

**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 )	Biology Higher Level (HL)
学年・クラス ( Grade・Class )	2 (IBDP 1st year)
単位数 ( Number of units )	
使用教科書 ( Text Books )	Oxford IB Diploma Programme Biology 2014 Edition
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 )	<ul style="list-style-type: none"> <li>acquire a body of knowledge, methods and techniques that characterize science and technology</li> <li>develop an understanding of the relationships between scientific disciplines and their influence on other areas of knowledge.</li> </ul>
【思考力、判断力、表現力等】 ( Ability to think, make judgements, express themselves )	<ul style="list-style-type: none"> <li>apply and use a body of knowledge, methods and techniques that characterize science and technology</li> <li>develop an ability to analyse, evaluate and synthesize scientific information</li> </ul>
【学びに向かう力、人間性等】 ( Motivation to learn, Humanity )	<ul style="list-style-type: none"> <li>appreciate scientific study and creativity within a global context through stimulating and challenging opportunities</li> <li>develop a critical awareness of the need for, and the value of, effective collaboration and communication during scientific activities</li> </ul>

**○ 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	計 画 時 数			
				知 ①	思 ②	態 ③	配 当 時 数
1 学期 ( 1st semester )	Unit (Units) 【Knowledge and Skills】 Demonstrate and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques connected to the content of the unit. 【Ability to think, make judgements, express themselves】 Formulate, analyse, evaluate and effectively communicate research questions, hypotheses, techniques, and data essential to the content. 【Motivation to learn, Humanity】 Apply and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques essential to the content. Demonstrate experimental and personal skills by engaging in practical activities and working collaboratively with others.	<b>Topic:</b> Plant Biology <b>Contents:</b> • Transport in the xylem of plants • Transport in the phloem of plants • Growth in plants • Reproduction in plants <b>Teaching materials:</b> • Text book, Powerpoint slides, lab equipment, ICT resources	①【Knowledge/Skills】 •Short test, Examination, Lab report. ②【Ability to think/make judgements/express themselves】 •Examination, Class Presentation, Lab report. ③【Attitude towards learning proactively】 •Reflections and student evaluations on lessons/activities. Homework.	○	○	○	25
	Unit (Units) 【Knowledge and Skills】 Demonstrate and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques connected to the content of the unit. 【Ability to think, make judgements, express themselves】 Formulate, analyse, evaluate and effectively communicate research questions, hypotheses, techniques, and data essential to the content. 【Motivation to learn, Humanity】 Apply and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques essential to the content. Demonstrate experimental and personal skills by engaging in practical activities and working collaboratively with others.	<b>Topic:</b> Ecology <b>Contents:</b> • Species, communities & ecosystems • Energy flow • Carbon cycling • Climate change <b>Teaching materials:</b> • Text book, Powerpoint slides, lab equipment, ICT resources	①【Knowledge/Skills】 •Short test, Examination, Lab report. ②【Ability to think/make judgements/express themselves】 •Examination, Class Presentation, Lab report. ③【Attitude towards learning proactively】 •Reflections and student evaluations on lessons/activities. Homework.	○	○	○	25
	Unit (Units) 【Knowledge and Skills】 Demonstrate and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques connected to the content of the unit. 【Ability to think, make judgements, express themselves】 Formulate, analyse, evaluate and effectively communicate research questions, hypotheses, techniques, and data essential to the content. 【Motivation to learn, Humanity】 Apply and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques essential to the content. Demonstrate experimental and personal skills by engaging in practical activities and working collaboratively with others.	<b>Topic:</b> Cell Biology <b>Contents:</b> • Introduction to cells • Ultrastructure of cells • Membrane structure • Membrane transport • The origin of cells • Cell division <b>Teaching materials:</b> • Text book, Powerpoint slides, lab equipment, ICT resources	①【Knowledge/Skills】 •Short test, Examination, Lab report. ②【Ability to think/make judgements/express themselves】 •Examination, Class Presentation, Lab report. ③【Attitude towards learning proactively】 •Reflections and student evaluations on lessons/activities. Homework.	○	○	○	30
	Unit (Units) 【Knowledge and Skills】 Demonstrate and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques connected to the content of the unit. 【Ability to think, make judgements, express themselves】 Formulate, analyse, evaluate and effectively communicate research questions, hypotheses, techniques, and data essential to the content. 【Motivation to learn, Humanity】 Apply and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques essential to the content. Demonstrate experimental and personal skills by engaging in practical activities and working collaboratively with others.	<b>Topic:</b> Molecular Biology <b>Contents:</b> • Molecules to metabolism • Water • Carbohydrates and lipids • Proteins • Enzymes • Structure of DNA and RNA • DNA replication, transcription and translation • Cell respiration • Photosynthesis <b>Teaching materials:</b> • Text book, Powerpoint slides, lab equipment, ICT resources	①【Knowledge/Skills】 •Short test, Examination, Lab report. ②【Ability to think/make judgements/express themselves】 •Examination, Class Presentation, Lab report. ③【Attitude towards learning proactively】 •Reflections and student evaluations on lessons/activities. Homework.	○	○	○	20
	定期考査 Examination			○	○		1

