pdf) (print the card from the URL above on a color printer or print it black-and-white and color it in with the same color scheme as the URL above) see the “Participation” section in this syllabus for more information
- **calculator (with square root key) brought to each class:** You’ll be allowed to use it on virtually all activities and assessments (but it really has to be a separate calculator, because you aren’t allowed to use Internet-enabled/storage devices such as a laptop, smartwatch, or cell phone on tests). You still must show enough work so I can follow your process. Example: to find mean of \{3, 4, 5, 5, 8\}, don’t just say “5”, but write out \((3 + 4 + 5 + 5 + 8) / 5 = 5\). A few calculations will be easier with a graphing calculator (you can use Google to find many resources on how to do statistics with your calculator; I will sometimes demonstrate things with a TI-73/83/84 -- their Guidebooks are under the Downloads pulldown menu at the above link; also see [http://www.prenhall.com/esm/app/calc_v2/](http://www.prenhall.com/esm/app/calc_v2/) but if you don’t already own one, you can manage with a scientific calculator or even a simple calculator that can do basic arithmetic such as **square roots**. As logistics and interest allow, I’ll also expose you to how stats are computed with applets and software (Excel, Minitab). While Minitab is in some on-campus labs (e.g.,

its Calc, Stat, Graph pulldown menus have about all you’d need (and more)!


Course Objectives (Learning Outcomes): Students will be able to:

apply arithmetic, algebraic, geometric, higher-order thinking, and statistical methods to modeling and solving real-world situations.

Numerical and graphical summaries of one-variable and two-variable datasets are interpreted, produced, and described verbally. We assess the reasonableness of linear models to data sets. We assess the reasonableness of a study's conclusions based on that study's qualities (e.g., was randomization used?).

represent & evaluate basic mathematical information verbally/numerically/graphically/symbolically

Numerical and graphical summaries of one-variable and two-variable datasets are interpreted, produced, and described verbally.

expand mathematical reasoning skills & formal logic to develop convincing mathematical arguments.

Reasoning used to apply probability rules and to critique statistical studies (and to assess whether a claim of significance is warranted).

use appropriate technology to enhance mathematical thinking and understanding and to solve mathematical problems and judge the reasonableness of the results.

technology incorporated such as spreadsheet software, internet applets/simulations, or graphing calculators.

interpret mathematical models (formulas/graphs/tables/schematics) and draw inferences from them.

Histograms, scatterplots, boxplots, tables, regression lines, etc. are interpreted.

recognize the limitations of mathematical and statistical models.

Studies done without random selection and/or random assignment are recognized as limited. Pitfalls and limitations of experiments (e.g., ecological validity), observational studies (e.g., no random assignment), and surveys are discussed. Formulas such as margin of error are recognized not to apply for a volunteer sample, for example.

develop the view that mathematics is an evolving discipline, interrelated with human culture, and understand its connections to other disciplines.

Because statistics can be applied to data from virtually all disciplines, it is natural to make clear interdisciplinary connections. Statistics and its tools are much newer field than the mathematics in "other math core classes". The connection to human culture comes into play with the human judgments that go into writing "the best" survey question, or deciding how to handle an outlier value, etc.

This course will expose you to typical intro topics but with particular emphasis on and grounding in conceptual understanding and statistical literacy in real life. You deserve, need and will be offered more than a plug-and-chug, memorize-the-recipes experience! You’ll be able to critically evaluate statistics commonly found in the media and in your major field. You’ll become acquainted with what is involved in the collection, interpretation, and communication of real-world data to explore questions of interest.

Also, future teachers will have the chance to gain background to handle probability and statistics questions on the TExES/ExCET (http://cms.texas-ets.org/prepmaterials/), teach related TEKS (http://ritter.tea.state.tx.us/rules/tac/chapter111/index.html), and make appropriate connections to the NCTM Standards (https://www.nctm.org/Standards-and-Positions/Principles-and-Standards/), the GAISE PreK-12 Curriculum Framework (http://www.amstat.org/Education/gaise/), and the Common Core State Standards http://www.corestandards.org/assets/CCSSI_Math%20Standards.pdf. Your
instructor has even taught some statistics on a children’s educational TV show to local first and second graders: https://youtu.be/iVeCN6dTvzo). Also, see http://www.amstat.org/ASA/Education/K-12-Educators.aspx#classroom?hkey=09d2addb-f9d1-42a8-bb71-3f395265b531

**Course Activities/Assignments:** Students will participate in in-class activities, demonstrations, discussions, readings, and assessments. Assigned homework exercises from the textbook are listed previously on this syllabus where the textbook is stated.

