<u>Curriculum</u>

<u>Class</u> : Sec3SE   <u>Cycle:</u> Secondary

<u>Subject</u> : Math   <u>Textbook:</u> Puissance

Units	Objectives	Learning Outcomes
Statistical Series in one Variable (10h)	• Statistical Vocabulary • Graphical Representation' • Characteristics of a statistical series • Use of the calculator	• Identify population , individual and character • Calculate relative frequency, cumulative frequency and cumulative relative. • Draw bar graph, circular diagram, histogram and polygon' • Calculate Mode, Median, mean, standard deviation and variance.
Statistical Series in two Variables (10h)	• Relation of 2 variables of a population • Scatter plot points • Linear Adjustment using the method of least squares	• Draw the scatter plot points. • Calculate the mean point • Calculate the covariance • Calculate the coefficient of linear correlation • Determine the equation of the regression line y in x and draw it and use it to predict new values.
Functions of Economics and Social Sciences (15h)	• Cost Functions • Revenue • Profit • Demand and Supply • Depreciation	• Determine the total cost as a sum of variable and fixed cost • Determine marginal cost • Determine average cost • Find quantity that minimize average cost • Determine total revenue, average and marginal revenue. • Determine total profit, average and marginal profit. • Determine the quantities that maximize the profit. • Analyze cases that make gain, loss or breakeven. • Determine market equilibrium quantity and price. • Calculate the elasticity of demand • Calculate yearly depreciation,

Units	Objectives	Learning Outcomes
Rational Functions (20h)	- Study of rational function - Graphical representation' - Rational functions and application to economics	- Determine the domain of definition - Calculate limits at infinity and at points. - Identify horizontal, vertical and oblique asymptotes. - Apply rules of derivative - Set up the table of variation, specify extremum. - Write the equation of tangent to curve - Apply Hopital's Rule - Prove the existence of unique solution of an equation. - Draw the graph and relate to economical relations.
Integration (10h)	- Rules of Integration - Properties - Calculation of area	- Definition of definite integral - Apply Fundamental theorem of integration - Apply rules of integration - Use the method of change of variable. - Use the method of integration by parts. - Calculate the area between two curves, curve and line or curve and x-axis. - Apply properties of linearity, chasles ' relation, comparison , even and odd . - Relation between total and marginal cost. - Applications on average value theorem.
Napierian Logarithm (20h)	- Definition - Rules of calculation - Derivative and Integral - Limits - Study of function ln	- Consequences of definition - Specify domain of definition - Logarithm of product, quotient and power. - Solving equalities, inequalities and system of equations. - Calculate derivative of logarithmic functions. - Calculate integrals using change of variable, integration by parts.

		• Memorize basic limits and solve others by substitution, hospitals rule or common factor or denominator.
		• Study the sense of variation; draw the curve of logarithmic functions.
		• Relate to economics functions
Exponentials (20h)	• Definition • Rules of calculation • Derivative and integral • Limits • Study of the function	• Consequences of definition • Exponential of product, quotient and power. • Solving equalities, inequalities and system of equations. • Calculate derivative of exponential functions. • Calculate integrals using change of variable, integration by parts. • Memorize basic limits and solve others by substitution, hospitals rule or common factor or denominator. • Study the sense of variation; draw the curve of exponential functions. • Relate to economic functions.
Numerical Sequence (15h)	• Definition • Determination • Sense of variation • Major, minor , bounded • Arithmetic • Geometric	• Define first term, successive terms and general term. • Determine the terms by explicit form or recursion. • Determine sense of variation (increasing or decreasing) by difference, derivative or ratio. • Define upper bound, lower bound and bounded sequence. • Define arithmetic sequence, equation of general term, equation of sum of first n terms and solve related word problems. • Define geometric sequence, equation of general term, equation of sum of first n terms, limit and solve related word problems

Interest (10h)	• Simple interest • Compound Interesr • Annuity	• Calculation of simple interest and acquired value. • Calculation of compound interest and acquired value or actual value. • Future value of annuity • Paying off a debt by annuity
Counting (10h)	• Factorial of a natural number • Arrangement with repetition • Arrangement without repetition • Combination	• Applications on use of factorial • Solve word problems to distinguish between formulas.
Probability (20h)	• Equiprobable events • Conditional probability/total probability • Tree diagram' • Random varaible	• Reminder of basic vocabulary • Calculate probability of equiuprobable events • Use tree diagram to calculate conditional probability • Distinguish independent events • Set the probability distribution table • Calculate the expected value