LESSON PLAN



UNIVERSITAS NEGERI SURABAYA FACULTY OF MATHEMATICS AND NATURAL SCIENCE UNDERGRADUATE PROGRAMME OF CHEMISTRY

Document Code

SUBSTER LEAR-VIPE VALVEY PLANCODECenter VSenset nOpenation ChemistrySenset nSenset nOpenation ChemistrySenset nSenset nOpenation ChemistryOpenation ChemistryOpenation ChemistryOpenation ChemistrySenset nPLOSOpenation Chemistry Colspan="2">Openation Chemistry Colspan="2"	UNESA										
COURSE CODE Course Form Credit Unit Semester Date Coordination Chemistry 2 - 4 th <t< th=""><th colspan="11">SEMESTER LEARNING ACTIVITY PLAN</th></t<>	SEMESTER LEARNING ACTIVITY PLAN										
Coordination Chemistry 2 - 4 th AUTHORIZATION CHEMISTRY Compiler Coordinator Head of Study Program Dr. Amaria, M.Si. Dr. Achmad Lutfi, M.Pd. Dr. Amaria, M.Si. Dr. Amaria, M.Si. Learning Outcomes Program Learning Outcomes (PLO) Dr. Amaria, M.Si. Dr. Achmad Lutfi, M.Pd. Dr. Amaria, M.Si. PL01 Capable to demonstrate knowledge related to theoretical concepts about structure, dynamics, and energy, as well as the basic principles of separation, analysis, synthesis and characterization of chemicals Northeoretical concepts of occepts about structure, dynamics, and energy, as well as the concept. PL05 Applying logical, critical, systematic and innovative thinking in the context of development or implementation of science, (COM-1) technology, and art that regards and applies humanities in accordance with chemistry education in solving problems Cucres Learning Outcomes CLO2 Understand the concepts of covalent bonds, ligands, stereochemistry, stability, magnetic properties and electronic spectra of focordination compounds. CLO2 CL02 Draw structures and predict the properties of coordination compounds. CLO3 communicate both verbally and in writing the concept of chemical bonds, stereochemistry, stability, magnetic properties, and electronic spectra of the coordination compound. Sub-CLO4 Demonstrate caring attitude and responsibility in applying coordination compounds in the environment	COURSE			CODE	Course	Group	Credit L	Jnit	Semester	Date	
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		Sub-CLO4	Understand	d the stability of the coordin	ation con	npound complex					

		Sub-CLO5	Sub-CLO5 Understand Term Symbols, Multiplicity, Orgel Diagrams, and Tanabe-Sugano diagrams of coordination compounds								
Brief D	Description of The study of the concepts: chemical bonding, stereochemistry, reaction mechanisms, properties, spectra, synthesis and stability of							/ of			
the Cou	Course coordination chemistry through discussion, presentation, structured assignments										
Study N	Aaterials:	The concept	of coordination co	mpounds	s, bond theories, typ	es of ligands, stereoche	mistry, stability of cor	nplex ions, term symb	ols,		
Learnir	g Materials	multiplicity, (Orgel diagrams, and	d Tanabe	-Sugano diagrams of	coordination compoun	ds				
Referei	nce	Main :									
		1. Basol	lo, F and Johnson, F	R.C. 1986	5. Coordination Chem	histry, 2nd Edition. New	York: W.A. Benjamin,	Inc.			
		2. Sugia	<u>irto, Bamban</u> g. 200	6. Teori S	Senyawa Koordinasi.	Surabaya: Unesa Univer	rsity Press.				
		Additional :									
		1. Quag	gliano, J. V. And Val	larino, L.	M., 1969. Coordinat	ion Chemistry, Massach	usetts: D. C. Heath ar	nd Company			
		2. Huhe	eey, E. James, Ellen	, A.K, and	d Richard I.K. 1978. I	norganic Chemistry, Prir	nciple of Structure and	d Reactivity. USA: Har	per		
		Colli	ns College Publishe	ers							
		3. Mad	an, R.D., 1997. Mo	dern Ino	rganic Chemistry, S.	Chand and Company LT	D, New Delhi.				
Lecture	r	Prof. Dr. Sari	Prof. Dr. Sari Edy Cahyaningrum. M.Si.,								
		Dr. Amaria, N	Dr. Amaria, M.Si.,								
		Dina Kartika	Maharani, S.Si., M.	.Sc.							
Prereq	uisite courses	_	i			i					
						Learning	; Forms,		Pating		
Meetin	The final abil	ity of each	4	Assessme	ent	Learning Methods,			Moight		
g	activ	activity				Student Assignment			(%)		
			Indicator		Criteria & Form	Offline	online		(70)		
(1)	(2)		(3)		(4)	(5)	(6)	(7)	(8)		
1	Understand the	properties,	1. Distinguish betw	veen	Essay writting test	- Lecture	-	Coordination			
development and		nd	double salt and			- Discussion		compound concept	10		
	nomenclature c	of coordination	coordination			- Exercises		(Reference number			
	compounds		compound			- 1x2x50 minutes		1, 2 & 5)			
			2. Describe the	d							
			nomonclature of	iu f							
			coordination	1							
			compounds.								