**Assessment of Course Objectives:** Assessments include written reflections, quizzes, exams, and a final project.

**Course Schedule:**
- **UTEP Census Day:** Sept. 12
- **Midterm Exam:** scheduled for Th Oct. 11, but subject to change
- **Turn in Data Analysis Project Proposal** on or before Oct. 11
  - (http://www.math.utep.edu/Faculty/lesser/1380proposal.html)
  - or http://www.math.utep.edu/Faculty/lesser/1380proposal.pdf
- **Freshmen midterm grades due Oct. 24** (released Oct. 26)
- **Deadline to Drop with a “W”:** Nov. 2 (CoS won’t approve drop requests after Nov. 2 except for withdrawal of all courses)
- **Presentation of Data Collection Projects:** to be announced (but it will likely be during the last 2 regular weeks of the course)
- **Last Regular Class Meeting:** Thurs., Dec. 6 (project writeup due)
- **Finals Week Exam:** Th., Dec. 13, 1-3:45pm (as set by UTEP registrar; focusing on material AFTER the material covered by the midterm)

**Grading Policy:** after any rescaling needed for all components to be on the 0-100 scale, the grade is determined by the usual cutoffs of 90-80-70-60 based on these 3 parts:

* **October Midterm** (23%) at least a week or two in advance, I’ll confirm the exact material covered, the date, and the major tables and unannotated formulas from the textbook that will be provided on each of the 2 tests; you must bring your own calculators (see p. 2 of the syllabus) and #2 pencils; the main emphasis of the exam is not on memorization or rote procedures, but on being able to recognize, apply, critique, and interpret concepts in context (e.g., in newspaper articles or graphs), even if the questions have a multiple-choice format; it is recommended that you study with a partner your class notes, the textbook chapters, homework, and quizzes.

* **December 13 Exam** (23%) – focusing on material AFTER the material covered by the midterm

* **Quizzes/HW/Reflections** (23%): some of these will be with a partner, some will be “solo”; some may be in class, some “take home”; no more than your top 8 scores will count. (So quizzes are your friend – not only do they help you assess your understanding before an exam, but after we’ve had the “top number that count”, your quiz score can only increase, so you actually want me to give you as many quizzes as possible!) To be sure you get credit for your written work, you need to use your full name since there are often students in the class who share a first or last name. The nature/number of these items will be determined after the instructor has full information about quality/quantity of grading support as well as operationalization of new mandates.

* **Team Project** (31%) – for deadlines, see Course Schedule above; for requirements, see http://www.math.utep.edu/Faculty/lesser/Stat1380DataProject.html

* **Extra Credit opportunities:** (1) turn in first day of class survey by 3pm August 31, (2) turn in ART of STATISTICS project by 4pm, Nov. 20, (3) do UTEP end-of-course evaluations (if UTEP allows and lets me know in a timely manner that over 90% of the class did it, I’ll add 4 points to all students’ finals week exam scores).

**Makeup Policy:**
A makeup exam is possible only if you take the initiative to send me an email or voicemail within 24 hours (or the earliest medically possible opportunity) that tells me: (1) why missing the scheduled class exam date was unavoidable for a serious reason, and (2) gives me multiple days/times within the next few days when you would be available to take a makeup exam. If it takes more than 48 hours after an exam to receive such an email from you, I would consider a makeup only in extreme circumstances with written documentation.

With a missed in-class quiz, you have two choices: (1) don’t worry about it because no more than the top 8 quizzes count and we often have close to twice that many, so missing a quiz doesn’t give you a 0, that quiz just simply won’t be a score in your top 8; or (2) if the missed quiz is for a serious reason for which you email me or hand me written third-party documentation (e.g., a doctor’s note, jury summons, employer/athletic/military supervisor signed note) within 3 calendar days, then the missed quiz will not count against the number you are allowed to “drop.”

