Semester Learning Plan (SLP)
MASTER STUDY PROGRAM (S2) CHEMISTRY
Faculty of Mathematics and Natural Sciences
UNIVERSITAS BENGKULU

Course Identity			**Identity of The Course Lecturer**		
Course Code	:	MIK-212	Name of Lecturer Compiling SLP	:	Dr. Sal Prima Yudha S., M.Si
Course Name	:	Advanced Inorganic Chemistry	Field Group	:	Inorganic Chemistry
Credit Unit (sks)	:	2 (2-0) credit unit	Compiled on	:	January 2018
Semester	:	1 (One)	Revision		July 2021
Prerequisite Course	:	-			

Program Learning Outcomes **(PLO)**

PLO Code		**PLO Elements**
	:	demonstrate a responsible attitude towards working independently in their area of expertise;
		able to develop science and technology through research, innovation, and testing, solving problems with an inter- or multi-disciplinary approach.
	:	able to demonstrate independent, quality, and measurable performance.
Scientific Study Materials	:	Acid-base strength from the perspective of inorganic chemistry; complex compound reactions; distinguish the formation of complex and organometallic compounds by various methods; and describe the role of inorganic chemistry in biological systems and the environment.
Course Learning Outcomes (CLO)	:	1. Mastering the theory of enthalpies and applying it to reactions 2. Mastering the theory and concepts of analysis and applying them to chemical analysis and research problems 3. mastering micro- and macromolecular synthesis strategies and applying them to several reactions by paying attention to reaction control 4. Mastering theoretical concepts about the function of the latest instruments in the field of chemistry and how to operate them, as well as mastering the application of relevant chemical technology. 5. Mastering the principles, procedures, and latest handling techniques on the impact of the use of chemical substances on people's lives, 6.Able to solve science and technology problems related to structure, properties, and chemical changes at the micro level as well as through computation and simulation. 7. Able to solve science and technology problems related to the structure, properties, and chemical changes, as well as the inter- or multidisciplinary approach that is characterized by the production of macromolecules. able to implement and update certain chemical knowledge through research, especially in the fields of energy and environment.
Learning Experience	:	Students are given knowledge and understanding of the strength of acids and bases from the perspective of inorganic chemistry, complex compound reactions, distinguishing the formation of complex and organometallic compounds by various methods, and describing the role of inorganic chemistry in biological systems and the environment.
Reference List	:	1. Miesler, G.L., Tarr, D.A., 2005. Inorganic Chemistry. 2nd-ed. Prentice Hall International Inc. 2. Shiriver . D.F., Atkins, P.W., Longford, C.H., Inorganic Chemistry. Oxford University Press with EL-BS.

Step	Target Competency	Subject matter	Ref.	Learning methods	Time (min)	Evaluationn*	
						Indicator	Evaluation techniques
1	2	3	4	5		6	7
1	Applying lecture rules and course assessment components	• Lecture Contract • Learning Rules • Component assessment • Reference/literature/reference book	Ref No : -	Lecture Class discussion	2x50 min	• Knowing the components of the assessment and references to be used	
2	Further study the concept of acid-base reactions from the perspective of inorganic reactions and its implications in the development of complex compounds.	• The concept of acid-base from the perspective of inorganic reactions	Ref No : 1,2	Lecture Information discussion/sharing	2x50 min	• Students can define the concept of "acid base." • Students can apply the concept of acid-base in the context of inorganic reactions.	
3	Reviewing the concept of hard and soft acids and bases in inorganic reactions	• The concept of hard and soft acids and bases in inorganic reactions and their use in predicting the stability of inorganic compounds	Ref No : 1,2	Lecture Information discussion/sharing	2x50 min	• Students can explain the concept of hard, soft, acid, and base. • Students can explain the relationship between hard and soft acid-base concepts in the mechanism of inorganic reactions.	
4	Further study of substitution reactions in square-planar complex compounds	• Substitution reactions in square planar complexes: • associative reaction proof • stereochemistry of reactions in square-planar complexes	Ref No : 1,2,3	Project Based Learning	2x50 min	• Students can explain the general mechanism of substitution reactions in square-planar complexes. • Students can analyze experimental evidence of associative reactions. • Students can explain the stereochemistry of reactions in square-planar complexes.	
5	Further study of the oxidation-reduction reaction and the mechanisms of the inner and outer spheres	• Reaksi Reduksi Oksidasi • Inner dan outer sphere	Ref No : 1,2,3	Lecture Information sharingg	2x50 min	• Students can explain the concept of oxidation-reduction reactions. Students can explain the reactions of the inner and outer spheres.	
6	• Chapter Exam 1	• Chapter Exam	Ref No : 1,2	Project Based learning	2x50 min		

7-8	Explain the basic concepts of the development of complex and organometallic compounds as well as the history of discoveries and recent developments.	• konsep dasar pengembangan senyawa komplek dan organometalik • sejarah penemuan dan perkembangan terkini	Ref No : 1,2	Lecture Information discussion/sharing	2x50 min x 2 time	Students can explain • Basic concepts for the development of complex and organometallic compounds history of discoveries and recent developments	
9-10	Further review of organometallic chemistry; the 18-electron rule; the role of ligands in organometallic compounds; bonds between metal atoms and organic Pi systems; Complex compounds containing metal-carbon sigma bonds	• Introduction to organometallic chemistry • Application of the 18-electrons rule. The role of ligands in organometallic compounds • Bonds between metal atoms and Pi system. • Complex compounds containing metal-carbon sigma bonds	Ref No : 1,2	Project Based Learning	2x50 min x 2 time	Students can review and explain: • Introduction to organometallic chemistry • Application of the 18-electron rule • The role of ligands in organometallic compounds • Bonds between metal atoms and Pi system. • Complex compounds containing metal-carbon sigma bonds	
11	• Chapter Exam 2	• Chapter Examr 2		Project Based Learning	2x50 min		
12-13	explaining the use of complex compounds in the field of catalysis in industry and laboratories.	• The basics of using compounds from transition elements as catalysts	Ref No : 1,2,3	Lecture Information discussion/sharing	2x50 min x 2 time	• Students can explain the basic concepts of using complex compounds in industry and laboratories.	
14-15	describing the study of porpyrine and related complex compounds; Benefits of potassium, sodium, and enzymes containing zinc and copper cofactors	• Porpyrins and related complex compounds • Enzymes and cofactors and chemical environment	Ref No : 1,2	Lecture Information discussion/sharing	2x50 min x 2 time	• Students can explain porpyrine and related complex compounds; Benefits of potassium and sodium; enzymes containing zinc and copper cofactors.	
16	Chapter Examr 3	Chapter Exam			2x50 min		