

Quantitative Literacy Spring 2012
Mathematics 125
Professor NC Ressler

I. Course Prefix/Number: MAT 125 0C1

Course Name: Quantitative Literacy

Semester Credit: 4

Office Room: 3602

meeting choice of office or computer lab

Monday, Wednesday: 9:00 a.m. – 10:00 a.m.; 2:00 p.m. – 3:00 p.m.

II. Prerequisite

MAT 120 with minimum grade of C or appropriate score on the Mathematics Placement Test, and MAT 053 or geometry proficiency.

III. Course (Catalog) Description

Course covers quantitative reasoning from a variety of mathematical perspectives. Content includes statistics, logic, geometry, estimation, and the process of problem solving. Technology incorporated when appropriate. Fulfills general education requirements for the Bachelor of Arts except for science majors will not fulfill the requirement for the Bachelor of Science.

IV. Learning Objectives

- A. Apply probability and statistics in everyday life.
- B. Recognize logical equivalence and identify common fallacies.
- C. Construct logical arguments.
- D. Employ algebraic and geometric techniques to solve systems of equations and systems of inequalities.
- E. Use algebraic and geometric concepts and techniques to estimate and to judge the reasonableness of answers.
- F. Understand the problem solving process and develop problem solving strategies for personal decision-making.
- G. Use the calculator and/or computer to facilitate problem solving.
- H. Applications of business to everyday life.

V. Academic Integrity

Students and employees at Oakton Community College are required to demonstrate academic integrity and follow Oakton's Code of Academic Conduct. This code prohibits:

- cheating,
- plagiarism (turning in work not written by you, or lacking proper citation),
- falsification and fabrication (lying or distorting the truth),
- helping others to cheat,
- unauthorized changes on official documents,
- pretending to be someone else or having someone else pretend to be you,
- making or accepting bribes, special favors, or threats, and
- any other behavior that violates academic integrity.

There are serious consequences to violations of the academic integrity policy. Oakton's policies

and procedures provide students a fair hearing if a complaint is made against you. If you are found to have violated the policy, the minimum penalty is failure on the assignment and, a disciplinary record will be established and kept on file in the office of the Vice President for Student Affairs for a period of 3 years.

Details of the Code of Academic Conduct can be found in the Student Handbook.

VI. Sequence of Topics

1. Statistics

A. Displaying Statistical Data

1. Frequency tables
2. Relative and Cumulative Frequency
3. Graphing Qualitative Data: bar graphs, histograms, polygons, and ogives

B. Measures of Central Tendency

1. Arithmetic Mean, Median and Mode
2. Means, Medians, and Modes with Frequency Tables

C. Measures of Dispersion

1. Range, Variance, Standard Deviation
2. Finding Measures of Dispersion with Frequency Tables

D. Measures of Position

E. The Normal Distribution

1. Area under the Normal Curve
2. Finding Z-scores
3. Finding Probabilities based on Z-scores

2. Consumer Applications

A. Simple Interest, Compound Interest, and Continuous Compounding

B. Effective Rate of Interest

C. Markup, Markdown

D. Annuities

1. Future Value, Sinking Funds
2. Present Value, Amortization

E. Consumer Loans, Installment Buying

F. Mortgages

G. Life Insurance

3. Counting and Probability Theory

A. Counting Principle

1. The Multiplication principle
2. Permutations and Combinations

B. Probability

1. Definition and Basic Properties
2. Sample Spaces
3. Tree Diagrams
4. Odds and Expectation
5. General Addition and Multiplication Rules

4. Geometry with an Emphasis on Measurement
 - A. Fundamental Concepts of Geometry
 1. Points, Lines, Planes, Angles
 2. Plane Shapes
 - a. Triangles, Quadrilaterals, Polygons, Circles
 - b. Perimeter and Area
 - c. Congruent and Similar Shapes
 3. Additional Applications to Triangles - sine, cosine, and tangent
 4. Networks
 - B. Three-Dimensional Geometry
 1. Rectangular Prisms
 2. Cylinders
 3. Spheres
5. Problem Solving, Modeling and Using Technology
 - A. Applications of computer algebra systems / graphic calculators / Internet.
 1. Graphs of Equations and Inequalities
 2. Interpreting Graphs of Equations
 3. Solving Systems of Equations Graphically
 - B. Computational skills
 1. Interpreting and Developing Models for Real Application Problems and Checking Results
 2. Systems of inequalities and linear programming
 3. Developing Models for Real Application Problems using Linear Programming
 - C. Statistical skills
 1. Calculation of Statistics and Parameters
 2. Generating Graphs
 3. Applications of the Normal Distribution
 4. Probability Simulation
6. Set Theory, Logic and Boolean Algebra
 - A. Statements and symbols
 - B. The Algebra of Sets
 1. Union, Intersection and Complement
 2. Venn Diagrams
 - C. Reasoning, Logic and Problem Solving
 1. Conjunction, Disjunction and Negation
 2. Conditional and Biconditional Statements
 3. De Morgan's Law and Equivalent Statements
 - D. Valid Arguments
 1. Truth Tables
 2. Applications

VII. Methods of Instruction

Use of the On Line Streaming Videos; Use of the FREE Campus Tutors at the Tutoring Center; Use of the Interactive Computer Program with 'help me solve this'; 'check my answer'; 'show me an example'; etc. (On Line Study requires Commitment, Practice and Diligence). Techniques will emphasize critical thinking and applications; continual use of Calculators and Computers.

VIII. Course Practices Required

Course practices include: Pencil/Paper Homework Assignments (found within the e-book or the hard copy text book), Chapter Tests (both "A" and "B"), Mid Term (on campus) Exam; Final (on campus) Exam

IX. Instructional Materials

THINKING MATHEMATICALLY 5th Edition included within the computer program accessed through the Oakton College Web Page at MyOakton. www.oakton.edu after college enrollment by: **Robert Blitzer**
Prentice Hall/Pearson Education
A Calculator.

X. Methods of Evaluating Student Progress

Evaluation methods include: **submitted and graded Pencil/Paper Homework** (found within the on line e-book or the hard copy text book), **Chapter Tests** and **Exams**:

Chapter Tests

(50% of the *average* of the Chapter Tests contributes to the Transcript Grade)

Mid Term Exam - On Campus (Photo ID)

(20% of the score contributes of the transcript grade)

Final Exam – On Campus (Photo ID)

(20% of the score contributes to the Transcript Grade) Pencil/Paper Homework

Assignments

(10 Full Points for completed Pencil/Paper Homework with critical steps included) contribute to the Transcript Grade. On Line practice is *valuable*; it does not contribute points to a transcript grade

Grading:

100 - 93 A

92 - 85 B

84 - 76 C

75 - 67 D

66 - below F

XI. Other Course Information

If you have a documented learning, psychological, or physical disability you may be entitled to reasonable academic accommodations or services. To request accommodations or services, contact the ASSIST office in the Learning Center. All students are expected to fulfill essential course requirements. The College will not waive any essential skill or requirement of a course or degree program