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

〇 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)	Science
科目	(Subject)	Basic Chemistry
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)	化学基礎(東京書籍)
校外学習	(Field trip)	None

O 教科の目標 (Goals of the subject area)

【知識及び技能】(Knowledge and Skills)

Acquire a body of knowledge, methods and techniques that characterize science and technology.

Develop an understanding of the relationships between scientifc disciplines and their influence on other areas of knowledge.

【思考力、判断力、表現力等】 (Ability to think, make judgements, express themselves)

Apply and use the a body of knowledge, methods and techniques that characterize science and technology .

Develop an ability to analyze, evaluate and synthesize sciencitific information.

Develop experimental and investigate scientific skills including the use of current technologies.

【学びに向かう力、人間性等】 (Motivation to learn, Humanity)

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.

〇 科目の目標 (Goals of the subject)										
【知識及び技能】	【思考力、判断力、表現力等】	【学びに向かう力、人間性等】								
(Knowledge and Skills)	(Ability to think, make judgements, express themselves)	(Motivation to learn, Humanity)								
Demonstrate knowledge and understanding of:	Apply	Demonstrate the appropriate research,								
a. Facts, concepts and terminology	a. Facts, concepts and terminology	experimental,								
b. Methodologies and techniques	b. Methodologies and techniques	and personal skills necessary to carry out								
c. Communicating scientific information	c. Methods and communicating scientific	insightful								
	information	and ethical investigations.								

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0	ノ皮柔町画(Course schedule) トローン									hours
	単元の具体的な指導目標 Unit Objectives	指導項日・内容 Topic / Contents	話.	<u>領</u> 理	這	評価規準 Evaluation Criteria	知	思の	影	配当 時数
	単元名を記載 【知識及び技能】 【思考力、判断力、表現力等】 【学びに向かう力、人間性等】	 指導事項 教材 一人1台端末の活用 等 	0			 ●【知識・技能】 ●【思考・判断・表現】 ●【主体的に学習に取り組む態度】 	0	0	0	6
	Unit 1: Stochiometry -Particulate Theory of Matter [Knowledge and Skills] Develop understanding on the concept of matter [Ability to think, make judgements, express themselves] Be able to explain the processes invloved in the transition of matter. Be able to interpret the cooling and heating curve of various substances using data and conduction od experiments. [Motivation to learn, Humanity] Enggages activiely in the practicals Work collaboratively with other classmates during practicals	•Contents Matter Kinetic/ Particulate Theory Cooling and Heating Curve Separating Techniques •Teaching materials Textbook, Powerpoint slides	0			 [Knowledge/Skills] Short Test, Examination, Lab Report, Home Work [Ability to think/make judgements/express themselves] Examination, Presentation, Class Discussions [Attitude towards learning proactively] Reflection 	0	0	0	6
							0	0		1
(1st semester)	Unit 2: Atomic Structure [Knowledge and Skills] Develop understanding of the atomic structure Develop understanding of the origination of the subatomic particles Be able to differentiate amongst the subatomic particles	•Contents Atomic structure Discovery of the sub-atomic particles Determination of the proton, electron, neutron numbers and the mass number Electronic configuration •Teaching materials Textbook, Powerpoint slides				 [Knowledge/Skills] Short Test, Examination, Lab Report, Home Work [Ability to think/make judgements/express themselves] Examination, Presentation, Class Discussions [Attitude towards learning proactively] Reflection 				

