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

DEPARTMENT:	Mathematics
COURSE:	MAT 1180
TITLE:	Mathematical Concepts and Applications
DESCRIPTION:	This course covers topics from algebra, geometry, graphs of functions, inequalities, probability and statistics.
<u>TEXTS</u>:	<u>Thinking Mathematically</u> 5th edition By Robert Blitzer Prentice Hall
CREDITS:	4 (4 class hours)
PREREQUISITES:	CUNY proficiency in reading and mathematics or MAT 0630 or MAT 0650 or MAT 0670. Credit will not be given for both MAT 1175 and MAT 1180.
	Prepared by Professors Holly Carley, Thomas Tradler and Lin Zhou (Fall 2011)

A.   Testing 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 Second Quarter.
3. A one session exam at the end of the Third Quarter.
4. A one session Final Examination.

B.   A scientific calculator with trigonometric functions is required.

Course Intended Learning Outcomes/Assessment Methods

Learning Outcomes	Assessment Methods
1. Simplify and perform operations with polynomial, rational, radical, and exponential expressions.	Classroom activities and discussion, homework, exams.
2. Solve • Linear and fractional equations and inequalities. • Systems of equations and inequalities.	Classroom activities and discussion, homework, exams.
3. • Identify lines and angles. • Apply the AA Theorem for similar triangles. • Apply the Pythagorean Theorem. • Find the area and perimeter of polygons. • Find the area and circumference of circles.	Classroom activities and discussion, homework, exams.
4. • Represent data graphically. • Assign probabilities to events. • Solve simple problems involving the normal distribution, correlation, and regression.	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.

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 1180 Mathematical Concepts and Applications   **Text:** <u>Thinking Mathematically</u>, 5th edition, by Robert Blitzer

Session	Topics	Homework
1	**1.2** Estimation, Graphs, and Mathematical Models, **pages** 16-20, Ex. 5, 6, 7	**P. 23**: 43-47 all, 49, 50
	5.1 Number Theory: Prime and Composite Numbers**, pages** 228-235, Ex. 1, 3, 4, 5 (optional), 6 (optional)	**P. 235**: 1, 5, 9-17 odd, 45, 47, 49, 91, 93, 117 (optional)
2	**5.2** The Integers; Order of Operations, **pages** 238-247, Ex. 1, 3, 4, 6-8	**P. 247**: 13-17 odd, 81-103 odd, 115-121 odd, 139 (optional)
3	**5.3** The Rational Numbers, **pages** 250-261, Ex. 4-15	**P. 261**: 25, 31, 35, 39, 43, 47, 51, 55, 59, 67, 75, 81, 87, 97, 105-109 odd, 121, 123, 133
4	**5.4** The Irrational Numbers, **pages** 264 -270, Ex. 1-6	**P. 271**: 1, 7, 11, 13, 19, 23, 27, 31, 35, 37, 41, 45, 49, 53, 55, 57, 61-67 odd, 71, 75, 77, 81
5	**5.5** Real Numbers and their Properties, **pages** 275-276, Ex.1	**P. 280**: 1-11 odd
	5.6 Exponents and Scientific Notation, **pages** 282-289, Ex. 1-9	**P. 290**: 1, 9, 13, 21, 27, 29, 47, 55, 65, 71, 73, 83, 87, 91, 93-115 odd
6	**First Examination**	
7	**6.2** Linear Equations in One Variable and Proportions, **pages** 317-328, Ex. 1-11	**P. 328**: 13, 21, 23, 31, 33, 39, 41, 47, 53, 55, 59-71 odd, 73-77 odd, 105-113 odd, 131 (optional)
8	**6.3** Applications of Linear Equations, **pages** 331-338, Ex. 1-6	**P. 338**: 1-5 odd, 19-25 odd, 31-35 odd, 43-53 odd, 73, 77
9	**6.4** Linear Inequalities in One Variable, **pages** 342-348, Ex. 1-7	**P. 348**: 15, 23, 27, 33, 39, 47, 51, 53, 79, 81, 85-91 odd, 104
10	**7.2** Linear Functions and Their Graphs, **pages** 383-389, Ex. 1-6	**P. 391**: 1-9 odd, 15, 19, 21, 27, 33, 39, 43, 45, 57, 59-60
11	**7.3** Systems of Linear Equations in Two Variables, **pages** 395-404, Ex. 1-6	**P. 405**: 1, 5, 7, 15, 19, 23, 27, 33, 35, 45, 51-55 odd, 61, 63
12	**7.4** Linear Inequalities in Two Variables, **pages** 408-414, Ex. 1-6	**P. 414**: 1, 9, 13-19 odd, 23, 27, 31, 33, 37, 45, 46, 49, 50, 51, 58 (optional)
13	**Midterm Examination**	
14	**8.1** Percent, Sales Tax, and Income Tax, **pages** 444-452, Ex. 1-5, 7-10 ("Exclude Percent and Income Tax," **pages** 447-449)	**P. 452**: 1,7, 11, 17, 23, 27, 31, 35-37 odd, 46-50, 61-65, 76-79
	8.2 Simple Interest (optional), **pages** 454-457, Ex. 1-3	**P. 458**: 1-13 odd, 35, 36

