



ILLINOIS VALLEY COMMUNITY COLLEGE

COURSE OUTLINE

DIVISION: Natural Sciences and Business

COURSE: MTH 1000 Math for Liberal Arts

Date: Spring 2019

Credit Hours: 3

Prerequisite(s): 1) Math 0910 Foundations of Algebra with a "C" or better, or the equivalent college course; or 2) Another approved placement option.

Delivery Method:

<input checked="" type="checkbox"/> Lecture	3 Contact Hours (1 contact = 1 credit hour)
<input type="checkbox"/> Seminar	0 Contact Hours (1 contact = 1 credit hour)
<input type="checkbox"/> Lab	0 Contact Hours (2-3 contact = 1 credit hour)
<input type="checkbox"/> Clinical	0 Contact Hours (3 contact = 1 credit hour)
<input checked="" type="checkbox"/> Online	
<input checked="" type="checkbox"/> Blended	

Offered: Fall Spring Summer

IAI Equivalent –**Only for Transfer Courses**–go to <http://www.itransfer.org>: M1904

CATALOG DESCRIPTION:

Intended as a survey course for those students interested in developing an appreciation of the role of mathematics and mathematical methods in contemporary thought. Emphasizes the understanding and application of mathematics. The course includes the study of set theory, probability, statistics and other selected topics such as consumer math, scientific notation, problem solving and geometry. This course does not serve as the prerequisite for any other mathematics course.

GENERAL EDUCATION GOALS ADDRESSED

[See last page for Course Competency/Assessment Methods Matrix.]

Upon completion of the course, the student will be able:

[Choose up to three goals that will be formally assessed in this course.]

- To apply analytical and problem solving skills to personal, social, and professional issues and situations.
- To communicate successfully, both orally and in writing, to a variety of audiences.
- To construct a critical awareness of and appreciate diversity.
- To understand and use technology effectively and to understand its impact on the individual and society.
- To develop interpersonal capacity.
- To recognize what it means to act ethically and responsibly as an individual and as a member of society.
- To recognize what it means to develop and maintain a healthy lifestyle in terms of mind, body, and spirit.
- To connect learning to life.

EXPECTED LEARNING OUTCOMES AND RELATED COMPETENCIES:

[Outcomes related to course specific goals. See last page for more information.]

Upon completion of the course, the student will be able to:

Outcome 1 - Students will demonstrate knowledge of probability.

Competencies for Outcome 1

- 1.1. Students will be able to identify experiments, outcomes, and sample spaces.
- 1.2. Students will be able to use the Fundamental Principle of Counting.
- 1.3. Students will be able to calculate the number of permutations and combinations.
- 1.4. Students will be able to calculate probabilities using the axiomatic/theoretical approach.
- 1.5. Students will be able to calculate probabilities using the empirical approach.
- 1.6. Students will be able to calculate probabilities using counting rules.
- 1.7. Students will be able to calculate probabilities of compound events.
- 1.8. Students will be able to calculate conditional probabilities.
- 1.9. Students will be able to identify mutually exclusive and independent events.
- 1.10. Students will be able to calculate odds.
- 1.11. Students will be able to calculate expected values.

Outcome 2 - Students will demonstrate knowledge of statistics.

Competencies for Outcome 2

- 2.1. Students will be able to represent data graphically using histograms and stem and leaf displays.
- 2.2. Students will be able to define a population and a sample
- 2.3. Students will be able to calculate the mean, median, mode, and midrange.
- 2.4. Students will be able to identify data which is skewed to the left or to the right.
- 2.5. Students will be able to identify quartiles.
- 2.6. Students will be able to identify percentiles.
- 2.7. Students will be able to calculate the standard deviation and variance.
- 2.8. Students will be able to calculate the range.

- 2.9. Students will be able to calculate probabilities for a standard normal random variable.
- 2.10. Students will be able to calculate probabilities for a normal random variable.
- 2.11. Students will be able to calculate and interpret margin of error.
- 2.12. Students will be able to make a scatter plot.
- 2.13. Students will be able to distinguish between positive, negative, and no linear correlation.
- 2.14. Students will be able to determine the correlation coefficient for a given data set.
- 2.15. Students will be able to find the equation of the regression line for a given data set.

Outcome 3 - Students will demonstrate knowledge of consumer math.

Competencies for Outcome 3

- 3.1. Students will be able to calculate simple interest.
- 3.2. Students will be able to calculate compound interest.
- 3.3. Students will be able to calculate the amount owed or earned on principle using simple and compound interest.
- 3.4. Students will be able to calculate present value and use its applications.
- 3.5. Students will be able to find daily periodic rates for credit cards.
- 3.6. Students will be able to calculate finance charges on owed balances such as credit cards.
- 3.7. Students will be able to calculate effective rates of interest to compare two or more banking accounts.
- 3.8. Students will be able to calculate the future value of an annuity.
- 3.9. Students will be able to calculate the present value of an annuity.
- 3.10. Students will be able to compute loan payments.
- 3.11. Students will be able to calculate the total interest paid on a loan or mortgage.
- 3.12. Students will be able to calculate the unpaid balance on loan or mortgage.
- 3.13. Students will be able to define and use the various terminology of a mortgage or loan including term, APR, and down payment.
- 3.14. Students will be able to explain how such variable as interest rate, and term of a loan affect the amount paid.
- 3.15. Students will be able to complete an amortization schedule.

