

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5年度 (2023 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)	Science
科目 (Subject)	Basic Biology
学年・クラス (Grade・Class)	1st Grade Class A~F
単位数 (Number of units)	2
使用教科書 (Text Books)	生物基礎 (東京書籍)
校外学習 (Field trip)	None

○ 教科の目標 (Goals of the subject area)

<p>【知識及び技能】 (Knowledge and Skills)</p> <ul style="list-style-type: none"> acquire a body of knowledge, methods and techniques that characterize science and technology develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge. <p>【思考力、判断力、表現力等】 (Ability to think, make judgements, express themselves)</p> <ul style="list-style-type: none"> apply and use a body of knowledge, methods and techniques that characterize science and technology develop an ability to analyse, evaluate and synthesize scientific information develop experimental and investigative scientific skills including the use of current technologies <p>【学びに向かう力、人間性等】 (Motivation to learn, Humanity)</p> <ul style="list-style-type: none"> appreciate scientific study and creativity within a global context through stimulating and challenging opportunities develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities

○ 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)
Demonstrate knowledge and understanding of: a. facts, concepts and terminology b. methodologies and techniques c. communicating scientific information	Apply: a. facts, concepts and terminology b. methodologies and techniques c. methods of communicating scientific information	Demonstrate the appropriate research, experimental, and personal skills necessary to carry out insightful and ethical investigations.

○ 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	Alotted hours			
				知 ①	思 ②	態 ③	相当 時数
1 学期 (1st semester)	<p>【Knowledge and Skills】</p> <ul style="list-style-type: none"> Develop and understanding of the similarities and differences between all forms of life. Understand how energy is exchanged within and organisms and between organisms in an ecosystem. <p>【Ability to think, make judgements, express themselves】</p> <ul style="list-style-type: none"> Be able explain how all organisms have developed from a single ancestor and provide evidence. Construct a food web, food chain and a pyramid of energy for a given ecosystem. <p>【Motivation to learn, Humanity】</p> <ul style="list-style-type: none"> Engages actively in discussions and class tasks Work collaboratively with other classmates during practicals and class tasks. 	<p>Topic</p> <ul style="list-style-type: none"> Diversity and commonality of life <p>Contents</p> <ul style="list-style-type: none"> Similarity in diverse life <p>Topic</p> <ul style="list-style-type: none"> Biological activities and energy <p>Contents</p> <ul style="list-style-type: none"> Cells: The universal unit of life Energy and metabolism Enzyme for energy metabolism Energy and metabolism in cells 	<p>①【Knowledge/Skills】</p> <ul style="list-style-type: none"> Short test, Examination, Lab report <p>②【Ability to think/make judgements/express themselves】</p> <ul style="list-style-type: none"> Examination, Poster presentation <p>③【Attitude towards learning proactively】</p> <ul style="list-style-type: none"> Reflection 	○	○	○	6
	<p>【Knowledge and Skills】</p> <ul style="list-style-type: none"> Understand what is the function of DNA and how it controls expression of traits in organisms <p>【Ability to think, make judgements, express themselves】</p> <ul style="list-style-type: none"> Draw diagrams and presentations explaining the structure of DNA, Nucleotides. Extracting DNA experiment. <p>【Motivation to learn, Humanity】</p> <ul style="list-style-type: none"> Engages actively in discussions and class tasks Work collaboratively with other classmates during practicals and class tasks. 	<p>Topic</p> <ul style="list-style-type: none"> Organisms and genes <p>Contents</p> <ul style="list-style-type: none"> Accurate transmission of genetic information Structure of DNA 	<p>①【Knowledge/Skills】</p> <ul style="list-style-type: none"> Short test, Examination, Lab report <p>②【Ability to think/make judgements/express themselves】</p> <ul style="list-style-type: none"> Examination, Poster presentation <p>③【Attitude towards learning proactively】</p> <ul style="list-style-type: none"> Reflection 	○	○	○	4
	定期考査 Examination			○	○		1
	<p>【Knowledge and Skills】</p> <ul style="list-style-type: none"> Understand that DNA is responsible for the storage of genetic information in organisms and how. <p>【Ability to think, make judgements, express themselves】</p> <ul style="list-style-type: none"> Draw diagrams and presentations explaining the Cell cycle and DNA replication. <p>【Motivation to learn, Humanity】</p> <ul style="list-style-type: none"> Engages actively in discussions and class tasks Work collaboratively with other classmates during practicals and class tasks. 	<p>Topic</p> <ul style="list-style-type: none"> Organisms and genes <p>Contents</p> <ul style="list-style-type: none"> Genome and genetic information 	<p>①【Knowledge/Skills】</p> <ul style="list-style-type: none"> Short test, Examination, Lab report <p>②【Ability to think/make judgements/express themselves】</p> <ul style="list-style-type: none"> Examination, Poster presentation <p>③【Attitude towards learning proactively】</p> <ul style="list-style-type: none"> Reflection 	○	○	○	6

