STATISTICS 301 - section 500

Fall Semester, 2013

INSTRUCTOR: Dr. Suhasini Subba Rao
OFFICE: BLOCKER 435
LECTURE: Monday, Wednesday and Friday 11:30 - 12:20 pm,
LECTURE ROOM: HELD 107.
OFFICE HOURS: Monday and Wednesday 2:50-3:50 (and by appointment)
email address: Please send all emails to the course email address: stat301tamu@gmail.com If you really need to get in touch with me, my personal email address is suhasini@stat.tamu.edu
T.A.: Shiyuan He, Office: Blocker 420, email shiyuan@stat.tamu.edu (Shiyuan also will answer homework questions and monitor the discussion board).

HELP SESSIONS: Help sessions will be in Blocker 162, which is close to the Daily Grind.
Monday - Thursday 10-12 (3 students), Monday - Thursday 5-7pm (6 students), Sunday 3-5pm (3 students).
The graduate students on duty will be Sara Algeri, Quan Cai, Kejun He, Shiyuan He, Donghyuk Lee, Furong Li, Ming Lu, Soutrik Mandal, Shyamalendu Sinha, Qifan Song, Xiao Wang, Xiaoyeqin Wu, Jingnan Xue.
The course TA, Shiyuan will be on help session duty 5-7pm Monday, Tuesday, Thursday 5-7pm.
This is an ideal opportunity to get further assistance on your homework and lab work, but remember our graduate students will not DO your homework, only guide you.

CLASS WEB PAGES: http://dl.stat.tamu.edu/dostat (for lectures, notes, homework assignments and discussion board). See Instructions for DoStat below. You need to register for the course. First you need to go to the above and register as a student (with name etc). Then register for this course by using the course reference DS-594. Without registering for this course we cannot give you grades for HWs and you won’t be able to do the quizzes (it is essential you register on Dostat).
I will post the lecture notes on my webpage
www.stat.tamu.edu/~suhasini/teaching.html


Recommended introductory text: Grady Klein and Alan Dabney, The Cartoon Introduction to Statistics. Available from Amazon:

COMPUTING: StatCrunch, which is accessed from the DoStat resource. The password for out of campus access is maroon.

OBJECTIVES: This class in intended mainly for students in animal sciences, this course is an introduction to random sampling, random variation of data and statistical inference for one- and two-variable data, both numerical and categorical. Statistical methods include estimation and
hypothesis tests for means and proportions, and tests for relationship between two variables. These methods are being widely applied to animal-oriented industry.

Credit will not be allowed for more than one of STAT 301, 302 or 303. Prerequisite: MATH 141 or 166 or equivalent.

**TIME AND EFFORT:** It should be emphasized that this course will cover a great deal of material at a rapid pace. As a rule of thumb, you should expect to spend a **minimum of three hours for every hour spent in class** reviewing material covered in lecture and homework. Students who have had difficulty in previous quantitative courses, or who have not had such a course in several semesters, may find that this course requires a considerable amount of preparation and extra study time, and should plan accordingly.

**GRADING POLICY:**

- **Homework:** Homework will be assigned each Friday. It can be found on my webpage. You will have one week to complete the homework. You must hand in your HW to the TA (Shiyuan He) by Thursday of the following week. Shiyuan He will do the grading. Homework will not be accepted after the due date, for any reason, but the lowest two homework score will be dropped.

  Your homework solutions must be your own work, but you may use

  - Your textbook, e-book resources and notes from class.
  - Discussion with the instructor or lab assistants.
  - I realize that many of your will want to use a tutoring service. I strong advise you not to ask them the tutors to do your homework, this will not help you learn the material. The homeworks will prepare you for your midterms and final.
  - Voluntary, mutual and cooperative discussion with other students in the class. Do not post complete solutions or final answers on the discussion board. Suggestions and partial explanations are ok.

  You may not use:

  - Solutions manuals (printed or electronic).
  - Solutions from students who took the class previously.
  - Copying from students in this class, including expecting them to reveal complete solutions in “discussion”.

  As part of your first homework you need to put on DoStat a recent photo of yourself, with name and major. This will help me to remember your name.

- **Exams** You will need an 8.5×11 BLUE/GRAY scantron sheet for each exam. Each exam will be comprehensive, cumulative and closed book. Acceptable resources to use in an exam are:

  - A calculator for numerical calculations only. The calculator may not be part of, associated with or connected to any communication device, such as a cell phone or laptop. You are free to use a programmable calculator if you so desire. However, I will not be teaching you how to use it.
– Statistical tables. (Print your own copies. I will have versions available on my website).
– Cheat sheets, I will discuss this closer to the examination time.

