



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

Document Code

SEMESTER LEARNING PLAN

Courses	CODE	Course Family	Credit Weight			SEMESTER	Compilation Date										
Herbal Medicine Science	4710202057	Study Program Elective	T=2	P=0	ECTS=4.48	2	August 23, 2023										
AUTHORIZATION	SP Developer		Course Cluster Coordinator			Study Program Coordinator											
	Prof. Dr. Tukiran, M.Si		Prof. Dr. Suyatno, M.Si			Prof. Dr. Nuniek Herdyastuti, M.Si.											
Learning model	Project Based Learning																
Program Learning Outcomes (PLO)	PLO study program that is charged to the course																
	PLO-2	Demonstrate the character of being tough, collaborative, adaptive, innovative, inclusive, lifelong learning and entrepreneurial spirit															
	PLO-7	Develop logical, critical, systematic and creative thinking in the field of science and technology according to their field of expertise through scientific research, creating works and compiling scientific conceptions and study results based on scientific rules, procedures and ethics in the form of a thesis.															
	PLO-10	Able to carry out studies according to their field of expertise in solving problems in society or relevant industry through developing their knowledge and expertise															
	PLO-11	Able to educate the public about the benefits of chemistry in health and environmental sustainability based on research results															
	PLO-12	Have the ability to innovate in entrepreneurial development and have managerial abilities															
	Program Objectives (PO)																
	PO - 1	Able to use the concepts of phytochemistry, phytopharmacy, phytopharmacology, phytotherapy, labeling of traditional medicine and CPOTB.															
	PO - 2	Mastering the basic concepts of secondary metabolite compounds (including chemo-diversity) and their benefits for humans from the pharmacokinetic and pharmacodynamic aspects of the chemical complexity of plants on the efficacy of herbal medicines															
	PO - 3	Make decisions based on the results of phytochemical screening analysis, isolation and bioactivity testing of secondary metabolite compounds for the development of phytopharmaceuticals, phytopharmacology and phytotherapy.															
	PO - 4	Have a responsible attitude in developing simplicia (preparations), extracts or isolates from plant materials as traditional medicinal ingredients including the preparation of herbal products.															
	PLO-PO Matrix																
			P.O	PLO-2	PLO-7	PLO-10	PLO-11	PLO-12									
		PO-1			✓	✓											
		PO-2				✓	✓										
	PO-3	✓	✓	✓													
	PO-4	✓			✓		✓										
PO Matrix at the end of each learning stage (Sub-PO)																	
	P.O	Week															
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
	PO-1	✓	✓														
	PO-2			✓			✓	✓	✓								✓
	PO-3					✓					✓	✓					
	PO-4				✓					✓				✓	✓	✓	
Short Course Description	Knowledge about herbal medicine includes phytochemistry, phytopharmacy, phytopharmacology, phytotherapy. The study of phytochemistry, namely studying plant chemistry from the secondary metabolite groups of terpenoids, steroids, phenylpropanoids, flavonoids and alkaloids), phytopharmaceuticals concerns the preparation of natural medicines in their original form, or in the form of tea packaging, or in the form of preparations that have been processed (tincture) is followed by modern testing for the identification and quality of drugs using specific physicochemical testing methods, phytopharmacology is related to the chemical components of plants and investigates the pharmacokinetics and pharmacodynamics of the chemical components of the plant, and phytotherapy describes the potential & limitations of herbal medicines in treating human diseases, marking natural medicines, and Good Traditional Medicine Treatment Methods. Lectures are carried out using the method of discussion, presentation and preparation of herbal products (including processing IPR applications, processing MUI Halal and BPOM).																
References	Main :																

1. Lully Hanni Endarini, 2016. Modul Bahan Ajar Cetak Farmasi: Farmakognisi dan Fitokimia, Jakarta: Pusat Pendidikan Sumber Daya Manusia Kesehatan, Badan Pengembangan dan Pemberdayaan Sumber Daya Manusia Kesehatan, Kementerian Kesehatan Republik Indonesia.
2. Noorcahyati, 2012. Tumbuhan Berkhasiat Obat Etnis Alsi Kalimantan, Balai Penelitian Teknologi Konservasi Sumber Daya Alam, Badan Penelitian Dan Pengembangan Kehutanan, Kementerian Kehutanan.

Supporters:

3. Anonim, 2015. Buku Saku 1 Petunjuk Praktis Toga Dan Akupresur, Jakarta: Direktorat Jenderal Bina Gizi Dan Kesehatan Ibu Dan Anak, Kementerian Kesehatan RI
4. Efizal, Dkk. 2020. Buku Saku Obat Tradisional Untuk Daya Tahan Tubuh, Badan Pengawas Obat Dan Makanan Republik Indonesia
5. Keputusan Menteri Kesehatan Republik Indonesia Nomor Hk.01.07/Menkes/187/2017 Tentang Formularium Ramuan Obat Tradisional Indonesia

