

Tsuyama College		Year	2021		Course Title	Applied Chemistry
Course Information						
Course Code	0062		Course Category	General / Compulsory		
Class Format	Lecture		Credits	School Credit: 1		
Department	Department of Integrated Science and Technology Communication and Informations System Program		Student Grade	4th		
Term	Second Semester		Classes per Week	2		
Textbook and/or Teaching Materials	Chemistry (Tokyo shoseki) , Distribute materials as needed.					
Instructor	MORITOMO Hiroki,TAKAGI Kenji,SAITO Nanami,SHIMOIKE Yoichi					
Course Objectives						
Learning purposes : Building on what students have learned in Chemistry I and II, students will learn about inorganic chemistry and the chemical industry in general and understand the relationship between industry and chemistry.						
Course Objectives : 1. To understand the structure and properties of solids 2. To understand the properties of inorganic and organic materials that support human life. 3. To understand the industrial manufacturing methods for chemical products.						
Rubric						
	Excellent	Good	Acceptable	Not acceptable		
Achievement 1	Students can explain the structure and properties of solids in their own words with concrete examples.	Students can explain the structure and properties of solids in their own words.	Students understand the structure and properties of solids.	Students do not understand the structure and properties of solids.		
Achievement 2	Student understands the characteristics and properties of inorganic and organic compounds that support our lives, and is able to explain in his or her own words the relationship between them and our daily lives.	Students understand the characteristics and properties of inorganic and organic compounds that support life and their connection to life.	Students understand the characteristics and properties of inorganic and organic compounds that support life.	Students do not understand the characteristics and properties of inorganic and organic compounds that support life.		
Achievement 3	Students can explain in their own words the characteristics and ingenuity of industrial manufacturing methods for chemical products, which are different from laboratory methods, and understand their importance in the real world.	Students can explain in their own words the characteristics and innovations of industrial manufacturing methods for chemical products that differ from those of laboratory methods.	Students understand industrial manufacturing methods for chemical products, which are different from laboratory methods.	Students do not understand the characteristics and ingenuity of industrial manufacturing methods for chemical products, which are different from laboratory methods.		
Assigned Department Objectives						
Teaching Method						
Outline	GGeneral or Specialized : General Field of learning : Common and basic science Required, Elective, etc. : Must complete subjects Foundational academic disciplines : Inorganic chemistry, physical chemistry, organic chemistry Relationship with Educational Objectives : This class is equivalent to (2) Acquire basic science and technical knowledge. Relationship with JABEE programs : The main goals of learning / education in this class concern "(A)". Course outline : This course explains the relationship between chemistry, real life and industry, based on what we have learned in the past.					
Style	Course method : The lecture will proceed with handouts as needed. Grade evaluation method : The scores of the four regular examinations are evaluated equally (70%), and the quizzes, reports, and class attitudes are taken into account (30%).					
Notice	Precautions on the enrollment : Students must take this class (no more than one-third of the required number of class hours may be missed) in order to complete the 4th year course. Course advice : Students are expected to participate in the class with an active attitude while making use of their previous knowledge of chemistry. Foundational subjects : Chemistry I (2nd year),Chemistry II (3rd) Related subjects : Inorganic Chemistry (4th year), Organic Chemistry (4th),Organic Chemistry(5th), Chemistry Experiment (4th), Physical Chemistry (5th)					

Characteristics of Class / Division in Learning								
<input type="checkbox"/> Active Learning		<input type="checkbox"/> Aided by ICT		<input type="checkbox"/> Applicable to Remote Class		<input type="checkbox"/> Instructor Professionally Experienced		
Course Plan								
			Theme	Goals				
2nd Semester	3rd Quarter	1st	Structure and properties of solids (1)	To understand the structures of metallic crystals, ionic crystals, molecular crystals, and amorphous materials.				
		2nd	Structure and properties of solids (2)	Same as above.				
		3rd	Non-metallic elements and compounds (1)	To understand the various properties of representative nonmetallic elements, both as individual elements and as compounds.				
		4th	Non-metallic elements and compounds (2)	Same as above.				
		5th	Simple substance and compound of typical elements	To understand the various properties of representative typical elements, both singly and in compounds.				
		6th	Simple substance and compound of transition elements	To understand the various properties of representative transition elements, both singly and in compounds.				
		7th	Separation and qualitative analysis of metal ions	To understand the principles and experimental procedures of separation and qualitative analysis of metal ions.				
		8th	【1st semester mid-term exam】					
	4th Quarter	9th	Return and commentary of exam answers					
		10th	Organic Compounds and Human Life		To understand how the properties of organic materials are used in the products around us.			
		11th	Natural Organic Chemistry		To understand the properties and structures of sugars, amino acids, and proteins.			
		12th	Chemical industry 1: Soda industry		To understand the current situation and innovations in the soda industry.			
		13th	Chemical Industry 2: Contact and Ostwald method		To understand the significance of the contact method and the Ostwald method.			
		14th	Chemical industry (3) : Haber-Bosch method		To understand the significance of the Haber-Bosch method and its innovations.			
		15th	【1st semester final exam】					
		16th	Return and commentary of exam answers					
Evaluation Method and Weight (%)								
	Examination	Presentation	Mutual Evaluations between students	Behavior	Portfolio	Other	Total	
Subtotal	70	0	0	0	0	30	100	
Basic Proficiency	70	0	0	0	0	30	100	
Specialized Proficiency	0	0	0	0	0	0	0	
Cross Area Proficiency	0	0	0	0	0	0	0	