MATH 101 Course Outline as of Fall 2023

CATALOG INFORMATION

Dept and Nbr: MATH 101   Title: MATH FOR AA/AS DEGREE
Full Title: Mathematics for the Associate Degree
Last Reviewed: 12/12/2022

Units			Course Hours per Week		Nbr of Weeks	Course Hours Total	
Maximum	3.00		Lecture Scheduled	3.00	17.5	Lecture Scheduled	52.50
Minimum	3.00		Lab Scheduled	0	6.5	Lab Scheduled	0
			Contact DHR	0		Contact DHR	0
			Contact Total	3.00		Contact Total	52.50
			Non-contact DHR	0		Non-contact DHR	0

Total Out of Class Hours: 105.00   Total Student Learning Hours: 157.50

Title 5 Category: AA Degree Applicable
Grading: Grade or P/NP
Repeatability: 00 - Two Repeats if Grade was D, F, NC, or NP
Also Listed As:
Formerly:

Catalog Description:

Students will learn four mathematics topics selected from functions, financial math, geometry, linear programming, probability and statistics, reasoning, and trigonometry. This course fulfills the mathematics competency requirement for an associate degree from SRJC. It is not recommended for students intending to transfer.

Prerequisites/Corequisites:

Course Completion of MATH 151 OR Completion of MATH 150B or higher (MATH)

Recommended Preparation:

Limits on Enrollment:

Schedule of Classes Information:

Description: Students will learn four mathematics topics selected from functions, financial math, geometry, linear programming, probability and statistics, reasoning, and trigonometry. This course fulfills the mathematics competency requirement for an associate degree from SRJC. It is not recommended for students intending to transfer. (Grade or P/NP)
Prerequisites/Corequisites: Course Completion of MATH 151 OR Completion of MATH 150B

or higher (MATH)
Recommended:
Limits on Enrollment:
Transfer Credit:
Repeatability: Two Repeats if Grade was D, F, NC, or NP

ARTICULATION, MAJOR, and CERTIFICATION INFORMATION:

AS Degree:	**Area**		**Effective:**	**Inactive:**
	B	Communication and Analytical Thinking	Fall 2012	
	MC	Math Competency		
	B	Communication and Analytical Thinking	Fall 2009	Summer 2011
CSU GE:	**Transfer Area**		**Effective:**	**Inactive:**
IGETC:	**Transfer Area**		**Effective:**	**Inactive:**

CSU Transfer:	**Effective:**	**Inactive:**
UC Transfer:	**Effective:**	**Inactive:**

CID:

Certificate/Major Applicable:
Both Certificate and Major Applicable

COURSE CONTENT

Student Learning Outcomes:
At the conclusion of this course, the student should be able to:
1. Demonstrate proficiency in mathematical skills and conceptional understanding within four of the following topics: functions, financial math, geometry, linear programming, probability and statistics, reasoning, and trigonometry.
2. Apply mathematical concepts to a variety of real-world problems.

Objectives:
At the conclusion of this course, the student should be able to do the listed objectives from four of the following seven subject areas:
I. Functions
   A. Define function, domain, and range, and use function notation appropriately.
   B. Use a graphing calculator to analyze the graph of a function.
   C. Solve application and modeling problems that involve functions.
II. Financial Math
   A. Use simple interest, compound interest, future value, present value, and effective yield formulas to calculate unknown values.
   B. Use a graphing calculator to solve for unknown values.
   C. Create and explore amortization tables.
III. Geometry: Instructor choice of at least three of the following objectives.
   A. Identify two- and three-dimensional shapes and use basic distance, area, surface area and volume formulae.
   B. Recognize, and apply appropriately, constructions, relationships and formulae involving

quadrilaterals; sides and angles of triangles; parallel lines and planes; and chords, secants and tangents of circles.

    C. Describe and apply symmetry and rigid and non-rigid transformations.

    D. Use deductive reasoning to reach conclusions based on underlying axioms or previously proved theorems.

    E. Discuss and apply relationships in non-Euclidean geometry.

    F. Recognize types of graphs and use relationships between vertices and edges to discuss and solve problems from graph theory.