2 3-4	Apply the various bond theories in coordination compounds Apply the various bond theories in coordination compounds	 Apply the concept of electron pair bonding Apply the concept of Effective Atomic Number Apply Valence Bond Theory Apply Cristal Field Theory 	Essay writting test Essay writting test	 Lecture Discussion Exercises 1x2x50 minutes Lecture Discussion exercises 2x2x50 minutes 	-	Electron pair bonds (Reference number 1 &2) Valence Bond Theory (Reference number 1 & 2)	20
5-7	Apply the various bond theories in coordination compounds	 Explain the advantages of molecular orbital theory over crystal field theory in coordination compounds Apply molecular orbital theory to prove the paramagnetic properties of coordination compounds Apply molecular orbital theory to prove the strength of bonds in coordination compounds 	Essay writting test	 Lecture Direct Instruction Model Discussion Exercises 3x2x50 minutes 	-	Molecular Orbital Theory (Reference number 1, 2 &3)	10
8		· ·	Mid-Term Exa	m			
9	Understand the geometry and isomers of coordination compounds	 Describe the various type of isomers in coordination compounds Determine the geometrical isomers of coordination compound 	Essay writting test	 Lecture Direct Instruction Model Discussion Exercises 1x2x50 minutes 	-	Coordination compounds Isomers (Reference number 1, 2 & 5)	20

		3. Determine the optically active isomers of coordination compound					
10-11	Understand the determinant factors of coordination compound stability	 Describe the differences of the thermodynamic and kinetic complex stability Write down the reaction steps of formation reaction and writing the stability constant of coordination compound Describe the factors that affect the stability constant 	Essay writting test	 Lecture Cooperatif Learning Model Discussion Exercises 2x2x50 minutes 		Stability of coordination compound (Reference number 1, 2 & 3)	20
12	Understand Term Symbols, Multiplicity, Orgel Diagrams, and Tanabe-Sugano Diagrams	Describe the Term Symbols	Essay writting test	 Lecture Cooperatif Learning Model Discussion Exercises 1x 2x50 minutes 	-	Term symbol (Reference number 5)	20
13	Understand Term Symbols, Multiplicity, Orgel Diagrams, and Tanabe-Sugano Diagrams	Describe the multiplicity	Essay writting test	 Lecture Cooperatif Learning Model Discussion Exercises 1x2x50 minutes 	-	Multiplicity (Reference number 5)	
14-15	Understand Term Symbols, Multiplicity, Orgel Diagrams, and Tanabe-Sugano Diagrams	Describe the Orgel Diagrams, and Tanabe-Sugano Diagrams	Essay writting test	 Lecture Cooperatif Learning Model Discussion 	-	Orgel Diagram & Tanabe-Sugano Diagram	

				 Exercises 1x2x50 minutes 		(Reference number 5)	
16	Final Exams						