JEFFERSON COLLEGE

COURSE SYLLABUS

MTH131

SURVEY OF COLLEGE MATHEMATICS

3 Credit Hours

Prepared by:
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Revised by:
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January 2018

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MTH131: Survey of College Mathematics

I. CATALOG DESCRIPTION

A. Course Pre-requisite/co-requisite:
Reading Proficiency
Must meet math requirement by one of the following:
1. High School GPA 3.0+ within 5 years
2. ACT 22+ within two years
3. Accuplacer Elementary Algebra 107+ within two years
4. Accuplacer College Level Math 39+ within two years
5. JC Non-STEM College Math Placement Exam 50+ within two years
6. HiSET Career and College Readiness level or GED Score 175+ within 5 years
7. High School GPA 3.0+ within seven years AND corequisite MTH091 Support for Survey of College Math
8. JC Non-STEM College Math Placement Exam 20 - 49 within two years AND corequisite MTH091 Support for Survey of College Math
9. GED Score 165 - 174 within seven years AND corequisite MTH091 Support for Survey of College Math

B. 3 semester credit hours

C. Survey of College Mathematics deals with several advanced mathematical topics, many of which are included in College Algebra. This course is not a prerequisite for any mathematics course. A scientific calculator is required (D,O)

D. Fulfills Mathematical Sciences CORE requirement for AA, AAT, AFA, and select AAS degrees; MOTR MATH 120 Mathematical Reasoning & Modeling equivalent.

Elective course applies toward AA and AAT degree requirement.

II. EXPECTED LEARNING OUTCOMES/CORRESPONDING ASSESSMENT MEASURES

Expected Learning Outcomes	Assessment Measures
Students apply proportional reasoning to draw conclusions and make decisions in quantitative-based situations.	Class discussion/practice, homework, quizzes, and tests
Solve applications by appropriately applying algebraic techniques including linear equations, proportions, and linear inequalities	Class discussion/practice, homework, quizzes, and tests
Analyze and model data using functions and graphs	Class discussion/practice, homework, quizzes, and tests

Solve applications involving consumer mathematics	Class discussion/practice, homework, quizzes, and tests
Analyze data through the use of basic statistical measures	Class discussion/practice, homework, quizzes, and tests
Use units and unit conversions to explain, draw conclusions, or make decisions.	Class discussion/practice, homework, quizzes, and tests

III. OUTLINE OF TOPICS

Required:

A. Algebra: equations and inequalities
   1. Algebraic expressions and formulas
   2. Linear equations in one variable and proportions
   3. Applications linear equations
   4. Linear inequalities in one variable
   5. Quadratic equations (optional)

B. Algebra: graphs, functions, and linear systems
   1. Graphing and functions
   2. Linear functions and their graphs
   3. Systems of linear equations in two variables (optional)
   4. Linear inequalities in two variables (optional)
   5. Linear programing (optional)
   6. Modeling data: exponential, logarithmic, and quadratic functions

C. Consumer mathematics and financial management
   1. Percent, sales tax, and discounts
   2. Simple interest
   3. Compound interest
   4. Annuities, methods of saving, and investments
   5. Cars (optional)
   6. Cost of home ownership (optional)
   7. Credit cards (optional)

D. Measurement
   1. Measuring length; the metric system
   2. Measuring area and volume
   3. Measuring weight and temperature

E. Counting methods and probability theory
   1. The fundamental counting principle
   2. Permutations
   3. Combinations
   4. Fundamentals of probability

5. Probability with the fundamental counting principle, permutations, and combinations
6. Events involving “not” and “or” odds (optional)
7. Events involving “and” conditional probability (optional)
8. Expected value (optional)

F. Statistics
1. Sampling, frequency distributions, and graphs
2. Measures of central tendency
3. Measures of dispersion
4. The normal distribution
5. Problem solving with the normal distribution (optional)
6. Scatter plots, correlation, and regression lines

