*Approved: April 2023 Effective: Fall 2023*

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| **MATERIAL TO BE COVERED** | **SECTIONS FROM TEXT** | **TIME LINE** |
| Problem solving, inductive and deductive reasoning, problem solving with patterns, problem solving strategies, calculating, estimating and reading graphs. | 1.1 - 1.4 | 5 hours |
| Sets: basic properties of sets, subsets, set operations, applications of sets, infinite sets, Venn diagrams. | 2.1 - 2.4 | 5 hours |
| Logic: logic statements and quantifiers, truth tables and applications, the conditional and the biconditional, the conditional and related statements, arguments, Euler diagrams. | 3.1 - 3.6 | 7 hours |
| Conversion between number bases. | 4.4 | 1.5 hours |
| Modeling: linear functions, graphs, applications, and models (review of algebra topics as needed to cover mathematical modeling). | 8.3-8.4 | 2.5 hours |
| Counting: counting by systematic listing, using the Fundamental Counting Principle, using permutations and combinations, using Pascal's Triangle, counting problems involving "not" and "or". | 10.1 - 10.5 | 4.5 hours |
| Probability: basic concepts, events involving "not" and "or", conditional probability: events involving "and", binomial probability, expected values. | 11.1 - 11.5 | 5 hours |
| Statistics: visual displays of data, measures of central tendency, measures of dispersion, measures of position, the Normal Distribution. | 12.1 - 12.5 | 5 hours |
| Optional Topics:  Historical numeration systems  The Fibonacci Sequence and the Golden Ratio  Quadratic functions, graphs and models  Exponential and logarithmic functions, graphs and models  Non-Euclidean geometry and topology  Chaos and fractal geometry  Graph theory  Apportionment and voting | 4.1-4.2  5.5  8.5  8.6  9.7  9.8  14.1-14.4  15.1-15.4 | 4.0 hours |

\* At least **two** optional topics must be covered.

### 3-unit class: hours total 42.5 (15 x 2 hours 50 minutes) – 3 hours for exams + 2.5 hour final

[This outline allows for 3 hours of exams.]

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* Math Department Policy can be found at: <https://mtsac.instructure.com/courses/33990/files?preview=8920380>