If a written assignment is due in class and you are not able to get to UTEP, you are still responsible for emailing or faxing the assignment by the time it is due. In general (out of fairness and logistics), late work will not be accepted, and may be subject to a penalty in the rare borderline cases that it is accepted at the instructor’s discretion.

Attendance Policy: I view attendance as required and here’s why: Much of this course involves beyond-the-book group activities, experiences or discussions that are virtually impossible to recreate or “make up.” Successful completion of this course is intended not only to imply you have demonstrated sufficient knowledge acquisition, but also that you have been exposed to key processes, modeling, and experiences (which are especially important for future teachers, for example). Therefore, if you are now in a situation where you expect to have frequent absences, you might consider taking this class in another section or another semester. Attendance is generally taken each meeting using a sign-in sheet and it’s your responsibility to sign it and not wait until the end when I’m packing up materials. Late arrival, early departure, or blatant nonparticipation may be counted as a half-absence or even a full absence, depending on what is missed.

As the UTEP Catalog says, “When in the judgment of the instructor, a student has been absent to such a degree as to impair his or her status relative to credit for the course, the instructor may drop the student from the class with a grade of “W” before the course drop deadline [Fri., Nov. 2] and with a grade of “F” after the course drop deadline.” In practical terms, this means a student is subject to being dropped for 6 or more absences (unless you have given me a written or emailed reason I have approved). If you choose to withdraw, I ask that you submit the formal paperwork and send me an email to let me know rather than just stop attending class and assume you will be withdrawn automatically. On a positive note, a strong record of attendance will be taken into account if your final average is a point below a letter grade cutoff.

It’s your responsibility to….

(1) give me a written note or email by the 15th day of the semester [Mon., Sept. 17] if you will have absence for religious holy days (which are excused, of course).
(2) give me an email or written documentation as soon as possible if you anticipate the possibility of missing large parts of class due to exceptional circumstances such as military service/training, childbirth, or competing on official UTEP athletic teams.
(3) let me know by email (Lesser (at) utep.edu) or voicemail (747-6845) or daytime math dept. fax (747-6502) at the earliest opportunity if you have a serious situation which may affect a test, major assessment deadline, the final exam week meeting, or a
large number of “regular” class days. **If you miss a “regular class meeting,” you don’t need to contact me, but you do need to get notes and announcements from a classmate:** be sure you have contact information for at least 3 classmates for this purpose.

**Academic Integrity Policy:** It’s UTEP’s policy (and mine) for all suspected violations to be referred to the Dean of Students for investigation and disposition (see the Handbook of Operating Procedures, [https://www.utep.edu/vpba/hoop/](https://www.utep.edu/vpba/hoop/)). Cheating, plagiarism and collusion in dishonest activities are serious acts which erode the university’s purpose and integrity and cheapen the learning experience for us all. Don’t resubmit work completed for other classes without specific acknowledgment and permission from me. It is expected that work you submit represents your own effort (or your own group’s effort, if it is a group project), will not involve copying from or accessing unauthorized resources or people (e.g., from a previous year’s class). You must cite references that you do consult, using APA style with complete citations even for websites and people you consult.

For **Group Work**: Within a group, members are allowed to divide up subsets of the project for which individuals will take the initial responsibility for coordinating efforts, but it is assumed that by the time a group turns in a writeup that all members have read, discussed, contributed to, and understand what is being turned in. Group members may even discuss general ideas and strategies with members of other groups, but **NOT share parts of actual written work**. At a minimum, to be safe, put away all written notes and writing materials and recording devices before having any intergroup conversations. And if you still see a “gray area,” play it safe and ask the instructor! Conversations between teams are not allowed during in-class quizzes taken as teams.

