



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

Document Code

## SEMESTER LEARNING PLAN

<b>Courses</b>	<b>CODE</b>	<b>Course Family</b>	<b>Credit Weight</b>			<b>SEMESTER</b>	<b>Compilation Date</b>																																
CHEMISTRY OF MAIN GROUP ELEMENTS	4720103188		T=2	P=0	ECTS=3.18	3	July 17, 2024																																
<b>AUTHORIZATION</b>	<b>SP Developer</b>		<b>Course Cluster Coordinator</b>			<b>Study Program Coordinator</b>																																	
	.....		.....			Dr. Amaria, M.Si.																																	
<b>Learning model</b>	Case Studies																																						
<b>Program Learning Outcomes (PLO)</b>	PLO study program that is charged to the course																																						
	Program Objectives (PO)																																						
	PLO-PO Matrix																																						
		P.O																																					
	PO Matrix at the end of each learning stage (Sub-PO)																																						
		<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tr> <td rowspan="2" style="width: 5%;">P.O</td> <td colspan="16">Week</td> </tr> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td><td>13</td><td>14</td><td>15</td><td>16</td> </tr> </table>						P.O	Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
P.O	Week																																						
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																							
<b>Short Course Description</b>	Study of abundance, nature, how to obtain, benefits and how to identify, as well as being able to utilize the main group elements through discussions, presentations, project assignments, conveying ideas orally and in writing.																																						
<b>References</b>	<b>Main :</b>																																						
	1. Lee, J. D. 1991. Concise Inorganic Chemistry. Four Edition. London: Chapman & Hall. 2. Madan, R. D. 1997. Modern Inorganic Chemistry. New Delhi: S. Chand and Company LDT. 3. Sugiarto, B. dkk. 1997. Kimia Anorganik. Surabaya: Unipress IKIP Surabaya. 4. Handbook of Inorganic Compounds, Second Edition (Hardcover) 13 May 18, 2011. ISBN-13: 000-1439814619 ISBN-10: 14398146																																						
	<b>Supporters:</b>																																						
<b>Supporting lecturer</b>	Prof. Dr. Achmad Lutfi, M.Pd. Dr. Muchlis, S.Pd., M.Pd. Dr. Kusumawati Dwiningsih, 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.																																						
<b>Week-</b>	<b>Final abilities of each learning stage (Sub-PO)</b>	<b>Evaluation</b>		<b>Help Learning, Learning methods, Student Assignments, [ Estimated time]</b>		<b>Learning materials [ References ]</b>	<b>Assessment Weight (%)</b>																																
		<b>Indicator</b>	<b>Criteria &amp; Form</b>	<b>Offline ( offline )</b>	<b>Online ( online )</b>																																		
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)																																

1	Students understand the discussion of inorganic chemistry and the role of theory in inorganic chemistry as well as the basis for classifying elements	1. Understand the basics of classifying elements. 2. Explain the role of chemical theory in inorganic chemistry	<b>Criteria:</b> 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Sub-summative test, assessed all relevant indicators through a written exam, given a weight (3) 4.3. Assignment value for working on questions and writing papers (weight 2) 5.4. 3x UAS score (3) 6. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Presentation, discussion. 2 X 50			0%
2	Students understand the position, physico-chemical properties, laboratory production of hydrogen compounds and their benefits	1. Understand the position, properties and uses of hydrogen and its compounds. 2. Understand how to make hydrogen and its compounds in laboratories and industrially	<b>Criteria:</b> 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Sub-summative test, assessed all relevant indicators through a written exam, given a weight (3) 4.3. Assignment value for working on questions and writing papers (weight 2) 5.4. 3x UAS score (3) 6. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Discussions, presentations, assignments. 2 X 50			0%

3	Students understand the position, physico-chemical properties, laboratory preparation of alkaline compounds and their benefits.	1. Understand the position, properties, and methods of obtaining alkali metals. 2. Explain the uses of alkaline compounds based on their properties.	<b>Criteria:</b> 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Sub-summative test, assessed all relevant indicators through a written exam, given a weight (3) 4.3. Assignment value for working on questions and writing papers (weight 2) 5.4. 3x UAS score (3) 6. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Presentations, discussions and assignments. 2 X 50			0%
4	Students understand the position, physico-chemical properties, laboratory preparation of alkaline compounds and their benefits.	1. Understand the position, properties, and methods of obtaining alkali metals. 2. Explain the uses of alkaline compounds based on their properties.	<b>Criteria:</b> 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Sub-summative test, assessed all relevant indicators through a written exam, given a weight (3) 4.3. Assignment value for working on questions and writing papers (weight 2) 5.4. 3x UAS score (3) 6. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Presentations, discussions and assignments. 2 X 50			0%

