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

DEPARTMENT:	Mathematics
COURSE:	MAT 1372
TITLE:	Statistics with Probability
DESCRIPTION:	Topics covered include sample spaces and probabilities, discrete probability distributions (Binomial, Hypergeometric), expectation and variance, continuous probability distributions (Normal, Student, Chi-Square), confidence intervals, hypothesis testing, and correlation and regression. Spreadsheets are used throughout the semester.
TEXTS:	1. Introductory Statistics Sheldon Ross 3rd edition, Academic Press 2. Statistics with Microsoft Excel Beverly J. Dretzke 5th edition, Pearson
CREDITS:	3 (2 class hours, 2 lab hours)
PRE- or COREQUISITES:	MAT 1375
	Prepared by Professors Thomas Johnstone, Boyan Kostadinov, and Jonathan Natov (Fall 2010) Revised by Professor Satyanand Singh (Fall 2011)

A. Testing/ Assessment Guidelines:

The following exams should be scheduled:

1. A one session exam at the end of the First Quarter.
2. A one session exam at the end of the Third Quarter.
3. A one session Final Examination.

Course Intended Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Collect, organize and graph raw data.	Exams
2. Compute statistical parameters (mean, median, mode, average deviation, variance, and sample standard deviation).	Exams
3. Create grouped frequency distributions, probability distributions, histograms as well as identify bell-shaped distributions (normal, t-distribution) and non-bell shaped distributions (Chi-square).	Exams
4. Assign probabilities to events using counting methods, conditional probability and discrete probability distributions.	Exams
5. Determine if the data supports a hypothesis at a given significance level using known distributions.	Exams
6. Use spreadsheet software and other computer technology to assist in creating distributions and testing hypothesis.	Exams

General Education Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Understand and employ both quantitative and qualitative analysis to solve problems.	Exams
2. Make meaningful and multiple connections between mathematics and other areas of study leading to a major or profession.	Exams
3. Employ scientific reasoning and logical thinking.	Exams
4. Communicate effectively using written and oral means.	Exams

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.

MAT 1372 Statistics with Probability **Texts: 1)** Introductory Statistics by Sheldon Ross, 3rd edition
2) Statistics with Microsoft Excel by Beverly J. Dretzke, 5th edition

Session	**Statistics with Probability**	**Text #1**	**Homework**	**Text #2**
1	Introduction to Excel			**P. 1 - 5, 9 - 11 and 13 - 23**
2	Graphical Descriptive Techniques	2.1 - 2.4	**P. 25**: 1, 2, 3; **P. 39**: 1, 3; **P. 47**: 1, 3	SORT, FREQUENCY **P. 28 - 29**
3	Measures of Central Location and Variability	3.2 - 3.5	**P. 79**: 1, 9; **P. 86**: 1, 2, 11; **P. 98**: 1, 5; **P. 105**: 1, 2, 6	AVERAGE(:), VARP(:), STDEVP(:) **P. 36 - 45**
4	Covariance and Coefficient of Correlation	2.5, 3.7	**P. 54**: 1, 5; **P.128**: 1, 3	COV(X,Y), CORREL(X,Y) **P. 189 - 193**
5	Least Squares Method and Regression	12.1 - 12.3	**P. 542**: 1, 5; **P. 548**: 1, 2, 3	SLOPE, INTERCEPT **P. 205 - 210**
6	Assigning Probabilities to Events; Probability Rules	4.1 - 4.3	**P. 150**: 1, 3, 4, 7, 10, 11, 12; **P. 156**: 1, 2, 7, 9, 10	
7	Experiments Having Equally Likely Outcomes	4.4	**P. 164**: 1, 2, 3, 6, 9, 10, 12, 14	
8	Conditional Probability and Independence	4.5	**P. 177**: 1, 2, 3, 4, 7, 11, 15, 18, 28, 29, 33, 35, 38	
9	Relative Frequency Distribution and z-scores			FREQUENCY(bin:data) **P. 45 - 48, P. 59 - 76**
10	**First Examination**			
11	Random Variables, Probability Distributions	5.2	**P. 215**: 1, 3, 4, 9, 10, 15, 17, 18	
12	Expected Value and Variance	5.3 5.4	**P. 225**: 1, 3, 4, 5, 9, 11, 19, 23, 27, 30 **P. 236**: 2, 3, 5, 10, 11, 17, 18, 19	
13	Binomial Distribution	5.5	**P. 244**: 2, 3, 5, 10, 11, 21, 23	BINOMDIST(s,n,p,false) **P. 104 - 108**
14	Poisson Distribution	5.7	**P. 253**: 1, 3, 5	POISSON(x,mean,false) **P. 111 - 115**

MAT 1372 Statistics with Probability **Texts: 1)** Introductory Statistics by Sheldon Ross, 3rd edition
2) Statistics with Microsoft Excel by Beverly J. Dretzke, 5th edition

Session	Statistics with Probability	Text #1	Homework	Text #2
15	Continuous Random Variables	6.2	**P. 264**: 1, 2, 3, 6, 7	
16	Normal Random Variables	6.3, 6.4	**P. 269**: 1, 2, 3, 5, 7, 19; **P. 276**: 3, 4, 5	NORMSDIST(z), NORMSINV(p) **P. 115 - 122**
17	Finding Normal Probabilities	6.5, 6.7	**P. 281**: 1, 3, 5, 9, 13; **P. 289**: 1, 3, 9, 13	
18	Sample Mean	7.3	**P. 303**: 1, 3, 5	
19	Distribution of the Sample Mean	7.4.1	**P. 311**: 1, 3, 5, 7, 11, 13	
20	Distribution of the Sample Variance of a Normal Population	7.6	**P. 325**: 1	
21	**Midterm Examination**			
22	Estimating Population Means	8.2	**P. 334**: 1, 3, 5, 7, 9	
23	Hypothesis Testing with Known Standard Deviation	9.2 - 9.3.1	**P. 392:** 1, 3 **P. 400**: 1, 3, 5, 7, 9, 11 **P. 408**: 1, 3, 5	**P. 131 - 153**
24	Inference about a Population Mean with Unknown Standard Deviation	9.4	**P. 417**: 1, 3, 5, 13, 17	TDIST(x,df,tails), TINV(p,df), **P. 140 - 153**
25	Class Project Presentation			
26	Class Project Presentation			
27	Chi-Squared Goodness of Fit Test	13.2	**P. 615**: 1, 3, 7, 11	CHIDIST(x,df), CHIINV(p,df) **P. 249 - 255**
28	Chi-Squared Test for Independence - Contingency Table	13.3	**P. 626**: 1, 3, 5, 9, 11	
29	Review			
30	**Final Examination**			