Options: a minimum of 1 will be covered from the following:

G. Problem solving and critical thinking
1. Inductive and deductive reasoning
2. Estimation, graphs, and mathematical models
3. Problem solving

H. Set theory
1. Basic set concepts
2. Subsets
3. Venn diagrams and set operations
4. Set operations and Venn Diagrams with three sets
5. Survey problems

I. Logic
1. Statements, negations, and quantified statements
2. Compound statements and connectives
3. Truth tables for negations, conjunction, and disjunction
4. Truth tables for the conditional and the biconditional
5. Equivalent statements and variations of conditional statements
6. Negations of conditional statements and De Morgan’s Laws
7. Arguments and truth tables
8. Arguments and euler diagrams

J. Number representation and calculation
1. Our Hindu-Arabic system and early positional systems
2. Number bases in positional systems
3. Computation in positional systems
4. Looking back at early numeration systems

K. Number theory and the real number system
1. Number theory, prime and composite numbers

2. The integers; order of operations
3. The rational numbers
4. The irrational numbers
5. Real numbers and their properties
6. Exponents and scientific notation
7. Arithmetic and geometric sequences

L. Geometry
1. Points, lines, planes, and angles
2. Triangles
3. Polygons, perimeter, and tessellations
4. Area and circumference
5. Volume and surface area
6. Right triangle trigonometry
7. Beyond Euclidean geometry

M. Voting and apportionment
1. Voting methods
2. Flaws of voting methods
3. Apportionment methods
4. Flaws of apportionment methods

N. Graph theory
1. Graphs, paths, and circuits
2. Euler paths and Euler circuits
3. Hamilton paths and Hamilton circuits
4. Trees

IV. METHODS OF INSTRUCTION

A. Lecture

B. Discussion

C. In-class activities

D. MyMathLab interactive assignments

V. REQUIRED TEXTBOOK(S)

A. Blitzer, B. F., *Thinking mathematically* (current ed.). Pearson.

B. MyMathLab Student Access Kit. Boston: Pearson
.

VI. REQUIRED MATERIALS

Scientific calculator

VII. SUPPLEMENTAL REFERENCES

Contained within MyMathLab:

A. Student Solutions Manual

B. Study plan

VIII. METHODS OF EVALUATION

A. Homework: 10-20%

B. Classwork/Discussions: 0-20%

C. Quizzes: 0-20%

D. Tests: 30-60%

E. Final examination: 15-25%

F. Grading Scale
90-100% = A
80-89% = B
70-79% = C
60-69% = D
Below 60% = F

IX. ADA AA STATEMENT

Any student requiring special accommodations should inform the instructor and the Coordinator of Disability Support Services (TC101; phone 636-481-3169).

X. ACADEMIC HONESTY STATEMENT

All students are responsible for complying with campus policies as stated in the Student Handbook (see College website, http://www.jeffco.edu).

XI. ATTENDANCE STATEMENT

Regular and punctual attendance is expected of all students. Any one of these four options may result in the student being removed from the class and an administrative withdrawal being processed: (1) Student fails to begin class; (2) Student ceases

participation for at least two consecutive weeks; (3) Student misses 15 percent or more of the coursework; and/or (4) Student misses 15 percent or more of the course as defined by the instructor. Students earn their financial aid by regularly attending and actively participating in their coursework. If a student does not actively participate, he/she may have to return financial aid funds. Consult the College Catalog or a Student Financial Services representative for more details.

XII. OUTSIDE OF CLASS ACADEMICALLY RELATED ACTIVITIES

The U.S. Department of Education mandates that students be made aware of expectations regarding coursework to be completed outside the classroom. Students are expected to spend substantial time outside of class meetings engaging in academically related activities such as reading, studying, and completing assignments. Specifically, time spent on academically related activities outside of class combined with time spent in class meetings is expected to be a minimum of 37.5 hours over the duration of the term for each credit hour.