

SYLLABUS OF Math 1680.012 (Fall 2011)

Elementary Probability and Statistics

INSTRUCTOR: Koshal Dahal

OFFICE: GAB 441 (with Window-Nepal)

Personal Site: www.math.unt.edu/~koshal

OFFICE HOURS: Thu: 3:25-4:25pm and Fri: 11-2pm

CLASS MEETS: T/Th. 12:30-1:50pm @ GAB 317

EMAIL: koshaldahal@my.unt.edu (For emergencies, not in lieu of attendance. Allow two (2) business days for reply. Include course name, number and section and your full name in the subject header. Email must be sent from UNT domain.)

FINAL EXAM DATE AND TIME: Tuesday, Dec.13, at 10:30-12:30pm

(<http://essc.unt.edu/registrar/schedule/fall/final.html>)

- **Final grades** online access: <http://www.unt.edu/grades>

UNT MATH TUTOR LAB: GAB 440 (opposite to my office)

Go to Website: www.math.unt.edu/mathlab for information. **Opens September 1.**

Fall 2011: September 1 – December 9, 2011

Monday – Thursday: 7:00 am – 9:00 pm

Friday: 7:00 am – 4:00 pm

Saturday: 12:00 pm – 5:00 pm

Closed Sundays and holidays

ONLINE TUTORING:

www.unt.edu/lc, select the online tutoring button located in the left column of the page. The link will direct you www.smarthinking.com

COURSE DESCRIPTION : Introductory course to serve students of any field who want to apply statistical inference. Descriptive statistics, elementary probability, estimation, hypothesis testing and small samples. Satisfies the Mathematics requirement of the University Core Curriculum

(please contact Rita Sears (rhsears@unt.edu) in GAB 443 at 940.565.4045 about any question)

TEXTS FOR THE COURES:

- Statistics, 4th Edition, by Freedman, Pisani, and Purves
- Math 1680 Workbook

This class will use a specially written 1680 workbook as a standard supplement to the original text. This workbook contains all of the lecture notes to be covered, as well as all of the HW assignments. **The workbook is mandatory, and can be purchased in the Copy Center in the Student Union (2nd floor, near the main stairwell).**

Recommended Supplement: The Cartoon Guide to Statistics, by Larry Gonick and Woollcot Smith

Recommended Materials: pair of dice, deck of 52 playing cards and **GRAPHING CALCULATOR**(TI 83, TI 83 Plus, TI 84, TI 84 Plus or equivalent, their use will be supported in class. TI 89's, TI 92'2 or any other utility with alphanumeric/CAS capabilities ARE NOT permitted. A calculator may not be shared during an exam)

Welcome to Math 1680! This is arguably the most entertaining math course offered here. The statistical methods you will learn here are applied over a huge range of disciplines, everything from medical science to political campaigns to engineering, pretty much anywhere you have a lot of numerical data in your work. Probability, while also finding its way into many disciplines, is best learned and demonstrated in games of chance, be they dice, cards, or flipping a coin. It is my intent to make this class as interactive and enjoyable as we can while still getting you a firm grounding in these arts. And believe me, they are arts. Anyone can tell the computer to calculate a standard deviation. It's up to you to interpret it!

Learning Objectives:

- Students will learn how to calculate and use the most common descriptive statistics
- Students will learn to interpret and construct frequency histograms from distribution tables.
- Students will learn standard normal curve and application
- Students will learn how to interpret and sketch scatter plots, identifying key “landmarks” based on the averages and standard deviations of the data sets
- Students will learn to calculate and interpret the correlation coefficient
- Students will learn to predict values in one data set given a value in the other with linear regression
- Students will work with data sets to calculate probabilities for events
- Students will learn how to develop the binomial formula
- Students will learn how to develop the intuition behind the law of averages
- Students will learn to describe random processes in terms of random variables and box models
- Students will learn to calculate the expected value and standard error for various types of chance processes
- Students will learn to draw probability histograms
- Students will apply the things they have already learned to the real-life challenge of sampling and polling
- Students will learn the methods of hypothesis tests

COURSE OUTLINE:

The material for this class is broken into six distinct blocks, not necessary of equal length or intensity. (There is one “bonus block ” which is at the beginning the class. While I won't test you on this block, knowing this will still help your grade.)

