

NEW YORK CITY COLLEGE OF TECHNOLOGY
The City University of New York

DEPARTMENT:	Mathematics
COURSE:	MAT 1272
TITLE:	Statistics
DESCRIPTION:	An introduction to statistical methods and statistical inference. This course includes such topics as descriptive statistics, random variables, distributions, sampling, estimation and inference, t-tests, chi-square tests and correlation.
TEXT:	<u>Elementary Statistics</u> 5 th edition Ron Larson and Betsy Farber Prentice Hall
CREDITS:	3 (3 class hours)
PREREQUISITE:	MAT 1180 or higher

Prepared by:
Prof. A. P. Taraporevala
Prof. N. Benakli
Prof. E. Hallek
Prof. H. Yuce
Prof. U. Ghosh-Dastidar

Fall 2012

- A. Testing Guidelines:
The following exams should be scheduled:
1. A one-hour exam at the end of the First Quarter.
 2. A one-session exam at the end of the Second Quarter.
 3. A one-hour exam at the end of the Third Quarter.
 4. A one session Final Examination.
- B. A scientific calculator is required.

Course Intended Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Collect, organize and graph raw data.	Classroom activities and discussion, homework, exams.
2. Compute statistical parameters (mean, median, mode, average deviation, variance, and sample standard deviation).	Classroom activities and discussion, homework, exams.
3. Identify the binomial distribution and bell-shaped distributions (normal, t-distribution).	Classroom activities and discussion, homework, exams.
4. Do simple counting arguments and apply simple probabilities to events.	Classroom activities and discussion, homework, exams.
5. Determine if the data supports a hypothesis to a given level of significance.	Classroom activities and discussion, homework, exams.
6. Find the least squares regression line.	Classroom activities and discussion, homework, exams.

General Education Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Gather, interpret, evaluate, and apply information discerningly from a variety of sources.	Classroom activities and discussion, homework, exams.
2. Understand and employ both quantitative and qualitative analysis to solve problems.	Classroom activities and discussion, homework, exams.
3. Employ scientific reasoning and logical thinking.	Classroom activities and discussion, homework, exams.
4. Communicate effectively using written and oral means.	Classroom activities and discussion, homework, exams.
5. Make meaningful and multiple connections between mathematics and other areas of study leading to a major or profession.	Classroom activities and discussion, homework, exams.

Mathematics Department Policy on Lateness/Absence

A student may be absent during the semester without penalty for 10% of the class instructional sessions. Therefore,

<u>If the class meets:</u>	<u>The allowable absence is:</u>
1 time per week	2 absences per semester
2 times per week	3 absences per semester

Students who have been **excessively absent and failed the course at the end of the semester will receive either**

- the WU grade if they have attended the course at least once. This includes students who stop attending without officially withdrawing from the course.
- the WN grade if they have never attended the course.

In credit bearing courses, the WU and WN grades count as an F in the computation of the GPA. While WU and WN grades in non-credit developmental courses do not count in the GPA, the WU grade does count toward the limit of 2 attempts for a developmental course.

The official Mathematics Department policy is that two latenesses (this includes arriving late or leaving early) is equivalent to one absence.

Every withdrawal (official or unofficial) can affect a student's financial aid status, because withdrawal from a course will change the number of credits or equated credits that are counted toward financial aid.

New York City College of Technology Policy on Academic Integrity

Students and all others who work with information, ideas, texts, images, music, inventions, and other intellectual property owe their audience and sources accuracy and honesty in using, crediting, and citing sources. As a community of intellectual and professional workers, the College recognizes its responsibility for providing instruction in information literacy and academic integrity, offering models of good practice, and responding vigilantly and appropriately to infractions of academic integrity. Accordingly, academic dishonesty is prohibited in The City University of New York and at New York City College of Technology and is punishable by penalties, including failing grades, suspension, and expulsion. The complete text of the College policy on Academic Integrity may be found in the catalog.

