

		Universitas Negeri Surabaya Faculty of Mathematics and Natural Sciences Undergraduate Chemistry Study Program					Document Code																																		
SEMESTER LEARNING PLAN																																									
Courses		CODE	Course Family		Credit Weight		SEMESTER	Compilation Date																																	
Instrument Analysis		4720103201	ANALYTICAL CHEMISTRY		T=3	P=0	ECTS=4.77	6 July 17, 2024																																	
AUTHORIZATION		SP Developer		Course Cluster Coordinator		Study Program Coordinator																																			
			Dr. Maria Monica Sianita Basukiwardojo, M.Si		Dr. Amaria, M.Si.																																			
Learning model	Project Based Learning																																								
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																																								
	Program Objectives (PO)																																								
	PLO-PO Matrix																																								
	<table border="1" style="margin: auto;"> <tr> <td style="width: 10%;"></td> <td style="width: 10%; text-align: center;">P.O</td> <td colspan="16"></td> </tr> </table>									P.O																															
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Short Course Description	PO Matrix at the end of each learning stage (Sub-PO)																																								
	<table border="1" style="margin: auto;"> <tr> <td rowspan="2" style="width: 10%;"></td> <td rowspan="2" style="width: 10%;"></td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 5%; text-align: center;">1</td> <td style="width: 5%; text-align: center;">2</td> <td style="width: 5%; text-align: center;">3</td> <td style="width: 5%; text-align: center;">4</td> <td style="width: 5%; text-align: center;">5</td> <td style="width: 5%; text-align: center;">6</td> <td style="width: 5%; text-align: center;">7</td> <td style="width: 5%; text-align: center;">8</td> <td style="width: 5%; text-align: center;">9</td> <td style="width: 5%; text-align: center;">10</td> <td style="width: 5%; text-align: center;">11</td> <td style="width: 5%; text-align: center;">12</td> <td style="width: 5%; text-align: center;">13</td> <td style="width: 5%; text-align: center;">14</td> <td style="width: 5%; text-align: center;">15</td> <td style="width: 5%; text-align: center;">16</td> </tr> </table>										Week																1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
		Week																																							
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16																								
Short Course Description	The application of instrumental analysis, where the theory is mostly given in the spectro-analysis and chromatography methods course for Chemistry study program students, which has a weight of 2 credits. In this course, students undertake a practical internship in industry and are given the opportunity to discuss the problems they face with the course lecturer																																								
References	Main :																																								
	1. Lambert, Joseph B., Mazzola, Eugene P. , Ridge, Clark D..2018, Nuclear Magnetic Resonance Spectroscopy:An Introduction to Principles, Applications, and Experimental Methods, 2nd Edition, New Jersey: Pearson Education, Inc 2. Reusch, W. 2013. Visible and Ultraviolet Spectroscopy. Department of Chemistry, Michigan State University.																																								
	Supporters:																																								
Supporting lecturer	Dr. Maria Monica Sianita Basukiwardojo, M.Si. Prof. Dr. Nita Kusumawati, S.Si., M.Sc.																																								
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	Instrument Analysis course orientation		Forms of Assessment : Participatory Activities, Practical Assessment, Tests	lectures and discussions 3x50	lectures and discussions 3x50	Material: Instrument analysis course orientation Bibliography: <i>Lambert, Joseph B., Mazzola, Eugene P. , Ridge, Clark D.. 2018, Nuclear Magnetic Resonance Spectroscopy: An Introduction to Principles, Applications, and Experimental Methods, 2nd Edition, New Jersey: Pearson Education, Inc</i>	0%
2	Instrument Analysis course orientation		Form of Assessment : Participatory Activities	lectures and discussions 3x50	lectures and discussions 3x50	Material: Instrument analysis course orientation Bibliography: <i>Lambert, Joseph B., Mazzola, Eugene P. , Ridge, Clark D.. 2018, Nuclear Magnetic Resonance Spectroscopy: An Introduction to Principles, Applications, and Experimental Methods, 2nd Edition, New Jersey: Pearson Education, Inc</i>	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** 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.
- 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.