No exam may be taken early or made up, except if you provide a university excused absence with appropriate documentation.

Copies of old exams will be available for you to review. However, their content may not exactly match this semester’s.

No exam may be taken early or made up, except for university excused absence.

• Exam Schedule:
  – Midterm 1: Wednesday 25th September.
  – Midterm 2: Wednesday 30th October.
  – Midterm 3: Monday 25th November.
  – Final Exam: December Wednesday 11th (10:30-12:30).

• Quiz Every week on random days I will set an online quiz (accessed via Dostat). The quizz will be open at 5pm (or earlier) after the class and close at 5pm the following day. The quiz will be announced in class, however if you miss class just check Dostat for the quiz. You can miss two quizzes without penalization.

• Grading scale:
  (i) 15% Midterm 1.
  (ii) 15% Midterm 2.
  (iii) 15% Midterm 3.
  (iv) 25% Final Exam.
  (v) An additional 5% based on your best exam score (from the midterms and final).
  (vi) 10% HW.
  (vii) 10% Quizzes (these will be online via Dostat).
  (viii) A bonus 5% based on my discretion.

The minimum requirements for each grade is given below.
A: 90%–100%. B: 80%–89%. C: 70%–79%. D: 60%–69%. Fail: Below 60%.

However, from past experience I usually curve the grade (I have a preset percentage of As, Bs and Cs that I try keep to). I find that the grade you get really depends on your performance with respect to everyone else in your class.

• You will NOT be allowed any extra credit projects, etc. to compensate for a poor average. Everyone must be given the same opportunity in this class. Individual exams WILL NOT be curved.

• Disabilities Help: The Americans with Disabilities Act ensures that students with disabilities have reasonable accommodation in their learning environment. If you have a disability and need help, please contact me and http://disability.tamu.edu/ in B118 Cain Hall, 845-1637.
• **Academic Integrity:** You are expected to maintain the highest integrity in your work for this class, consistent with the university rules on [http://aggiehonor.tamu.edu/Descriptions/academic-integrity](http://aggiehonor.tamu.edu/Descriptions/academic-integrity). This includes not passing off anyone else’s work as your own, even with their permission.

“An Aggie does not lie, cheat, or steal or tolerate those who do.”

• **Plagiarism statement:**

The handouts used in this course are copyrighted. By ”handouts,” I mean all materials generated for this class, which include but are not limited to syllabi, quizzes, exams, lab problems, in-class materials, review sheets, and additional problem sets. Because these materials are copyrighted, you do not have the right to copy the handouts, unless I expressly grant permission. As commonly defined, plagiarism consists of passing off as one’s own ideas, words, writing, etc., which belong to another. In accordance with this definition, you are committing plagiarism if you copy the work of another person and turn it in as your own, even if you should have the permission of that person. Plagiarism is one of the worst academic sins, for the plagiarist destroys the trust among colleagues without which research cannot be safely communicated. If you have any questions regarding plagiarism, please consult the latest issue of the Texas A&M University Student Rules, under the section ”Scholastic Dishonesty.”

**POLICIES:**

• **University Excused Absences** The following is from the Student Rules guidelines (see [http://student-rules.tamu.edu/rule07 : Academic Rules]).

The university views class attendance as an individual student responsibility. Students are expected to attend class and to complete all assignments. Instructors are expected to give adequate notice of the dates on which major tests will be given (see dates of exams above) and assignments will be due. This information should be provided on the course syllabus, which should be distributed at the first class meeting.

Makeup exams are granted only if satisfactory evidence/documents along with a verification letter from your dean’s office are provided.

7.1 The student is responsible for providing satisfactory evidence to the instructor to substantiate the reason for absence. Among the reasons absences are considered excused by the university are the following:

7.1.1 Participation in an activity appearing on the university authorized activity list. (See List of Authorized and Sponsored Activities.)

7.1.2 Death or major illness in a student’s immediate family.

7.1.3 Illness of a dependent family member.

7.1.4 Participation in legal proceedings or administrative procedures that require a student’s presence.

7.1.5 Religious holy day.

7.1.6 Illness that is too severe or contagious for the student to attend class (please go to [http://student-rules.tamu.edu/](http://student-rules.tamu.edu/) for more information).

7.1.7 Required participation in military duties.

7.1.8 Mandatory admission interviews for professional or graduate school which cannot be rescheduled.
7.2 The associate dean for undergraduate programs, or the dean’s designee, of the student’s college may provide a letter for the student to take to the instructor stating that the dean has verified the student’s absence as excused.

