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7年度 (2025 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 Area)	Mathematics
科目	(Subject)	Mathematics: Applications and Interpretation　Higher Level
学年･クラス	(Grade･Class)	DP2
単位数	(Number of units)	6
使用教科書	(Text Books)	Pearson Mathematics Applications and Interpretation
校外学習	(Field trip)	-

○ 教科の目標 (Goals of the subject area)

【知　識　及　び　技　能】(Knowledge and Skills)
Understand the basic concepts, principles and laws in mathematics, as well as the skills to mathematically interpret and express events.

【思考力、判断力、表現力等】 (Ability to think, make judgements, express themselves)
Develop the ability to examine events logically using mathematics, to recognize the essence of events and their relationships with other events and to examine them in an integrated and developed manner, and to express events concisely, clearly, and precisely using mathematical expressions.

【学びに向かう力、人間性等】 (Motivation to learn, Humanity)
Develop an attitude to recognize the advantages of mathematics and actively utilize mathematics, an attitude to think tenaciously and make judgments based on mathematical arguments, an attitude to reflect on the process of problem solving and to deepen consideration, evaluation and improvement, and a basis for creativity.

○ 科目の目標 (Goals of the subject)

【知識及び技能】 (Knowledge and Skills)	【思考力、判断力、表現力等】 (Ability to think, make judgements, express themselves)	【学びに向かう力、人間性等】 (Motivation to learn, Humanity)
Understand the basic concepts, principles and laws in mathematics, as well as the skills to mathematically interpret and express events.	Develop the ability to examine events logically using mathematics, to recognize the essence of events and their relationships with other events and to examine them in an integrated and developed manner, and to express events concisely, clearly, and precisely using mathematical expressions.	Develop an attitude to recognize the advantages of mathematics and to make use of mathematics, an attitude to think tenaciously and to make judgments based on mathematical arguments, and an attitude to deepen consideration, evaluation, and improvement by looking back on the process of problem solving, as well as a basis for creativity.

○ 授業計画 (Course schedule)

	単元の具体的な指導目標 Unit Objectives	指導項目・内容 Topic / Contents	評価規準 Evaluation Criteria	知 ❶	思 ❷	態 ❸	Alotted hours 配当時数
1学期 (1st semester)	Student(s) should be familiar with… - drawing inferences about a population - reliability and validity - the central limit theorem - confidence intervals for the proportion and mean. - the t-test and degrees of freedom - testng a hypothesis - type I and type II errors - the t-test to compare two means - the chi-squared test of goodness of fit - the chi-squared test of independence. - they key features of a scatter diagram and estimating a best-fit line by eye - the differece between causation and correlation - calculating (using a GDC) and interpreting Pearson's product-moment correlation for linear associations (r) - calculating (using a GDC) and interpreting Spearman's rank-order correlation coefficient - the limitations of and differences between Pearson's r and Spearman's r_s -and the least-square regression model and a piecewise linear model -interpreting SS_res as a measure of fit of a model - the coefficient of determination R^2 and its relationship to Pearson's r - non-linear regression using a GDC - non-linear regression by linearising data to find exponentia, logarithmic, or power models - log-log and log-lin graphs - working with first order differential equations (solving differential equations by separating the variables and setting up differential equations from context) - slope fields - finding numerical solutions of differential equations using Euler's method - finding numerical solutions for a coupled system - using a phase portrait to solve coupled differential equations - solving second-order differential equations by Euler's method - solutions to second-order diffential equatons by use of the phase portrait method	･Inferential Statistics ･Statistical tests and analyses ･Bivariate Analysis ･Integral calculus 2 (Differential Equations)	❶【Knowledge/Skills】 ･Recall, select and use their knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts. ･Use technology accurately, appropriately and efficiently both to explore new ideas and to solve problems. ❷【Ability to think/make judgements/express themselves】 ･Recall, select and use their knowledge of mathematical skills, results and models in both abstract and real-world contexts to solve problems. ･Transform common realistic contexts into mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation; use appropriate notation and teminology. ･Construct mathematical arguments through use of precise statements, logical deduction and interference and by the manipulation of mathematical expressions. ･Investigate unfamiliar situations, both abstract and from the real world, involving organizing and analyzing information, making conjectures, drawing conclusions, and testing their validity. ❸【Attitude towards learning proactively】 ･Be interested in mathematics, recognize the advantages of mathematics, and try to apply them to both abstract and real-world contexts to solve problems.	○	○	○	80
	Mock Exams			○	○		4

	単元の具体的な指導目標 Unit Objectives	指導項目・内容 Topic / Contents	評価規準 Evaluation Criteria	知 ❶	思 ❷	態 ❸	配当 時数
2学期（2nd semester）		・MAI Curriculum Review ・Holistic Understanding	❶【Knowledge/Skills】 ・Recall, select and use their knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts. ・Use technology accurately, appropriately and efficiently both to explore new ideas and to solve problems. ❷【Ability to think/make judgements/express themselves】 ・Recall, select and use their knowledge of mathematical skills, results and models in both abstract and real-world contexts to solve problems. ・Transform common realistic contexts into mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation; use appropriate notation and teminology. ・Construct mathematical arguments through use of precise statements, logical deduction and interference and by the manipulation of mathematical expressions. ・Investigate unfamiliar situations, both abstract and from the real world, involving organizing and analyzing information, making conjectures, drawing conclusions, and testing their validity. ❸【Attitude towards learning proactively】 ・Be interested in mathematics, recognize the advantages of mathematics, and try to apply them to both abstract and real-world contexts to solve problems.	○	○	○	96
3学期（3rd semester）		・MAI Curriculum Review ・Holistic Understanding	❶【Knowledge/Skills】 ・Recall, select and use their knowledge of mathematical facts, concepts and techniques in a variety of familiar and unfamiliar contexts. ・Use technology accurately, appropriately and efficiently both to explore new ideas and to solve problems. ❷【Ability to think/make judgements/express themselves】 ・Recall, select and use their knowledge of mathematical skills, results and models in both abstract and real-world contexts to solve problems. ・Transform common realistic contexts into mathematics; comment on the context; sketch or draw mathematical diagrams, graphs or constructions both on paper and using technology; record methods, solutions and conclusions using standardized notation; use appropriate notation and teminology. ・Construct mathematical arguments through use of precise statements, logical deduction and interference and by the manipulation of mathematical expressions. ・Investigate unfamiliar situations, both abstract and from the real world, involving organizing and analyzing information, making conjectures, drawing conclusions, and testing their validity. ❸【Attitude towards learning proactively】 ・Be interested in mathematics, recognize the advantages of mathematics, and try to apply them to both abstract and real-world contexts to solve problems.	○	○	○	48

総授業時数 Total hours	228