Block 0: The method of comparison (chapter 1 & 2)

- Controlled Experiment
- Minimizing Bias
- Observational Studies

Block 1: Descriptive Statistics and Normal Approximation (chapter 3, 4, 5 & 6(optional))

- Central tendency measures and spread measures
- Histograms and box-and-whisker plots
- Standardization and normal approximation
- Measurement errors

Block 2: Correlation and Regression (chapter 8, 9, 10 & 11(optional))

- Correlation
- Linear regression
- RMS error

Block 3: Probability (chapter 13-18)

- Axioms and properties of probability
- The binomial distribution
- The law of averages
- Expected value and standard error
- Normal approximation using the Central Limit Theorem

Block 4: Sampling and Parameter Estimation (chapter 19, 20, 21& 23)

- Sample design
- Simple random sampling
 - Sample average/percentage and standard error
 - Estimation of percentages and averages, confidence intervals

Block 5: Test of significance (chapter 26)**Expectations:**

This is college, and everyone here is an adult; I expect everyone to behave as one. This means that you come to class on time, listen, and interact. I expect you to treat your fellow students and myself with courtesy and respect. I also expect a degree of professionalism and discipline from all of you. If you fail to uphold these expectations, you can expect to be kicked out of my class.

Appropriate behavior is expected of all students taking this course. **Arrive to class promptly and do not leave until the scheduled ending time of the class.** If you must arrive late or leave early, please do so as discreetly as possible and take a seat near the door. **Turn off** all non-medical electronic devices such as pagers, cell phones, laptops, etc. Take off the headphones. Do not read newspaper or work on unrelated assignments during class. I prefer that you not eat during class

In particular, I always start class on time and collect homework at the beginning. Do not get into the habit of showing up late, as you will miss your chance to turn in homework!

Read this syllabus carefully and completely. I will hold you to the information contained in it, whether you have read it or not.

Consider yourself warned: This is a fast-paced course. You get from this class ultimately what you put into it. If you need to pass it for whatever reason, then you should begin working to do that NOW. When the end of the semester rolls around, I will not give extra credit assignments to cover poor performance throughout the semester. **This applies to students with impending graduation dates.** Your grade is **your** responsibility.

Exams:

We will be having four exams (3 regular exams and final exam) over the course of the semester, each one being worth 100 points. The *tentative* exam dates will be announced in class one week in advance. Note that the 4th exam will be your final exam; it will be comprehensive. Of your exams, I will use your final grade to replace your lowest exam score if your final grade is better. This will allow you a little safety if one block of material is particularly difficult for you. Be cautioned, however, that the material is cumulative. Once I return the exams back to you, you will have until the end of the day to appeal to me about the score. If I haven't heard objections before then, then I will assume you are happy with your score, and it will stand.

Exam 1 covers block1.

Exam 2 covers block2

Exam 3 covers block3
Final is comprehensive
Do not count on a curve to bolster your grade!

Extra Work:

If the instructor **deems** necessary, towards the end, I may assign you an extra work that may help you to make up your grade.

Exam Etiquette:

- Place all papers, textbook, notes, etc. in a backpack or a book bag and close it securely.
- Turn off all electronic devices (unless medically necessary), this includes cell phones, pagers, etc.
- Handling of ANY such electronic devices during an exam will be construed as cheating (receiving unauthorized aid) and may result in a zero for that exam.
- Do not share any materials during an exam. This includes, but is not limited to pencils, erasers, calculators, etc.
- Only approved calculators during an exam. You may have both a scientific and a graphing calculator. It is your responsibility to know how to work the calculator(s) you bring to a test.
- Have only the exam, pencil, eraser and calculator out during an exam. Plenty of work-space is provided on the actual exam. You will not be permitted to have any scratch paper during an exam.