7.3 Students may be excused from attending class on the day of a graded activity or when attendance contributes to a student’s grade, for the reasons stated in Section 7.1, or other reason deemed appropriate by the student’s instructor. Except in the case of the observance of a religious holiday, to be excused the student must notify his or her instructor in writing (acknowledged e-mail message is acceptable) prior to the date of absence if such notification is feasible. In cases where advance notification is not feasible (e.g. accident, or emergency) the student must provide notification by the end of the second working day after the absence. This notification should include an explanation of why notice could not be sent prior to the class. Accommodations sought for absences due to the observance of a religious holiday can be sought either prior or after the absence, but not later than two working days after the absence.

If needed, the student must provide additional documentation substantiating the reason for the absence, that is satisfactory to the instructor, within one week of the last date of the absence.

If the absence is excused, the instructor must either provide the student an opportunity to make up any quiz, exam or other graded activities or provide a satisfactory alternative to be completed within 30 calendar days from the last day of the absence.

7.4 The instructor is under no obligation to provide an opportunity for the student to make up work missed because of an unexcused absence.

7.5 See Part III, Grievance Procedures: 49. Unexcused Absences, for information on appealing an instructor’s decision.

7.6 If the student is absent for excused reasons for an unreasonable amount of time during the semester, the academic Dean or designee of the student’s college may consider giving the student a grade of W during the semester enrolled or a NG (no grade) following posting of final grades.

7.7 Whenever a student is absent for unknown reasons for an extended period of time, the instructor should initiate a check on the welfare of the student by reporting through the head of the student’s major department to the Dean or designee of the student’s college.

- Classroom: Please turn off electronic devices (cell phones, ipods, etc.) while in the classroom, except possibly a calculator for in-class work.

Questions are encouraged, especially to help clarify points in the lecture. No question is “bad” or “dumb” if it is relevant.

- Makeup Policy: If you must miss an exam due to illness or other university excused rule notify me or the Statistics Department (before, if feasible, otherwise within two working days after you return). See me as soon as possible to schedule a make-up exam.

- Incomplete Rules An Incomplete will be given only in the event you have completed most of the course but circumstances beyond your control cause prolonged absence from class and the work cannot be made up in time.

Instructions for Using the DoStat Website

1. Students will have to register on http://dl.stat.tamu.edu/dostat, in order to get all the course information.
2. To access the website, you will need to register according to the instructions below soon after classes start.

(If you are already registered as a DoStat user (for example you have done a previous statistics class at A&M), skip steps 1 and 2 and go to just follow the instructions below).

– Go to http://dl.stat.tamu.edu/dostat and click on the Register Here link.
– Fill in all of the information and click on Submit. Please enter your preferred email address as this will be the one I use to contact you. You should get an email confirming your registration.
– Login (at the same site) using the information entered in step 2.
– Click on the Add Course link to the left.
– Fill in the course reference DS-594 and press Register.
– Click My Account and edit your information as desired. Again, please indicate your preferred email address.

After registering for the course, take a look at the resources. Please look/watch for further instructions concerning the use of DoStat. Especially note the Discussion Board Rules.
Syllabus (subject to change)

Week 1
- Introduction: data collection and variables (Section 1.1).
- Graphs, Descriptive Statistics and sample mean (Sections 1.1, 2.1, 1.2 and 2.5)

Week 2
- Measures of spread Quartiles: interquartiles range, boxplots, standard deviations (Section 1.2)
- Shift/scale changes, normal distribution, the normal tables for calculating probabilities (Section 1.3).

Week 3
- z-scores (with examples). Random sampling. (Sections 1.3, 3.1 and 3.2)
- Distribution of the sample mean, statistical bias, standard error (Sections 3.3 and 5.1).

Week 4
- Confidence interval for the mean.
- t-distribution vs normal distribution. The t-tables (for calculating probabilities). Confidence intervals for the mean when the standard deviation is unknown (thus use t-distribution rather than normal distribution).

Week 5
- If there is time one-sample t-test for mean (when the standard deviation is known, thus using the normal distribution).

Week 6
- One-sample t-test for mean (when the standard deviation is unknown, thus using the t-distribution), p-values.
- Type I, Type II errors and power.

Week 7
- Paired t-test
- Independent sample (2-sample) t-tests.

Week 8
- Examples of one sample test, paired t-tests, independent (2-sample) sample t-tests.
- Sample proportions.

Week 9
- Confidence intervals for sample proportions.

Week 10
- Hypothesis tests for proportions.
- Examples hypothesis tests for proportions.

Week 11
- Using 2-way tables to calculating marginal and conditional probabilities.
- Chi-squared test for independence.

Week 12
- Bivariate data, scatterplot, slope and intercept.
- Measuring dependence and fit: Correlation and $R^2$.

Week 13
- t-test for slope, prediction.

Week 14
- Regression analysis, ANOVA for regression.
- Comparing more than two populations.