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Session	Topics	Homework
15	**9.1** Measuring Length; the Metric System, **pages** 502-509, Ex. 1-4	**P. 509**: 1, 7, 9, 13, 17, 23, 24, 29, 35, 43, 45, 47, 67-77 odd
	9.2 Measuring Area and Volume, **pages** 511-517, Ex. 1-6	**P. 517**: 1-4 all, 5, 7, 11, 13, 15, 19, 25, 27, 29, 39-49 odd
16	**9.3** Measuring Weight and Temperature, **pages** 519-524, Ex. 1-5	**P. 525**: 3, 7, 9, 11, 13, 17, 19, 23, 25, 35, 37, 39, 45, 61, 65, 72-75, 82-83
17	**10.1** Points, Lines, Planes, and Angles **pages** 532-537, Ex. 2 - 5	**P. 537**: 11-31 odd, 74 (optional)
18	**10.2** Triangles, **pages** 540– 546, Ex. 1-6	**P. 546**: 1-9 odd, 13-21 odd, 25, 35-38, 43
19	**10.3** Polygons, Quadrilaterals, and Perimeter, **pages** 550-552, Ex. 1	**P. 555**: 14, 15, 19, 21, 23, 47, 49, 63 (optional)
	10.4 Area and Circumference, **pages** 558-564, Ex. 1-8	**P. 564**: 1-5 odd, 9-11 odd, 14, 15-23 odd, 37, 39, 41, 45-49 odd, 64 (optional)
20	**11.1** The Fundamental Counting Principle, **pages** 602-606**,** Ex. 1-6	**P. 606**: 1-21 odd, 31 (optional)
21	**11.4** Fundamental Probability, **pages** 621-627, Ex. 1-4	**P. 627**: 1, 5, 7, 9, 23, 25, 27, 31, 35, 37, 41-59 odd
22	**Third Examination**	
23	**11.6** Events Involving Not and Or; Odds, **pages** 637-644, Ex. 1-9	**P. 645**: 11, 12, 13, 29-41 odd, 77, 89, 90
	11.7 Events Involving And; Conditional Probability, **pages** 649-653, Ex. 1-5	**P. 656**: 1-9 odd, 25ab, 27-31 odd, 37-41 odd
24	**12.1** Sampling, **pages** 674-682, Ex. 1-5	**P. 683**: 1, 3-7 all, 9-17 all, 19, 20, 21, 26-30 all, 32
25	**12.2** Measures of Central Tendency, **pages** 687-696, Ex. 1-5, 7-10	**P. 696**: 1, 7, 9, 13, 19, 25, 31, 33, 37, 43, 45, 55, 56, 59, 61, 78 (optional)
26	**12.3** Measures of Dispersion, **pages** 699-704, Ex. 1, 3-5	**P. 705**: 1, 3, 21-27, 52, 53
27	**12.4** The Normal Distribution, **pages** 707-717, Ex. 1-7	**P. 717**: 1, 7, 9, 13, 17, 19, 23, 29, 49, 51, 59, 65
	12.5 Problem Solving with the Normal Distribution, **pages** 720-724, Ex. 1-3	**P. 724**: 5, 7, 17, 21, 27, 29, 44 (optional)
28	**12.6** Scatter Plots, Correlation, Regression Lines, **pages** 725-732, Ex. 1, 4	**P. 732**: 3-31 odd, 39, 45, 46
		P. 740: 61-67 all (optional)
29	**Review**	
30	**Final Examination**	

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5.2 The Integers; Order of Operations, **pages** 238-247, Ex. 1, 3, 4, 6-8	**P. 247**: 13-17 odd, 81-103 odd, 115-121 odd, 139 (optional)
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