Outcome 4 - Students will demonstrate knowledge of set theory.

Competencies for Outcome 4

- 4.1. Students will be able to use three methods to represent sets.
- 4.2. Students will be able to the element and not element symbols.
- 4.3. Students will be able to apply set notation.
- 4.4. Students will be able to determine a set's cardinal number.
- 4.5. Students will be able to recognize equal sets.
- 4.6. Students will be able to recognize equivalent sets.
- 4.7. Students will be able to understand the meaning of a universal set.
- 4.8. Students will be able to understand the basic ideas of Venn diagrams.
- 4.9. Students will be able to use the symbols subset, not a subset, and proper subset.
- 4.10. Students will be able to determine the number of subsets of a set.
- 4.11. Students will be able to use Venn diagrams to visualize set relationships.
- 4.12. Students will be able to perform operations with two sets (complement, union, intersection).

- 4.13. Students will be able to perform operations with three sets (complement, union, intersection).
- 4.14. Students will be able to use Venn diagrams with three sets.
- 4.15. Students will be able to use Venn diagrams to illustrate equality of sets.
- 4.16. Students will be able to use Venn diagrams to visualize application problems (e.g. survey results).
- 4.17. Students will be able to use the cardinal number formula for the union of sets.
- 4.18. Students will be able to use application information to complete Venn diagrams and answer questions about the application (e.g. survey results).

MAPPING LEARNING OUTCOMES TO GENERAL EDUCATION GOALS

[For each of the goals selected above, indicate which outcomes align with the goal.]

Goals	Outcomes
First Goal	
To apply analytical and problem solving skills to personal, social, and professional issues and situations.	<ul style="list-style-type: none"> • Students will demonstrate knowledge of probability. • Students will demonstrate knowledge of statistics. • Students will demonstrate knowledge of consumer math. • Students will demonstrate knowledge of set theory.
Second Goal	
Third Goal	

COURSE TOPICS AND CONTENT REQUIREMENTS:

- I. Probability
 - A. Basic concepts of probability
 - B. Counting rules
 - C. Probabilities using counting rules
 - D. Probability of compound events
 - E. Conditional probability
 - F. Mutually exclusive events
 - G. Independent events
 - H. Odds

- II. Statistics
 - A. Representation of data
 - B. Measures of central tendency
 - C. Measures of spread
 - D. Normal distributions
 - E. Statistical inferences

- III. Consumer mathematics

- A. Simple interest
- B. Compound interest
- C. Annuities
- D. Loan payments

IV. Set Theory

- A. Basic set concepts
- B. Venn diagrams and subsets
- C. Venn diagrams and set operations with two sets
- D. Venn diagrams and set operations with three sets
- E. Application problems and cardinal numbers

INSTRUCTIONAL METHODS:

1. Lecture
2. Class discussion
3. Class participation and activities
4. Audio-visual aids - calculator, document camera, computers, etc.
5. Quizzes and exams
6. Projects / Case Studies

INSTRUCTIONAL MATERIALS:

1. Text: Thinking Mathematically (Blitzer's 7th edition, Pearson, 2019)
2. Test bank
3. Computer with internet access
4. Scientific calculator
5. Instructor solutions manual
6. MyMathLab Student Access Kit

STUDENT REQUIREMENTS AND METHODS OF EVALUATION:

- A= 90-100
- B= 80-89
- C= 70-79
- D= 60-69
- F= 0-59

Acceptable course assignments/assessments

1. Homework assignments
2. Class participation and activities
3. Quizzes, exams
4. Student projects / case studies
5. Computer assignments
6. Surveys
7. Journals

OTHER REFERENCES

Course Competency/Assessment Methods Matrix

(Dept/# Course Name)	Assessment Options																																			
For each competency/outcome place an "X" below the method of assessment to be used.	Assessment of Student Learning	Article Review	Case Studies	Group Projects	Lab Work	Oral Presentations	Pre-Post Tests	Quizzes	Written Exams	Artifact Self Reflection of Growth	Capstone Projects	Comprehensive Written Exit Exam	Course Embedded Questions	Multi-Media Projects	Observation	Writing Samples	Portfolio Evaluation	Real World Projects	Reflective Journals	Applied Application (skills) Test	Oral Exit Interviews	Accreditation Reviews/Reports	Advisory Council Feedback	Employer Surveys	Graduate Surveys	Internship/Practicum /Site Supervisor Evaluation	Licensing Exam	In Class Feedback	Simulation	Interview	Written Report	Assignment				
	Direct/ Indirect	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	D	I	I	I	I	D	D										
Students will demonstrate knowledge of probability.		X	X					X	X		X	X						X	X																X	
Students will demonstrate knowledge of statistics.		X	X					X	X		X	X						X	X																	X
Students will demonstrate knowledge of consumer math.		X	X					X	X		X	X						X	X																	X
Students will demonstrate knowledge of set theory.		X	X					X	X		X	X						X	X																	X