Session	Statistics	Homework
1	1.1 An Overview of Statistics pages 2-5, Examples 1 - 3 1.2 Data Classification page 9, Example 1 1.3 Data Collection and Experimental Design pages 16 - 22, Examples 1, 3 and 4	P. 6: 1 – 41 odd P. 13: 7 – 17 odd P. 23: 11 – 15 odd, 19 – 29 odd
2	2.1 Frequency Distributions and Their Graphs pages 38 - 46, Examples 1 - 6	P. 47: 1 – 31 odd, 35, 39, 41
3	2.2 More Graphs and Displays pages 53 - 57, Examples 1, 2, and 4	P. 60: 5, 9, 13, 15 – 19 odd, 23, 35, 37
4	2.3 Measures of Central Tendency pages 65 – 68 and 71, Examples 1 - 6	P. 72: 1 – 11 odd, 17 – 21 odd, 25 – 29 odd
5	2.4 Measures of Variation pages 80 - 83, Examples 1 - 4 (Use the formula $\sigma^2 = \frac{N\sum x^2 - (\sum x)^2}{N^2}$ and $s^2 = \frac{n\sum x^2 - (\sum x)^2}{n(n-1)}$ when calculating the variance for examples done in class)	P. 90: 1, 3, 7, 11, 13, 19, 25, 27
6	2.5 Measures of Position pages 100 - 106, Examples 1, 3 - 7	P. 107: 1 -21 odd, 25 - 35 odd, 39 – 45 odd
7	3.1 Basic Concepts of Probability and Counting pages 128 - 137, Examples 1 - 11	P. 138: 1, 3, 15 - 25 odd, 28, 29, 33 – 41 odd, 45, 55 – 61 odd
8	First Examination	
9	3.2 Conditional Probability and the Multiplication Rule pages 145 - 149, Examples 1 - 5	P. 150: 7 - 19 odd, 23 – 31 odd
10	3.3 The Addition Rule pages 156 - 160, Examples 1 - 5	P. 161: 1 – 25 odd
11	3.4 Additional Topics in Probability and Counting pages 168 - 173, Examples 1 - 9	P. 174: 7, 11 – 31 odd, 37, 43 – 47 odd
12	4.1 Probability Distributions pages 190 - 193, Examples 1, 3 and 4	P. 197: 1 – 7 odd, 13 – 19 odd, 21 – 25 odd, 27 – 31 odd do part (a), 41
13	4.1 Probability Distributions pages 194 - 196, Examples 5 – 7 (Use the formula $\sigma^2 = \sum x^2 P(x) - \mu^2$)	P. 198: 27 – 31 odd do parts (c) and (d), 35, 37, 43

14	4.2 Binomial Distributions pages 202 - 208, Examples 1 – 3, 5, 6, 8	P. 211: 9 – 25 odd, 27 – 30 all do parts (a), (c) and (d), 33
15	Second Examination	
16	5.1 Introduction to Normal Distributions and the Standard Normal Distribution pages 236 - 243, Examples 1 – 6	P. 244: 9 - 15 odd, 19 – 37 odd, 41, 43
17	5.2 Normal Distributions: Finding Probabilities pages 249 - 250, Examples 1 - 2	P. 252: 1 - 23 odd
18	5.3 Normal Distributions: Finding Values pages 257 - 261, Examples 1 - 5	P. 262: 1 - 37 odd
19	5.5 Normal Approximations to Binomial Distributions pages 281 - 286, Examples 1 - 5	P. 287: 1 - 25 odd
20	5.4 Sampling Distributions and the Central Limit Theorem pages 266 - 273, Examples 1 - 6	P. 274: 11 – 35 odd
21	Third Examination	
22	7.1: Introduction to Hypothesis Testing pages 356 - 366, Examples 1 – 3, 5	P. 367: 11 – 25 odd, 28, 32, 38, 41, 43
23	7.2 Hypothesis Testing for the Mean (Large Samples) pages 376 - 380, Examples 7 - 10	P. 382: 17 – 27 odd, 35 – 39 all, 41
24	7.3 Hypothesis Testing for the Mean (Small Samples) pages 387 - 391, Examples 1 - 5	P. 393: 3 – 23 odd, 35
25	9.1 Correlation pages 484 - 488, Examples 1 and 4	P. 495: 1, 3, 9 – 13 odd, 21 – 27 odd do parts (b) and (c)
26	9.2 Linear Regression pages 501 - 502, Example 1	P. 505: 3, 5, 7 – 12 all, 17 - 23 odd
27	10.1 Goodness-of-Fit Test pages 540 - 545, Examples 1 - 3	P. 546: 1 - 15 odd,
28	10.2 Independence pages 551 - 555, Examples 1 - 2	P. 557: 1 – 17 odd
29	Review	
30	Final Examination	