*Approved: November 2023 Effective: Fall 2024*

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| **MATERIAL TO BE COVERED** | **SECTIONS FROM TEXT** | **RECOMMENDED TIME LINE** |
| **Math 120 Topics: Linear Functions**  Rectangular coordinate system, graphs of lines, equations of a line, function notation, supply and demand, break-even analysis  **Math 12 Support Topics:** Additional support for;rectangular coordinate system, graphs of lines, equations of a line, function notation, supply and demand, break-even analysis | 1.1 – 1.2 | **Math 120:**  2 hours  **Math 12:**  4 hours |
| **Math 120 Topics: Systems of Linear Equations and Matrices**  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.  Models: business and economic, life science, social science models.  **Math 12 Support Topics:** Additional support for; 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.  Models: business and economic, life science, social science models.  sciences. | 2.1 - 2.5 | **Math 120:**  6 hours  **Math 12:**  3 hours |
| **Math 120 Topics: Linear Programming (The Graphical Method)**  Graphing linear inequalities, geometric approach to linear programming. Models: investment, manufacturing, cost.  **Math 12 Support Topics:** Additional support for; graphing linear inequalities, geometric approach to linear programming. Models: investment, manufacturing, cost. | 3.1 - 3.3 | **Math 120:**  3 hours  **Math 12:**  3 hours |
| **Math 120 Topics: Linear Programming (The Simplex Method)**  Simplex method, pivoting, solving, maximization in standard form, minimizing using the Duality Principle. Simplex with mixed constraints.  Models: profit, mixture, and investment.  **Math 12 Support Topics:** Additional support for; 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 | **Math 120:**  6.5 hours  **Math 12:**  3 hour |
| **Math 120 Topics: Mathematics of Finance**  Simple interest, compound interest, present and future value annuities.  Models: loans, investment, mortgage.  **Math 12 Support Topics:** Additional support for; simple interest, compound interest, present and future value annuities.  Models: loans, investment, mortgage. | 5.1 – 5.3 | **Math 120:**  3.5 hours  **Math 10A:**  3 hours |
| **Math 120 Topics: Sets and Probability**  Set theory, Venn diagrams, sample space, probability of an event, odds, conditional probability, independent events, product rule of probability, Bayes’ Theorem.  **Math 12 Support Topics:** Additional support for; set theory, Venn diagrams, sample space, probability of an event, odds, conditional probability, independent events, product rule of probability, Bayes’ Theorem.  Additional time with applications of Venn diagrams (surveys and data analysis). | 7.1 – 7.6 | **Math 120:**  6 hours  **Math 12:**  4 hours |
| **Math 120 Topics: Counting Principles**  Combinatorics and counting techniques, multiplication principle, binomial probability distribution, expected value.  **Math 12 Support Topics:** Additional support for; combinatorics and counting techniques, multiplication principle, binomial probability distribution, expected value. | 8.1 – 8.5 | **Math 120:**  5 hours  **Math 12:**  4 hours |
| **Math 120 Topics: Statistics**  Data and sampling, organizing and displaying data, measure of central tendency, measures of variation, the normal distribution, normal approximation to the binomial distribution.  **Math 12 Support Topics:** Additional support for; data and sampling, organizing and displaying data, measure of central tendency, measures of variation, the normal distribution, normal approximation to the binomial distribution. | 9.1 – 9.4 | **Math 120:**  5 hours  **Math 12:**  4 hours |
| **Math 120 Topics: Markov Chains**  Markov chains and transition matrices.    **Math 12 Support Topics:** Additional support for;Markov chains and transition matrices. | 10.1 – 10.2 | **Math 120:**  2.5 hours  **Math 12:**  2 hours |

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**Math 12 Instructor Notes:**

* This outline does not include time for Math 12 exams. Exams in support courses are at the discretion of the professor.
* Corequisites are 15-week course and do not meet during finals week.
* Final exam should be given during week 15.
* Pearson MyLab is available as an instructor resource and student resource.
* Corequisite courses are Pass/No Pass grading and are not subject to department grading policy.
* Math Department Policy can be found at: <https://mtsac.instructure.com/courses/33990/files?preview=1988385>

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