	単元の具体的な指導目標	指導項目の容	領域		ŧ	評価規準	知	思	態	配当
E	Unit Objectives	I opic / Contents	a. 聞	書	読	Evaluation Criteria	Û	0	6	時数
1学月	[udgements, express themselves] Be able to calculate the mass, proton, neutron and electron numbers. Be able to predict the electronic configuartion of elements. [Motivation to learn, Humanity]]			0			0	0	0	6
	Ingges adtively in the practicals Work collaboratively with other classmates during practicals. Unit 3: Periodicity [Knowledge and Skills] Develop understanding of the trends of the periodic table Develop understanding of the origination of the subatomic particles Be able to differentiate amongst the subatomic particles [Ability to think, make judgements, express themselves] Be able to predict the trends of various elements. [Motivation to learn, Humanity]] Engages actively in the practicals Work collaboratively with other classmates during practicals.	•Contents Orignation of the Periodic Table The Periodic Table Periodic Trends (Groups and Periods) •Teaching materials Textbook, Powerpoint presentation •Effective use of students' PC etc.		0		 [Knowledge/Skills] Short Test, Examination, Lab Report, Home Work [Ability to think/make judgements/express themselves] Examination, Presentation, Class Discussions [Attitude towards learning proactively] Reflection 	0	0	0	8
	定期考查 Examination						0	0		1
	Unit 4: Chemical Bonding [Knowledge and Skills] Develop understanding on isotopes Develop the understanding of Chemical Bonding [Ability to think, make judgements, express themselves] Be able to represent the Lewis structures of compunds. Be able to represent the different types of bonding given the names of chemical compounds. [Motivation to learn, Humanity] Engages activiely in the practicals Work collaboratively with other classmates during practicals	Contents Isotopes and radioisotopes Chemical bonding- ionic, covalent, metallic and coordinate (Dative Bonding). Lewis diagrams of chemical bonding. Chemical bonding structures Allotropes: Diamond, Graphite •Teaching materials Textbook, Powerpoint presentation •Effective use of students' PC etc.				 Knowledge/Skills Short Test, Examination, Lab Report, Home Work (Ability to think/make judgements/express themselves) Examination, Presentation, Class Discussions (Attitude towards learning proactively) Reflection 				15
	定期考查 Examination									1
2 学期 (2nd semester)	Unit 5: Stochiometry - Mole Concept [Knowledge and Skills] Develop understanding of the mole concept. Develop understanding in the relationship of moles, mass, mass concentration, molar concentration and volume. Develop understanding of Avagadros Law and how to apply the law. [Ability to think, make judgements, express themselves] Be able to calculate questions related to the mole concept. Be able to interpret experimental data to calculate moles, mass, volumes, molar concentration, mass concentration, percent mass of hydrate, empirical and molecular formula [Motivation to learn, Humanity] Enggages activiely in the practicals Work collaboratively with other classmates during practicals	Contents The mole concept Avogadros constant and Law Moles, Mass, Mass Concentration and Molar concentration Percentage Mass of Hydrate Empirial and Molecular formula •Teaching materials Textbook, Powerpoint presentation				 IKnowledge/Skills] Short Test, Examination, Lab Report, Home Work IAbility to think/make judgements/express themselves] Examination, Presentation, Class Discussions Attitude towards learning proactively] Reflection 				15
	Examination									1

	単元の具体的な指導目標	単元の具体的な指導目標 指導項目・内容		領域		評価規準		思	態	配当
	Unit Objectives	Topic / Contents	話聞	書	読	Evaluation Criteria	0	0	€	時数
3学期 (3rd semester)	Unit 6: Acids and Bases [Knowledge and Skills] Develop understanding on pH, Acids, Bases and indicators [Ability to think, make judgements, express themselves] Be able to make calculations related to pH Be able to predict the acidity, Bascity of various substances Be able to recall the use of indicators and the appropriaate indicators to use in chemical experiments. [Motivation to learn, Humanity] Engages activiely in the practicals Work collaboratively with other classmates during practicals	•Contents Definition of terms related to pH (Arrhenius Acids and Bases) Relation of Acidity, Bascity and Neutrality to the pH scale Indicators, its use and selection. Calculations related to pH •Teaching materials Textbook, Powerpoint presentation				 ●[Knowledge/Skills] Short Test, Examination, Lab Report, Home Work ④[Ability to think/make judgements/express themselves] Examination, Presentation, Class Discussions ④[Attitude towards learning proactively] Reflection 				10
	Unit 7: Redox Properties [Knowledge and Skills] Develop understanding of electrochemical reactions Develop understanding of Quantity of Electricity and Faraday's constant, F. [Ability to think, make judgements, express themselves] Be able to interpret electrolytic cells and predict ions that will be preferentially dischagred at the electrodes. [Motivation to learn, Humanity] Engages activiely in the practicals Work collaboratively with other classmates during practicals	Contents Definition of electrochemical terms Electrolytic cell diagram The electrodes and rules for ions to be preferentially discharged. Quantity of Electricity Faraday's constant and relation to moles. Teaching materials Textbook, Powerpoint presentation				 ●[Knowledge/Skills] Short Test, Examination, Lab Report, Home Work ④[Ability to think/make judgements/express themselves] Examination, Presentation, Class Discussions ④[Attitude towards learning proactively] Reflection 				7
	定期考查 Examination									1

総授業時数 Total hours 78