Final Exam:

Your final exam will be administered in our regular classroom. It is scheduled for Tuesday, Dec.13 at **10:30-12:30pm**. See <http://essc.unt.edu/registrar/schedule/fall/final.html> for UNT Fall 2011 final exams schedule. **The final exam is comprehensive and is 25% of the course grade.**

Making up exams: As I am dropping one of the exams, there will be no make-up exams offered.

Make-up Exam Policy:

NO MAKE-UP EXAMS WILL BE GIVEN FOR ANY REASON. An exam may be taken **prior** to the scheduled date. You must request for this accommodation via email at least one week prior to day you wish to take the early exam. In the event of a schedule conflict with a university function, dental/physician's appointment, wedding, formal, or whatever, the **student must take the test early**. If a student does not take a scheduled exam, a zero will be recorded for that exam and a notice may be sent through the registrar's office.

There are three in-class exams. If your final exam score is higher than one of your in-class exam scores, then that in-class exam grade will be replaced with final exam grade. If you miss an in-class exam, a zero will be recorded for that exam grade and your final exam score will replace that one zero. If you receive a zero for cheating on an exam, the final exam score will NOT replace that zero. Again, **NO MAKE-UP EXAMS WILL BE GIVEN FOR ANY REASON.**

Drop Policy:

If the student is unable to complete this course, it is his/her responsibility to formally withdraw from the course. The student may do so through the Registrar's Office after obtaining the necessary signatures. Consents for withdrawal and all necessary signatures may be obtained in the Math Department Office, GAB 435. The last day to drop a class with an automatic "W" is **Tuesday, October 4**. The last day to drop a class with "W" or "WF" is **Friday, October 28**. "WF" is averaged into your GPA as an "F." If the student

does not properly withdraw from the course but stops attending, s/he will receive a performance grade, usually an F.

Incomplete, the Grade of I:

Beginning **Thursday, November 10**, a student that qualifies may request a grade of "I", incomplete. An "I" is a non-punitive grade given only if ALL three of the following criteria are satisfied. They are:

- 1) The student is passing the course;
- 2) The student has a justifiable (and verifiable) reason why the work cannot be completed as scheduled; and
- 3) The student arranges with the instructor to complete the work within one academic year.

Homework:

Homework is usually assigned **ONLINE** (www.math.unt.edu/~koshal) for every class period. Unless otherwise stated, all homework assignments are due at the beginning of the next day before class starts. There will be a total of 17 homework assignments, all found in the workbook. They will be given out after the day's lesson, up to 10 problems per chapter covered. This means on average you will have 10 problems on any given night. **No late home works will be accepted, even if only five minutes after I collect them, no excuses.** However, I will be dropping 2 lowest scores from your HW assignments to give you some room to work with.

In addition, I will "assign" homework relating to the bonus block of material at the beginning and end of the course. If you opt to turn one or both of these in, then I will use their scores to replace your lowest one (or two) HW scores after dropping the lowest assignment.

When turning in your HW, please staple your pages together (dog ears and paper clips don't cut it). Unstapled pages will be subject to your grader's whim. Also, write neatly and clearly. If the grader can't read it, I'm not going to make her grade it. It is your responsibility to keep up with which homework assignment is currently on deck; I will not hunt you down and hand it to you. Bear in mind that these assignments are not meant to be a haze; rather, they are intended as an exercise routine. At this level, learning math is very much like learning a physical sport. To get better at shooting jump shots, you shoot jump shot after jump shot. To get better at using the normal table, you reference it again and again. Take advantage of the practice and the feedback you will get from homework.

Attendance Policy:

Class attendance is mandatory. Students are responsible for all information given in class, regardless of his/her attendance. Starting **Wednesday, Oct 5** you may be dropped for nonattendance till **Friday, Nov 18**. Four or more absences constitute nonattendance. Missing any portion of class may be counted as an absence. My email may NOT be used in lieu of attendance. Students are responsible for all information given in class, regardless of his/her attendance. This includes knowing exam dates and homework assignments. If you miss a class, it is your responsibility to learn of all the important stuff you missed. Exchange contact information with several members of your class so that you will have multiple sources of contact in case of a personal emergency. Keep in mind that you need to be present at the start of class to turn in your HW! The class lectures will be the primary source of testable material, and you are strongly encouraged to attend (after all, statistics have shown that those who attend class tend to do better). Besides, you don't want to miss out on information for exam date changes and the like!