**Civility Statement:** We should all strive to follow basic standards of courtesy. Our comments during classroom discussions should focus constructively and respectfully on the intellectual merit of a position, *not* critiquing the person expressing it. Please avoid side conversations when one person (me, or another student) is addressing the class. Engaging in activities such as texting, Facebook, YouTube, phone conversations, or emailing are inappropriate because they distract and impact class participation by you and others. If you are expecting an urgent call, **please keep your phone on vibrate** instead of anything loud, sit near the door to minimize disruption, and have the phone handy so you don’t have to dig around for it. Or you might give your childcare provider or family member the phone number for the campus police (747-5611) so you can rest assured that someone will let you know if there is an emergency. Finally, know that free speech has limits and that the **UTEP Handbook of Operating Procedures** prohibits communication that is harassing, disruptive, or that incites imminent violations of law. Violations may be referred to the Dean of Students or Campus Police.

**Student Accommodations Statement:** If you have or believe you have a disability requiring accommodations, you may wish to self-identify by contacting the Center for Accommodations and Support Services (CASS; 747-5148; East Union Building 106; cass@utep.edu; [https://www.utep.edu/student-affairs/cass/](https://www.utep.edu/student-affairs/cass/)) to show documentation or register for testing and services. CASS will ask you to discuss needed accommodations with me within the first 2 weeks of the semester or as soon as disability is known, and at least 5 working days before an exam. At the start of a term, CASS sometimes has processing delays, and you are responsible to contact (and follow up with) CASS promptly so I that receive the CASS accommodation letter as soon as possible. CASS provides note taking, sign language, interpreter, reader and/or scribe services, priority
registration, adaptive technology, diagnostic testing for learning disabilities, assistance with learning strategies/tutoring, alternative testing location and format, and advocacy.

**Military Statement:** Give me an email or written documentation as soon as possible if you anticipate the possibility of missing large parts of class due to military service.

**ADDITIONAL INFORMATION**

**Catalog Description:** “A course in statistical literacy. Emphasis will be on standard descriptive measures of location, spread, and association. Regression, probability and sampling, and binomial distribution. Interpretation of data which occur in daily life (polls, weather forecasting, surveys, quality control, etc.) will be stressed.”

**Professionalism Statement:** Beyond the previously mentioned Civility Statement, students in this course are expected to exhibit professionalism that goes beyond avoiding negative behaviors. This includes making a good faith effort in preparation for and participation in individual and collaborative class activities. This also includes supporting a classroom culture respecting “incorrect answers” as usually correct answers to a different question or valuable opportunities to address an important distinction or common misconception. (*Fun Fact:* “mistakes” led to inventing sticky notes, penicillin, and rubber tires!) Also, be open to local opportunities for professional growth or service. For example, future teachers may consider encouraging K-12 students to enter an ASA Project or Poster (due April 1) or joining (at cheaper student rates!) professional organizations -- local (GEPCTM), state (TCTM), or national (NCTM, TODOS, etc.). You can also get a taste of student research by attending (and one day presenting at) events on campus such as the COURI symposium and the strongest student project authors in our class might consider entering a national contest before Dec. 21: [https://www.causeweb.org/usproc/USCLAP%20Competition](https://www.causeweb.org/usproc/USCLAP%20Competition).


**Participation:** Part of your expected daily class participation involves answering questions posed by the instructor. These questions are ongoing assessment designed to give feedback to you as well as to the instructor. Some questions will be answered “simultaneously and anonymously” using the research-backed, classroom-tested ABCD Class Response Card. **Each student is responsible for bringing to each class the ABCD Card** that has the same color scheme at the one located at the following URL: [http://www.math.utep.edu/Faculty/lesser/ABCDclassResponseCard.pdf](http://www.math.utep.edu/Faculty/lesser/ABCDclassResponseCard.pdf). Your participation can only help (not hurt) your learning and grade. If I call on you on a day you’re not feeling well, you have a “lifeline” to “pass” to a classmate.

**Confidentiality:** UTEP policy requires that inquiries about confidential information such as grades cannot be done over the audio phone, but can be from your miners.utep.edu
account and accompanied by your 800 number. If time permits before UTEP puts them online, I will post them in our course Blackboard shell so that you can see only yours.

