## *Approved:* May 2022 *Effective: FALL 2022*

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| **MATERIAL TO BE COVERED** | **SECTIONS**  **FROM TEXT** | **TIME LINE** |
| Rectangular coordinate system, graphs of lines, equations of a  line, function notation, supply and demand, break-even analysis. | (1.1 - 1.2) | (2 Hours) |
| Solving systems of linear equations in two and three variables using the echelon method, Gauss-Jordan method. Solving systems of m linear equations containing n variables.  Matrix algebra, multiplication of matrices, matrix inverses.  Business and Economic, Life Science, Social Science models. | (2.1 – 2.5) | (6 Hours) |
| Graphing linear inequalities, geometric approach to linear programming. Models: investment, manufacturing, cost. | (3.1 - 3.3) | (3 Hours) |
| Simplex method, pivoting, solving, maximization in standard form, minimizing using the Duality principle, Simplex with mixed constraints. Models: profit, mixture and investment. | (4.1 - 4.4) | (6.5 Hours) |
| Simple interest, compound interest, present and future value annuities. Models: Loans, investment, mortgage. | (5.1 - 5.3) | (3.5 Hours) |
| Set theory, Venn diagrams, sample space, probability of an event, odds, conditional probability, independent events, product rule of probability, Bayes' theorem. | (7.1 - 7.6) | (6 Hours) |
| Combinatorics and counting techniques, multiplication principle, binomial probability distribution, expected value. | (8.1 - 8.5) | (5 Hours) |
| Data and sampling, organizing and displaying data, measures of central tendency, measures of variation, the normal distribution, normal approximation to the binomial distribution. | (9.1 - 9.4) | (5 Hours) |
| Markov chains and transition matrices. | (10.1 - 10.2) | (2.5 Hours) |

### 3-unit class: hours total 42.5 (15 x 2 hours 50 minutes) – 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://www.mtsac.edu/math/departmentpolicy.html>