



Universitas Negeri Surabaya
Faculty of Mathematics and Natural Sciences
Undergraduate Chemistry Education Study Program

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight	SEMESTER	Compilation Date																																	
Inorganic Chemistry IV: Transition Elements	8420403120		T=3 P=0 ECTS=4.77	7	July 18, 2024																																	
AUTHORIZATION	SP Developer		Course Cluster Coordinator	Study Program Coordinator																																		
		Prof. Dr. Achmad Lutfi, M.Pd.	Prof. Dr. Utiya Azizah, M.Pd.																																		
Learning model	Project Based Learning																																					
Program Learning Outcomes (PLO)	PLO study program which is charged to the course																																					
	Program Objectives (PO)																																					
	PLO-PO Matrix																																					
		<table border="1" style="margin: auto;"> <tr><td style="width: 10%;">P.O</td></tr> </table>					P.O																															
P.O																																						
	PO Matrix at the end of each learning stage (Sub-PO) <table border="1" style="margin: auto;"> <tr> <td rowspan="2" style="width: 10%;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 5%;">1</td><td style="width: 5%;">2</td><td style="width: 5%;">3</td><td style="width: 5%;">4</td><td style="width: 5%;">5</td><td style="width: 5%;">6</td><td style="width: 5%;">7</td><td style="width: 5%;">8</td><td style="width: 5%;">9</td><td style="width: 5%;">10</td><td style="width: 5%;">11</td><td style="width: 5%;">12</td><td style="width: 5%;">13</td><td style="width: 5%;">14</td><td style="width: 5%;">15</td><td style="width: 5%;">16</td> </tr> </table>					P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
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	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																						
Short Course Description	Study of the physical, chemical properties of elements and transition compounds, first, second and third series, block d through discussions, project assignments, questions and answers, and presentations																																					
References	Main :																																					
	1. Madan, R. D. , 1997.ModernInorganic Chemistry. New Delhi. : S. Chand and Company Ltd 2. Manku, G. S. , 1980.Inorganic Chemistry.India: Tata Mc Graw Hill Book Co 3. Lee, J. D. 1991.Concise Inorganic Chemistry. Fourth Edition. London:Chapman & Hall																																					
	Supporters:																																					
Supporting lecturer	Dr. Amaria, M.Si. Dr. Muchlis, S.Pd., M.Pd. Rusly Hidayah, S.Si., M.Pd. Dr. Dina Kartika Maharani, S.Si., M.Sc. Amalia Putri Purnamasari, S.Si., M.Si.																																					
Week-	Final abilities of each learning stage (Sub-PO)	Evaluation		Help Learning, Learning methods, Student Assignments, [Estimated time]		Learning materials [References]	Assessment Weight (%)																															
		Indicator	Criteria & Form	Offline (offline)	Online (online)																																	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)																															

1	Understand the principles of extraction of metals	Write down the principles of metal extraction of transition elements	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is the participation score x2) (assignment score x 3) (UTS score x 2) UAS score (3) divided by 10	Presentation, discussion 3 X 50		0%
2	Understand the principles of extraction of metals	Write down the extraction reactions of transition metal elements	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Presentation, discussion 3 X 50		0%

3	Understand the physical and chemical properties of transition elements	Define the term transition element	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Discussion 3 X 50			0%
4	Understand the physical and chemical properties of transition elements	Write the electronic configuration of the transition elements	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Discussion, presentation 3 X 50			0%

5	Understand the characteristics of the scandium and titanium families including general properties, oxides and compounds, manufacture, properties and uses	<ol style="list-style-type: none"> 1.Explain the general characteristics of the scandium family 2.Write down the various oxides and compounds of scandium 3.Write down the preparation of scandium compounds 4.Explain the properties of scandium compounds 5.Mention the uses of scandium compounds 6.Describe the general properties of the titanium family 7.Write down the various oxides and compounds of titanium 	Criteria: <ol style="list-style-type: none"> 1.The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 	Discussion, presentation 3 X 50			0%
6	Understand the characteristics of the vanadium family including general properties, oxides and compounds, manufacture, properties and uses	<p>Explain the general properties of the vanadium family. Write down the types of vanadium oxides and compounds. Write down the preparation of vanadium compounds. Explain the properties of vanadium compounds. State the uses of vanadium compounds.</p>	Criteria: <ol style="list-style-type: none"> 1.The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 	Discussion, presentation 3 X 50			0%