5	Students understand the position, physico-chemical properties, laboratory preparation of alkaline earth compounds and their benefits.	1. Understand the position, properties, and methods of obtaining alkaline earth metals. 2. Explain the uses of alkaline earth compounds.	<b>Criteria:</b> 1. Assessment is carried out on aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. The Mid-Semester Examination (UTS) is carried out assessing all relevant indicators through a written exam, with a weighting of (2) 4.3. The Final Semester Examination (UAS) is carried out assessing all relevant indicators through a written examination, with a weight of (3)) 5.4. Product assessment Report/paper, as an assignment, with 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 and assignment 2 X 50			0%
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6	Students understand the position of physico-chemical properties, laboratory production of boron and aluminum compounds and their benefits.	1. Understand the position, nature, and method of obtaining group IIIA. 2. Explain the uses of Aluminum and Boron compounds. 3. Understand how to make Boron and Aluminum compounds in a laboratory	<b>Criteria:</b> 1. Assessment is carried out on aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. The Mid-Semester Examination (UTS) is carried out assessing all relevant indicators through a written exam, with a weighting of (2) 4.3. The Final Semester Examination (UAS) is carried out assessing all relevant indicators through a written examination, with a weight of (3)) 5.4. Product assessment Report/paper, as an assignment, with 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 and assignment 2 X 50			0%
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7	Students understand the position of physico-chemical properties, laboratory production of boron and aluminum compounds and their benefits.	1. Understand the position, nature, and method of obtaining group IIIA. 2. Explain the uses of Aluminum and Boron compounds. 3. Understand how to make Boron and Aluminum compounds in a laboratory	<b>Criteria:</b> 1. Assessment is carried out on aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. The Mid-Semester Examination (UTS) is carried out assessing all relevant indicators through a written exam, with a weighting of (2) 4.3. The Final Semester Examination (UAS) is carried out assessing all relevant indicators through a written examination, with a weight of (3)) 5.4. Product assessment Report/paper, as an assignment, with 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 and assignment 2 X 50			0%
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8	Midterm exam	Midterm exam	<b>Criteria:</b> 1. Assessment is carried out on aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. The Mid-Semester Examination (UTS) is carried out assessing all relevant indicators through a written exam, with a weighting of (2) 4.3. The Final Semester Examination (UAS) is carried out assessing all relevant indicators through a written examination, with a weight of (3)) 5.4. Product assessment Report/paper, as an assignment, with 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	Midterm Exam 2 X 50			0%
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9	Students understand the position, physico-chemical properties, laboratory production of carbon compounds and their benefits	1. Understand the position, properties, and methods of obtaining carbon groups. 2. Explain the uses of carbon compounds. 3. Understand how to make carbide compounds in the laboratory.	<b>Criteria:</b> 1. Assessment is carried out on aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. The Mid-Semester Examination (UTS) is carried out assessing all relevant indicators through a written exam, with a weighting of (2) 4.3. The Final Semester Examination (UAS) is carried out assessing all relevant indicators through a written examination, with a weight of (3)) 5.4. Product assessment Report/paper, as an assignment, with 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 and assignment 2 X 50			0%
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10	Students understand the position, physico-chemical properties, laboratory production of carbon compounds and their benefits	1. Understand the position, properties, and methods of obtaining carbon groups. 2. Explain the uses of carbon compounds. 3. Understand how to make carbide compounds in the laboratory.	<b>Criteria:</b> 1. Assessment is carried out on aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. The Mid-Semester Examination (UTS) is carried out assessing all relevant indicators through a written exam, with a weighting of (2) 4.3. The Final Semester Examination (UAS) is carried out assessing all relevant indicators through a written examination, with a weight of (3)) 5.4. Product assessment Report/paper, as an assignment, with 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 and assignment 2 X 50			0%
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11	Students understand the position, physico-chemical properties, laboratory production of nitrogen compounds and their benefits	1. Understand the position, properties, and methods of obtaining the nitrogen group. 2. Explain the uses of nitrogen compounds. 3. Understand how to make nitrogen, antimony and arsenic compounds in the laboratory.	<b>Criteria:</b> 1. Assessment is carried out on aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. The Mid-Semester Examination (UTS) is carried out assessing all relevant indicators through a written exam, with a weighting of (2) 4.3. The Final Semester Examination (UAS) is carried out assessing all relevant indicators through a written examination, with a weight of (3)) 5.4. Product assessment Report/paper, as an assignment, with 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 and assignment 2 X 50			0%
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12	Students understand the position, physico-chemical properties, laboratory production of oxygen and sulfur compounds and their benefits	1. Understand the position, properties and methods of obtaining oxygen and sulfur. 2. Explain the benefits of oxygen and sulfur compounds based on their properties	<b>Criteria:</b> 1. Assessment is carried out on aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. The Mid-Semester Examination (UTS) is carried out assessing all relevant indicators through a written exam, with a weighting of (2) 4.3. The Final Semester Examination (UAS) is carried out assessing all relevant indicators through a written examination, with a weight of (3)) 5.4. Product assessment Report/paper, as an assignment, with 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 and assignment 2 X 50			0%
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13	Students understand the position, physico-chemical properties, laboratory production and the benefits of halogen compounds	1. Understand the position, properties and methods of obtaining oxygen group elements. 2. Explain the benefits of fluor and iodine compounds based on their properties	<b>Criteria:</b> 1. Assessment is carried out on aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. The Mid-Semester Examination (UTS) is carried out assessing all relevant indicators through a written exam, with a weighting of (2) 4.3. The Final Semester Examination (UAS) is carried out assessing all relevant indicators through a written examination, with a weight of (3)) 5.4. Product assessment Report/paper, as an assignment, with 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 and assignment 2 X 50			0%
14	Students understand the position, physico-chemical properties, and laboratory production of noble gases	1. Understand the characteristics of the noble gas group. 2. Explain the benefits of noble gases based on their properties	<b>Criteria:</b> 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Sub-summative test, assessed all relevant indicators through a written exam, given a weight (3)) 4.3. Assignment value for working on questions and writing papers (weight 2) 5.4. 3x UAS score (3) 6. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Presentation, discussion and assignment 2 X 50			0%