IV. Linear Programming

    A. Graph systems of linear inequalities.

    B. Define the feasible region for a linear programming problem and calculate the vertices the region.

    C. Calculate the optimum value or values of a function of two variables based on the graph of the feasible region.

    D. Solve application and modeling problems that involve linear programming.

V. Probability and Statistics

    A. Create and use graphical displays of data and frequency distributions.

    B. Define mean, median, mode, percentiles, variability and standard deviation and compute each for sets of data.

    C. Use laws of probability.

    D. Discuss linear regression and correlation, and use technology to compute regression equations for applied problems.

VI. Reasoning

    A. Apply inductive reasoning to patterns and sequences.

    B. Apply deductive reasoning to analyze statements and arguments using logic, Venn diagrams and set theory.

VII. Trigonometry

    A. Calculate the lengths of the sides of a triangle using the Pythagorean theorem.

    B. Define the basic trigonometric functions in terms of right triangle ratios with angles given in degrees.

    C. Use a calculator to find the values of basic trigonometric functions and angles.

    D. Solve application and modeling problems that involve trigonometry.

Topics and Scope:

Instructor will choose four of the following seven topics:

I. Functions

    A. Variation

    B. Rates of change

    C. Population growth

    D. Other applications and models

II. Financial Math

    A. Simple and compound interest

    B. Future value

    C. Present value

    D. Annuities

    E. Loans

    F. Effective yield

    G. Applicatons

III. Geometry

    Topics chosen from at least seven of the following topics:

    A. Basic figures in geometry

B. Deductive reasoning
C. Parallel lines and planes
D. Similarity and congruence
E. Inequalities in geometry
F. Right triangles
G. Circles
H. Constructions
I. Areas and volumes
J. Non-Euclidean Geometry
K. Polyhedra
L. Transformations and symmetries
M. Graph theory
N. Applications

IV. Linear Programming
A. Linear modeling
B. Optimization
C. Applications

V. Probability and Statistics
A. Counting techniques
B. Probability rules
C. Sampling and collecting data
D. Organizing data
E. Measures of center and spread
F. Graphical display of data
G. Linear regression
H. Applications

VI. Reasoning
A. Inductive reasoning including patterns and sequences
B. Deductive reasoning including logic and sets
C. Applications

VII. Trigonometry
A. Angles
B. Basic definitions
C. Right triangles
D. Pythagorean Theorem
E. Applications

Assignment:

1. Weekly reading (20-50 pages)
2. Problem set assignment(s) from required text(s) or supplementary materials chosen by the instructor (1-6 per week)
3. Quiz(zes) (0-4 per week)
4. Exams (2-8)
5. Project(s) (0-10) for example:
    A. Computer explorations
    B. Modeling activities
6. Final exam

Methods of Evaluation/Basis of Grade:

Writing: Assessment tools that demonstrate writing skills and/or require students to select, organize and explain ideas in writing.

None, This is a degree applicable course but assessment tools based on writing are not included because problem solving assessments are more appropriate for this course.	Writing 0 - 0%

Problem Solving: Assessment tools, other than exams, that demonstrate competence in computational or non-computational problem solving skills.

Problem set assignment(s)	Problem solving 5 - 20%

Skill Demonstrations: All skill-based and physical demonstrations used for assessment purposes including skill performance exams.

None	Skill Demonstrations 0 - 0%

Exams: All forms of formal testing, other than skill performance exams.

Quiz(zes); exams; final exam	Exams 60 - 95%

Other: Includes any assessment tools that do not logically fit into the above categories.

Project(s)	Other Category 0 - 25%

Representative Textbooks and Materials:
Thinking Mathematically 8th ed. Blitzer, R. Pearson 2022.
Mathematics: A Human Endeavor. 3rd ed. Jacobs, Harold. W.H. Freeman. 1994 (classic).nstructor prepared materials