

令和2年度 神奈川県立横浜国際高等学校 指導計画(予定)

教科・科目	Mathematics: applications and interpretation (SL)	学年	2, 3	教科書	Haese Mathematics SL
		単位数	3, 3	副教材	Haese Mathematics HL etc.

学習目標	<p>Aims of Mathematics SL course are to:</p> <p>1. enjoy mathematics, and develop an appreciation of the elegance and power of mathematics. 2. develop an understanding of the principles and nature of mathematics. 3. communicate clearly and confidently in a variety of contexts. 4. develop logical, critical and creative thinking, and patience and persistence in problem solving. 5. employ and refine their powers of abstraction and generalization. 6. apply and transfer skills to alternative situations, to other areas of knowledge and to future developments. 7. appreciate how developments in technology and mathematics have influenced each other. 8. appreciate the moral, social and ethical implications arising from the work of mathematicians and the applications of mathematics. 9. appreciate the international dimension in mathematics through an awareness of the universality of mathematics and its multicultural and historical perspectives. 10. appreciate the contribution of mathematics to other disciplines, and as a particular “area of knowledge” in the TOK course.</p>
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学習方法	<p>The internally assessed exploration offers students the opportunity for developing independence in their mathematical learning. Students are encouraged to take a considered approach to various mathematical activities and to explore different mathematical ideas. The exploration also allows students to work without the time constraints of a written examination and to develop the skills they need for communicating mathematical ideas.</p>
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内容のまとめ	時期	単元(題材)	評価方法
Unit 1: Number and algebra	1年次 1-3月	1.1 Operations with numbers 1.2 Arithmetic sequences and series 1.3 Geometric sequences and series 1.4. Financial applications of geometric sequences and series 1.5 Laws of exponents with integer exponents 1.6 Approximation: decimal places, significant figures 1.7 Amortization and annuities using technology 1.8 Use of technology to solve systems of linear equations	Problem solving and graphing of real world problems in the activities. Graphing vectors and identifying special properties through computation.
Unit 2: Functions	2年次 前期	2.1 The different forms of the equation of a straight line; gradient; intercepts 2.2 Concept of a function, domain, range and graph 2.3 The graph of a function 2.4 Determine key features of graphs 2.5 Modelling with the following functions 2.6 Modelling skills	
Unit 3: Geometry and trigonometry	2年次 後期	3.1 The distance between two points in three-dimensional space, and their midpoint 3.2 Use of sine, cosine and tangent ratios to find the sides and angles of right-angled triangles 3.3 Applications of right and non-right angled trigonometry 3.4 The circle: length of an arc; area of a sector 3.5 Equations of perpendicular bisectors 3.6 Voronoi diagrams	
Unit 4: Probability and statistics	3年次 前期	4.1 Concepts of population, sample, random sample, discrete and continuous data 4.2 Presentation of data (discrete and continuous); frequency histograms with equal class intervals 4.3 Measures of central tendency 4.4 Linear correlation of bivariate data 4.5 Concepts of trial, outcome, equally likely outcomes, relative frequency, sample space (U) and event 4.6 Use of Venn diagrams, tree diagrams, sample space diagrams and tables of outcomes to calculate probabilities 4.7 Concept of discrete random variables and their probability distributions 4.8 Binomial distribution 4.9 The normal distribution and curve 4.10 Spearman's rank correlation coefficient 4.11 Formulation of null and alternative hypotheses	

Unit 5: Calculus	3年次 前期	5.1 Introduction to the concept of a limit 5.2 Increasing and decreasing functions 5.3 Derivative of functions 5.4 Tangents and normals at a given point, and their equations 5.5 Introduction to integration as anti-differentiation of functions 5.6 Values of x where the gradient of a curve is zero 5.7 Optimization problems in context. Examples 5.8 Approximating areas using the trapezoidal rule			Problem solving and graphing of real world problems in the activities. Graphing vectors and identifying special properties through computation
Trial Examination	3年次 後期				
最終試験 評価項目	外部評価 (EA)	Paper 1	ペーパーテスト	40%	
		Paper 2	ペーパーテスト	40%	
	内部評価 (IA)		「数学探究」	20%	