15	Students understand the position, physico-chemical properties, and laboratory production of noble gases.	1. Understand the characteristics of the noble gas group. 2. Explain the benefits of noble gases based on their properties.	<b>Criteria:</b> 1. The assessment is carried out on the following aspects: 2.1. Participation during lectures (weight 2) 3.2. Sub-summative test, assessed all relevant indicators through a written exam, given a weight (3) 4.3. Assignment value for working on questions and writing papers (weight 2) 5.4. 3x UAS score (3) 6. The final NA is (participation value x2) (assignment value x 3) (UTS value x 2) UAS value (3) divided by 10	Presentation, discussion and assignment 2 X 50			0%
16	According to final abilities at meetings 9-15	In line with indicators at meeting 9-15	<b>Criteria:</b> 1. Assessment is carried out on aspects: 2.1. Participation during lectures, carried out through observation (weight 2) 3.2. The Mid-Semester Examination (UTS) is carried out assessing all relevant indicators through a written exam, with a weighting of (2) 4.3. The Final Semester Examination (UAS) is carried out assessing all relevant indicators through a written examination, with a weight of (3) 5.4. Product assessment Report/paper, as an assignment, with 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%

**Evaluation Percentage Recap: Case Study**

No	Evaluation	Percentage
		0%

## Notes

1. **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.
2. **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.
3. **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.
4. **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.
5. **Indicators for assessing** abilities in the process and student learning outcomes are specific and measurable statements that identify the abilities or performance of student learning outcomes accompanied by evidence.
6. **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.
7. **Forms of assessment:** test and non-test.
8. **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.
9. **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.
10. **Learning materials** are details or descriptions of study materials which can be presented in the form of several main points and sub-topics.
11. **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%.
12. TM=Face to face, PT=Structured assignments, BM=Independent study.