7	Understand the characteristics of the chromium family including general properties, oxides and compounds, preparation, properties and uses	Explain the general properties of the chromium family. Write down the various oxides and compounds of chromium. Write down the preparation of chromium compounds. Explain the properties of chromium compounds. State the uses of chromium compounds.	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Discussion, presentation 3 X 50		0%
8	Midterm exam	Midterm exam	Criteria: Midterm exam	Midterm Exam 3 X 50		0%
9	Understand the characteristics of the manganese family including general properties, oxides and compounds, preparation, properties and uses	Explain the general properties of the manganese family. Write down the types of manganese oxides and compounds. Write down the preparation of manganese compounds. Explain the properties of manganese compounds. State the uses of manganese compounds.	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Discussion, presentation 3 X 50		0%

10	Understand the characteristics of the iron family including general properties, oxides and compounds, manufacture, properties and uses	Explain the general properties of the iron family. Write down the types of iron oxides and compounds. Write down the preparation of iron compounds. Explain the properties of iron compounds. State the uses of iron compounds.	Criteria: <ol style="list-style-type: none"> 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 	Discussion, presentation 3 X 50			0%
11	Understand the characteristics of the cobalt family including general properties, oxides and compounds, manufacture, properties and uses	Explain the general properties of the cobalt family. Write down the types of cobalt oxides and compounds. Write down the preparation of cobalt compounds. Explain the properties of cobalt compounds. State the uses of cobalt compounds.	Criteria: <ol style="list-style-type: none"> 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10 	Discussion, presentation 3 X 50			0%

12	Understand the characteristics of the nickel family including general properties, oxides and compounds, manufacture, properties and uses	Explain the general properties of the nickel family. Write down the types of nickel oxides and compounds. Write down the preparation of nickel compounds. Explain the properties of nickel compounds. State the uses of nickel compounds.	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Discussion, presentation 3 X 50			0%
13	Understand the characteristics of the copper family including general properties, oxides and compounds, manufacture, properties and uses	Explain the general properties of the copper family. Write down the types of copper oxides and compounds. Write down the preparation of copper compounds. Explain the properties of copper compounds. State the uses of copper compounds.	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Discussion, presentation 3 X 50			0%

14	Understand the characteristics of the zinc family including general properties, oxides and compounds, manufacture, properties and uses	Explain the general properties of the zinc family. Write down the various zinc oxides and compounds	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Discussion, presentation 3 X 50			0%
15	Understand the characteristics of the zinc family including general properties, oxides and compounds, manufacture, properties and uses	Write about the preparation of zinc compounds. Explain the properties of zinc compounds. State the uses of zinc compounds.	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Discussion, presentation 3 X 50			0%

16	In accordance with final abilities at meetings 9 to 15	In accordance with the indicators at meetings 9 to 15	Criteria: 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Subsummative test, carried out through a written exam, given weight (2) 4.3. Assessment of presentations and papers, considered as assignments, then given weight (3) 5.4. End of semester test as UAS score, given weight (3) 6.5. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Final Exam Semester 2 X 50			0%
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Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
		0%

Notes

- Learning Outcomes of Study Program Graduates (PLO - Study Program)** are the abilities possessed by each Study Program graduate which are the internalization of attitudes, mastery of knowledge and skills according to the level of their study program obtained through the learning process.
- The PLO imposed on courses** are several learning outcomes of study program graduates (CPL-Study Program) which are used for the formation/development of a course consisting of aspects of attitude, general skills, special skills and knowledge.
- Program Objectives (PO)** are abilities that are specifically described from the PLO assigned to a course, and are specific to the study material or learning materials for that course.
- Subject Sub-PO (Sub-PO)** is a capability that is specifically described from the PO that can be measured or observed and is the final ability that is planned at each learning stage, and is specific to the learning material of the course.
- Indicators for assessing** ability in the process and student learning outcomes are specific and measurable statements that identify the ability or performance of student learning outcomes accompanied by evidence.
- Assessment Criteria** are benchmarks used as a measure or measure of learning achievement in assessments based on predetermined indicators. Assessment criteria are guidelines for assessors so that assessments are consistent and unbiased. Criteria can be quantitative or qualitative.
- Forms of assessment:** test and non-test.
- Forms of learning:** Lecture, Response, Tutorial, Seminar or equivalent, Practicum, Studio Practice, Workshop Practice, Field Practice, Research, Community Service and/or other equivalent forms of learning.
- Learning Methods:** Small Group Discussion, Role-Play & Simulation, Discovery Learning, Self-Directed Learning, Cooperative Learning, Collaborative Learning, Contextual Learning, Project Based Learning, and other equivalent methods.
- Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
- The assessment weight** is the percentage of assessment of each sub-PO achievement whose size is proportional to the level of difficulty of achieving that sub-PO, and the total is 100%.
- TM=Face to face, PT=Structured assignments, BM=Independent study.