	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
2学期 (2nd semester)	Unit (Units) 【Knowledge and Skills】 Demonstrate and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques connected to the content of the unit. 【Ability to think, make judgements, express themselves】 Formulate, analyse, evaluate and effectively communicate research questions, hypotheses, techniques, and data essential to the content. 【Motivation to learn, Humanity】 Apply and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques essential to the content. Demonstrate experimental and personal skills by engaging in practical activities and working collaboratively with others.	<b>Topic: Metabolism</b> <b>Contents:</b> • Metabolism • Cell respiration • Photosynthesis <b>Teaching materials:</b> • Text book, Powerpoint slides, lab equipment, ICT resources	①【Knowledge/Skills】 •Short test, Examination, Lab report. ②【Ability to think/make judgements/express themselves】 •Examination, Class Presentation, Lab report. ③【Attitude towards learning proactively】 •Reflections and student evaluations on lessons/activities. Homework.	○	○	○	23
	Unit (Units) 【Knowledge and Skills】 Demonstrate and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques connected to the content of the unit. 【Ability to think, make judgements, express themselves】 Formulate, analyse, evaluate and effectively communicate research questions, hypotheses, techniques, and data essential to the content. 【Motivation to learn, Humanity】 Apply and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques essential to the content. Demonstrate experimental and personal skills by engaging in practical activities and working collaboratively with others.	Topic: Human Physiology Contents: •Digestion and absorption •The blood system •Defense against infectious disease •Gas exchange •Neurons and synapses •Hormones, homeostasis and reproduction Teaching materials: •Text book, Powerpoint slides, lab equipment, ICT resources	①【Knowledge/Skills】 •Short test, Examination, Lab report. ②【Ability to think/make judgements/express themselves】 •Examination, Class Presentation, Lab report. ③【Attitude towards learning proactively】 •Reflections and student evaluations on lessons/activities. Homework.	○	○	○	23
	Unit (Units) 【Knowledge and Skills】 Demonstrate and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques connected to the content of the unit. 【Ability to think, make judgements, express themselves】 Formulate, analyse, evaluate and effectively communicate research questions, hypotheses, techniques, and data essential to the content. 【Motivation to learn, Humanity】 Apply and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques essential to the content. Demonstrate experimental and personal skills by engaging in practical activities and working collaboratively with others.	<b>Topic: Human Physiology</b> <b>Contents:</b> • Digestion and absorption • The blood system • Defense against infectious disease • Gas exchange • Neurons and synapses • Hormones, homeostasis and reproduction <b>Teaching materials:</b> • Text book, Powerpoint slides, lab equipment, ICT resources	①【Knowledge/Skills】 •Short test, Examination, Lab report. ②【Ability to think/make judgements/express themselves】 •Examination, Class Presentation, Lab report. ③【Attitude towards learning proactively】 •Reflections and student evaluations on lessons/activities. Homework.	○	○	○	30
	定期考査 Examination			○	○		1
3学期 (3rd semester)	Unit (Units) 【Knowledge and Skills】 Demonstrate and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques connected to the content of the unit. 【Ability to think, make judgements, express themselves】 Formulate, analyse, evaluate and effectively communicate research questions, hypotheses, techniques, and data essential to the content. 【Motivation to learn, Humanity】 Apply and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques essential to the content. Demonstrate experimental and personal skills by engaging in practical activities and working collaboratively with others.	<b>Topic: Biotechnology</b> <b>Contents:</b> • Medicine • Bioinformatics <b>Teaching materials:</b> • Text book, Powerpoint slides, lab equipment, ICT resources.	①【Knowledge/Skills】 •Short test, Examination, Lab report. ②【Ability to think/make judgements/express themselves】 •Examination, Class Presentation, Lab report. ③【Attitude towards learning proactively】 •Reflections and student evaluations on lessons/activities. Homework.	○	○	○	30
	Unit (Units) 【Knowledge and Skills】 Demonstrate and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques connected to the content of the unit. 【Ability to think, make judgements, express themselves】 Formulate, analyse, evaluate and effectively communicate research questions, hypotheses, techniques, and data essential to the content. 【Motivation to learn, Humanity】 Apply and effectively communicate knowledge and understanding of facts, concepts, terminologies, and techniques essential to the content. Demonstrate experimental and personal skills by engaging in practical activities and working collaboratively with others.	Topic: Internal Assessment Contents: Individual Experimental Investigation Teaching materials: Lab Equipment, ICT resources, Text books, Library resources.	①【Knowledge/Skills】 •Short test, Examination, Lab report. ②【Ability to think/make judgements/express themselves】 •Examination, Class Presentation, Lab report. ③【Attitude towards learning proactively】 •Reflections and student evaluations on lessons/activities. Homework.	○	○	○	25
	定期考査 Examination			○	○		1

総授業時数 Total hours	234
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