	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 ①	思 ②	態 ③	相当 時数
	<p>【Knowledge and Skills】</p> <ul style="list-style-type: none"> Understand the mechanisms of how DNA replication occurs <p>【Ability to think, make judgements, express themselves】</p> <ul style="list-style-type: none"> Draw diagrams and presentations explaining Transcription, translation, protein structure, and gene expression. <p>【Motivation to learn, Humanity】</p> <ul style="list-style-type: none"> Engages actively in discussions and class tasks Work collaboratively with other classmates 	<p>Topic</p> <ul style="list-style-type: none"> Faithful delivery of genetic information <p>Contents</p> <ul style="list-style-type: none"> DNA replication Cell cycle 	<p>①【Knowledge/Skills】</p> <ul style="list-style-type: none"> Short test, Examination, Lab report <p>②【Ability to think/make judgements/express themselves】</p> <ul style="list-style-type: none"> Examination, Poster presentation <p>③【Attitude towards learning proactively】</p> <ul style="list-style-type: none"> Reflection 	○	○	○	4
	定期 考査 Examination			○	○		1
2学期 (2nd semester)	<p>【Knowledge and Skills】</p> <ul style="list-style-type: none"> Understand the mechanisms of how Proteins are synthesised from the information in DNA. <p>【Ability to think, make judgements, express themselves】</p> <ul style="list-style-type: none"> Draw diagrams and presentations explaining Transcription, translation, protein structure, and gene expression. <p>【Motivation to learn, Humanity】</p> <ul style="list-style-type: none"> Engages actively in discussions and class tasks Work collaboratively with other classmates 	<p>Topic</p> <ul style="list-style-type: none"> Genetic information and protein synthesis <p>Contents</p> <ul style="list-style-type: none"> Stream of genetic information Transcription Translation Gene expression and life process 	<p>①【Knowledge/Skills】</p> <ul style="list-style-type: none"> Short test, Examination, Lab report <p>②【Ability to think/make judgements/express themselves】</p> <ul style="list-style-type: none"> Examination, Poster presentation <p>③【Attitude towards learning proactively】</p> <ul style="list-style-type: none"> Reflection 	○	○	○	16
	定期 考査 Examination			○	○		1
2学期 (2nd semester)	<p>【Knowledge and Skills】</p> <ul style="list-style-type: none"> Understand the concept of homeostasis and how the internal environment is controlled. <p>【Ability to think, make judgements, express themselves】</p> <ul style="list-style-type: none"> Draw and label the liver, kidney and heart, describing structure and explaining function. <p>【Motivation to learn, Humanity】</p> <ul style="list-style-type: none"> Engages actively in discussions and class tasks Work collaboratively with other classmates during practicals and class 	<p>Topic</p> <ul style="list-style-type: none"> Internal environment <p>Contents</p> <ul style="list-style-type: none"> Characteristics of internal environment Control of the internal Environment Organs supporting the internal environment Heart and blood circulation 	<p>①【Knowledge/Skills】</p> <ul style="list-style-type: none"> Short test, Examination, Lab report <p>②【Ability to think/make judgements/express themselves】</p> <ul style="list-style-type: none"> Examination, Poster presentation <p>③【Attitude towards learning proactively】</p> <ul style="list-style-type: none"> Reflection 	○	○	○	16
	定期 考査 Examination			○	○		1
3学期 (3rd semester)	<p>【Knowledge and Skills】</p> <ul style="list-style-type: none"> Understand the structure and function of antibodies. Understand innate and adaptive immunity. <p>【Ability to think, make judgements, express themselves】</p> <ul style="list-style-type: none"> Drawing diagrams and presenting information explaining Innate and adaptive immunity and antibody structure and function. <p>【Motivation to learn, Humanity】</p> <ul style="list-style-type: none"> Engages actively in discussions and class 	<p>Topic</p> <ul style="list-style-type: none"> Immunity <p>Contents</p> <ul style="list-style-type: none"> Innate immunity Adaptive immunity Immunity and human diseases 	<p>①【Knowledge/Skills】</p> <ul style="list-style-type: none"> Short test, Examination, Lab report <p>②【Ability to think/make judgements/express themselves】</p> <ul style="list-style-type: none"> Examination, Poster presentation <p>③【Attitude towards learning proactively】</p> <ul style="list-style-type: none"> Reflection 	○	○	○	12
	定期 考査 Examination			○	○		1
3学期 (3rd semester)	<p>【Knowledge and Skills】</p> <ul style="list-style-type: none"> Understand how vegetation is established and distributed within different ecosystems. <p>【Ability to think, make judgements, express themselves】</p> <ul style="list-style-type: none"> Students should be able to explain the different biomes (environments) and their distribution in relation to the equator and the poles. <p>【Motivation to learn, Humanity】</p> <ul style="list-style-type: none"> Engages actively in discussions and class tasks Work collaboratively with other classmates during practicals and class 	<p>Topic</p> <ul style="list-style-type: none"> Diversity and distribution of vegetation <p>Contents</p> <ul style="list-style-type: none"> Vegetation and ecosystems Succession of vegetation 	<p>①【Knowledge/Skills】</p> <ul style="list-style-type: none"> Short test, Examination, Lab report <p>②【Ability to think/make judgements/express themselves】</p> <ul style="list-style-type: none"> Examination, Poster presentation <p>③【Attitude towards learning proactively】</p> <ul style="list-style-type: none"> Reflection 	○	○	○	9
	定期 考査 Examination			○	○		1

総授業時数 Total hours	78
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