**English Language Learner (ELL) Awareness:** Development of this class was supported in part by the US DOE grant Project LEAP-UP. Many of you are/were ELLs or may soon teach them. I will model strategies that help ELLs (and others, too!) and incorporate awareness of ELL issues and resources in probability/statistics (e.g., my 2011 paper in Statistics Teacher Network, resources at [http://www.tsusnell.org/](http://www.tsusnell.org/), and [http://isi.cbs.nl/glossary/index.htm](http://isi.cbs.nl/glossary/index.htm). The English Language Proficiency Standards require language acquisition and academic success in all content areas for students at all 4 levels (beg., int., adv., adv. high) in all 4 domains (listening, speaking, reading, writing). Finally, consider that the grade level readability of any subject’s text is from a statistical model based on average number of syllables per word, average number of words per sentence, etc. (e.g., see “readability” in MSWord Help).

Development of this class was also supported in part by US DOE grant Project ACE (ACtion for Equity) and some statistics examples we discuss involve or apply to equity, such as gender equity. Check out the cool poster at [http://www.cdc.gov/nchs/about/poster.htm](http://www.cdc.gov/nchs/about/poster.htm) and some resources at [http://www.math.utep.edu/Faculty/lesser/equity.html](http://www.math.utep.edu/Faculty/lesser/equity.html)

**Other Resources:** For those who may be helped by consulting statistics books for additional mathematical theory, conceptual intuition, or real-world connections, go to the UTEP library circulation desk and ask them to look under “STAT 1380”). Also, know that there are free statistics textbooks online (e.g., [https://openstaxcollege.org/textbooks/introductory-statistics/get](https://openstaxcollege.org/textbooks/introductory-statistics/get) or [http://onlinestatbook.com/](http://onlinestatbook.com/)) that can be consulted as references as well. I compiled [http://www.math.utep.edu/Faculty/lesser/StatEdIntro.html](http://www.math.utep.edu/Faculty/lesser/StatEdIntro.html) to share applets and other resources that not only can help your own understanding in this course, but also offer further context and connections with some topics. Please let me know of other resources you find helpful that I may not know about.

Calculation pages: [http://statpages.org/](http://statpages.org/) (includes much beyond our course)

Classroom connections (interesting for all, especially future teachers):
- [http://ww2.amstat.org/education/stn/](http://ww2.amstat.org/education/stn/) (e.g., browse issue #64)
- [http://www.statisticsteacher.org/](http://www.statisticsteacher.org/)
- [https://www.causeweb.org/cause/resources/](https://www.causeweb.org/cause/resources/)
- [https://onlinelibrary.wiley.com/journal/14679639](https://onlinelibrary.wiley.com/journal/14679639) (UTEP students have access through the UTEP library webpage)

UTEP Library: Also, I’ve put some statistics books with other conceptual intuition or real-world connections on reserve at the circulation desk under “Lesser” or “Stat 1380.” On the 2nd floor, free walk-in tutoring is available for this course ([http://marcs.utep.edu](http://marcs.utep.edu); Library 218; 747-5366) as well as free help with writing papers (Library 227; 747-5112; Writing Center (Library 227, 747-5112, [http://uwc.utep.edu/](http://uwc.utep.edu/)).

General study tips: [http://www.math.utep.edu/Faculty/lesser/mathtips.html](http://www.math.utep.edu/Faculty/lesser/mathtips.html)

Campus Concealed Carry: [http://sa.utep.edu/campuscarry/](http://sa.utep.edu/campuscarry/) (knives over 5.5” remain banned on campus)

**Student Support:** My training is limited to academic resources (e.g., my chapter on statistics anxiety on (e)reserve in the UTEP library under “MATH 5364”), but I want anyone who feels overwhelming stress/crisis to know about these broader resources:

- **UTEP’s Counseling Center** (free counseling to all students): 202 Union West,
747-5302 (which after-hours goes to a crisis line)

- El Paso’s Mental Health Crisis Line: 779-1800 (24 hours)
- National Suicide Prevention Hotline or Veterans Crisis Line: 1-800-273-8255
- NAMI (National Alliance Against Mental Illness) of El Paso: 534-5478
- http://caringeducators.tumblr.com/survival