

 UNESA	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
SPECTROSCOPIC AND CHROMATOGRAPHIC METHODS	4720102218		T=2	P=0	ECTS=3.18	4	July 17, 2024
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator	
			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						
		<div style="border: 1px solid black; padding: 5px; width: fit-content; margin: 0 auto;">P.O</div>					
Short Course Description	Study of chemical analysis qualitatively and quantitatively in terms of chemical structure, energetics and analysis based on the working principles of several Spectrophotometer and Chromatography instruments accompanied by supporting laboratory activities so that students are able to master related concepts, are skilled in using instruments, are able to collaborate and be responsible and can communicate knowledge and scientific skills.						
References	Main :	<ol style="list-style-type: none"> 1. Darmono. 2005. Materi Pelatihan Operasi Instrumen Laboratorium untuk Mahasiswa Fakultas MIPA Kimia UNESA, BTKL Surabaya. 2. Jurusan kimia FMIPA UGM. 2004. Hand Out Latihan Instrumentasi Kimia GC dan HPLC. 3. 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. 4. Pavia, Donald L., Lampman, Gary M., Kriz, George S., Engel, Randall G..2001, Techniques In the Organic Laboratory, Philadelphia: Harcourt College Publishers. 5. Reusch, W. 2013. Visible and Ultraviolet Spectroscopy. Department of Chemistry, Michigan State University. 6. Stuart, B. 2004. Infrared Spectroscopy: Fundamentals and Applications. John Wiley and Sons, Ltd 7. Harvey,D. 2000. Modern Analytical Chemistry. Int. Ed. Singapore: Mc.Graw Hill 					
	Supporters:						
Supporting lecturer	Prof. Dr. Pirim Setiarso, M.Si. Dr. Maria Monica Sianita Basukiwardojo, M.Si. Prof. Dr. Titik Taufikurohmah, S.Si., M.Si. Prof. Dr. Nita Kusumawati, S.Si., M.Sc. Dr. Indah Ardinarsih, 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							0%
2							0%
3							0%
4							0%
5							0%
6							0%
7							0%
8							0%
9							0%
10							0%
11							0%
12							0%
13							0%
14							0%
15							0%
16							0%

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.

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.