都立国際高校　年間授業計画／Tokyo Metropolitan Kokusai High School Course Syllabus

科目基礎情報／Course information

開講年度／Academic year	令和4年度／2022年度
開講学科／Department	国際学科国際バカロレアコース／IBDP(International Baccalaureate Diploma Programme)
教科／Subject	Mathematics Analysis and Approaches Higher Level (DP1)
科目／Course Title	Mathematics Analysis and Approaches Higher Level (DP1)
学年・クラス／Year・Class	DP1
単位数／credits	6

科目概要情報／Course description

講座概要／Course description	This course recognizes the need for analytical expertise in a world where innovation is increasingly dependent on a deep understanding of mathematics. This course includes topics that are both traditionally part of a pre-university mathematics course (for example, functions, trigonometry, calculus) as well as topics that are amenable to investigation, conjecture and proof, for instance the study of sequences and series and proof by induction.
到達目標／Course objectives	Enjoy mathematics and develop an appreciacion of the elegance and power of mathematics. Develop un understanding of the principles and natures of mathematics, develop logical, critical and creative thinking. Employ and refine powers of abstraction and generalization.
評価方法と評価基準／Evaluation method and criteria	1. Knowledge and Understanding 2. Problem solving 3. Communication and Interptretation 4. Technology 5. Reasoning 6. Inquiery Approaches
教科書／Textbooks	Mathematics: Analysis and Approaches, Higher Level, Pearson Education
校外学習／Field trip	

授業計画／Course schedule

		指導項目／Topic	指導内容／Contents	評価の方法・基準／Evaluation method and criteria	予定時数／Alotted hours
1学期/1st semester	4 月	Algebra and Function Basics, More about Functions	Students will learn more about algebraic solutions and the nature of mathematical functions including mapping, domain, range, composites, and inverses.	Homeworks, Quizzes, Take-Home Assignments, Examinations	18
	5 月	Sequences and Series	Students will learn about the relationship between series and sequences as well as a variety of series such as arithmetic sequence and geometric sequence.		18
		Exponential and Logarithmic Functions	Students will learn about the nature and graphs of exponential and logarithmic functions.		18
	6 月	Exponential and Logarithmic Functions	Students will learn more about manipulating exponential and logarithmic functions.		18
		Exponential and Logarithmic Functions	Students will learn more about the nature and graphs of exponential and logarithmic functions and solve equations		18
	7月	Proofs	Students will study about logic in proof, including direct proof, proof by counterexample, and inductive proofs.		18
2学期/2st semester	9月	Trigonometric Functions	Students will learn about the relationship trigonometric functions, their identities, and their graphs.		18
	10 月	Complex Numbers	Students will learn about the complex plane and various forms of complex numbers, plus the connection to trig.		18
	11 月	Differential Calculus 1 and 2	Students will learn about limits and differentiation, including how it pertains to gradient.		18
	12 月	Integral Calculus 1 and 2	Students will learn about integration techniques including u-substitution and integration by parts. Students will learn about solids of revolution and volume as it relates to integration.		18
3学期/3rd semester	1 月				18
	2 月	Vectors	Students will learn about vector algebra (including dot and cross products) and how vectors relate to lines and planes.		18
	3 月	Statistics and Probability I	Students will engage in descriptive and inferential statistics and probability models by hand and by GDC.		18

総授業時数／Total hours　　234