ACADEMIC DISHONESTY:

Cheating on final exams, on in-class tests, or on quizzes is a serious breach of academic standards and will be punished severely and generally result in a student failing the course. All work done on in-class exams and quizzes must represent only the student's own work, unless otherwise stated in the directions.

See <http://vpaa.unt.edu/academic-integrity.htm> for details on academic integrity at UNT.

Regarding Students with Disabilities:

It is the responsibility of students with certified disabilities to provide the instructor with appropriate documentation from the Dean of Students Office. If you have a disability, you must provide me with the appropriate documentation before I can accommodate you.

Evaluation:

Exam 1, 2 & 3----20% each (regular exams represent 60% of your final grade)

Homework-----15% total after dropping 2 lowest scores

Final exam-----25%

Keep in mind: Of your exams, I will use your final grade to replace your lowest exam score if your final grade is better.

Progress Reports:

Students needing progress reports completed/signed for athletics, scholarships and/or any other organization must attend office hours to get them completed.

Grading: A: [90%,); B: [80%, 90%); C: [70%, 80%); D: [60%, 70%); F: [0%, 60%), 59% is an F.

A grade of C or better is required for this course to serve as prerequisite for any math course

(Students may access their course grades online at: my.unt.edu.)

Student Behavior:

Student behavior that interferes with an instructor's ability to conduct a class or other students' opportunity to learn is unacceptable and disruptive and will not be tolerated in any instructional forum at UNT. Students engaging in unacceptable behavior will be directed to leave the classroom and the instructor may refer the student to the Center for Student Rights and Responsibilities to consider whether the student's conduct violated the Code of Student Conduct. The university's expectations for student conduct apply to all instructional forums, including university and electronic classroom, labs, discussion groups, field trips, etc. The Code of Student Conduct can be found at www.unt.edu/csrr

Student Evaluation of Teaching Effectiveness:

The Student Evaluation of Teaching Effectiveness (SETE) is a requirement for all organized classes at UNT. This short survey will be made available to you at the end of the semester, providing you a chance to comment on how this class is taught. I am very interested in the feedback I get from students, as I work to continually improve my teaching. I consider the SETE to be an important part of your participation in this class. The spring administration of the SETE will remain open through the week of finals

NOTES:

- 1) This syllabus is subject to change as the instructor deems necessary. Any/all changes will be announced during regular class time. It is the responsibility of the student to attend each scheduled class to be informed of these changes.
- 2) You are responsible for meeting all university deadlines, such as: registration, fee payment, drop deadlines, etc. Refer to online UNT Schedule of Classes and/or University Catalog for policies and dates.

Summary of Key Dates for 2011Fall:

August 25, Thursday

Classes begin.

September 2, Friday

Last day to add or swap a class for 2011 Fall.

September 8, Thursday

Last day to drop a course and receive some refund; Drops after this date require instructor's written con

October 4, Tuesday

Last day to drop a course or withdraw from the university with a grade of "W" for courses that a student is not passing; after this date a grade of "WF" may be recorded.

October 25, Wednesday

Beginning this date instructors may drop students with a grade of "WF" for non-attendance.

October 14, Friday

Mid semester

October 28, Friday

Last day to drop course with consent of instructor

November 10, Thursday

Beginning this date a student may request a grade of "I", incomplete, a non-punitive grade given only if a student (1) is passing; (2) has justifiable reason why the work cannot be completed on schedule; and (3) arranges with instructor to complete the work within the following academic semester.

November 18, Friday

Last day for an instructor to drop a student with a grade of "WF" for non-attendance

November 24 – 25, Thursday, Friday

Thanksgiving. University closed.

December 9, Friday

Reading Day. No Classes

December 10, Saturday – December 16, Friday

Final examinations week: term ends.

**MATHEMATICS IS NOT A SPECTATOR SPORT -- YOU MUST PRACTICE TO
LEARN!!!**

Have a good Semester!!