Supporting lecturer

Prof. Dr. Suyatno, M.Si.
Prof. Dr. Tukiran, M.Si.
Dr. Ratih Dewi Saputri, 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	Students understand various IPH terms including phytochemistry, phytopharmaca, phytopharmacology, phytotherapy, traditional medicine labeling and CPOTB	1.1. Explain the RPS, lecture system, assessment system, determination of graduation, and rules for Phytopharmacology lectures 2.2. Able to explain the terms phytochemistry, phytopharmaca, phytopharmacology, phytotherapy and development of herbal innovation products	Form of Assessment : Participatory Activities		Presentation and discussion 2 X 50 MINUTES	Material: phytochemistry, phytopharmaceuticals, phytopharmacology, phytotherapy and development of herbal innovation products References: 1. Lully Hanni Endarini, 2016. <i>Pharmaceutical Printed Teaching Material Module: Pharmacognition and Phytochemistry</i> , Jakarta: Health Human Resources Education Center, Human Resources Development and Empowerment Agency Health, Ministry of Health of the Republic of Indonesia.	5%
2	understand the Phytopharmacology lecture system	Identify the chemical components of plants and their specific characteristics	Criteria: essay test 25% while summative and performance assessment 75% Form of Assessment : Participatory Activities, Tests		Presentation and discussion 2x50 minutes	Material: Phytopharmacology References: 2. Noorcahyati, 2012. <i>Plants with Medicinal Efficacy of Alsi Kalimantan Ethnicity</i> , Natural Resources Conservation Technology Research Institute, Forestry Research and Development Agency, Ministry of Forestry.	5%
3	Students understand the description of chemodiversity (diversity of structures, chemical patterns, and biogenesis relationships) of a plant in one genus and/or in one plant family.	provides an overview of the chemo-diversity (diversity of structures, chemical patterns, and biogenesis relationships) of a plant in one genus and/or in one plant family.	Criteria: essay test 25% while summative and performance assessment 75% Form of Assessment : Participatory Activities, Tests		Presentation and discussion 2 X 50 MINUTES		5%
4	Students understand the preparation of natural medicines which are used in their original form, in the form of tea packaging, or in the form of processed preparations (tinctures).	Explains the preparation of natural medicines that are used in their original form, in the form of tea packaging, or in the form of processed preparations (tinctures).	Form of Assessment : Participatory Activities, Tests		Presentation and discussion 2 X 50 MINUTES	Material: natural medicines used in their original form, in the form of tea packaging, or in the form of processed preparations (tinctures) References: 1. Lully Hanni Endarini, 2016. <i>Pharmacy Printed Teaching Material Module: Pharmacognition and Phytochemistry</i> , Jakarta: Pusat Health Human Resources Education, Health Human Resources Development and Empowerment Agency, Ministry of Health of the Republic of Indonesia.	5%
5	Students understand natural medicines which are directed using specific physicochemical testing methods.	Identify targeted natural medicines using specific physicochemical testing methods	Criteria: essay test 25% while summative and performance assessment 75%		Presentation and discussion 2 X 50 MINUTES	Material: natural medicines that use specific physicochemical testing methods. Reference: 4. Efizal, et al. 2020. <i>Handbook of Traditional Medicine for Body Resistance</i> , Republic of Indonesia Food and Drug Supervisory Agency	5%

6	Students understand the pharmacokinetic aspects of the complexity of plant chemistry on the efficacy of herbal medicines	Explain the pharmacokinetic aspects of the complexity of plant chemistry on the efficacy of herbal medicines	Criteria: essay test 25% while summative and performance assessment 75% Form of Assessment : Participatory Activities		Presentation and discussion 2 X 50 MINUTES	Material: pharmacokinetics of the complexity of plant chemistry on the efficacy of herbal medicines References: 1. Lully Hanni Endarini, 2016. <i>Pharmaceutical Printed Teaching Material Module: Pharmacognition and Phytochemistry</i> , Jakarta: Health Human Resources Education Center, Health Human Resources Development and Empowerment Agency, Ministry Health of the Republic of Indonesia.	5%
7	Students understand the pharmacodynamic aspects of the complexity of plant chemistry on the efficacy of herbal medicines	Explain the pharmacodynamic aspects of the chemical complexity of plants on the efficacy of herbal medicines	Criteria: essay test 25% while summative and performance assessment 75%		2 x 50 min - PPT, Lapto 2 x 50 min	Material: pharmacodynamics of the complexity of plant chemistry on the efficacy of herbal medicines References: 1. Lully Hanni Endarini, 2016. <i>Pharmaceutical Printed Teaching Material Module: Pharmacognition and Phytochemistry</i> , Jakarta: Health Human Resources Education Center, Health Human Resources Development and Empowerment Agency, Ministry Health of the Republic of Indonesia.	5%
8	All CPMK from weeks 1 to 7	MATERIALS 1-7	Form of Assessment : Participatory Activities		Written Exam 2 X 50 MINUTES	Material: materials 1-7 References: 1. Lully Hanni Endarini, 2016. <i>Pharmacy Printed Teaching Material Module: Pharmacognition and Phytochemistry</i> , Jakarta: Health Human Resources Education Center, Health Human Resources Development and Empowerment Agency, Ministry of Health of the Republic of Indonesia. Material: material 1-7 References: 4. Efizal, et al. 2020. <i>Handbook of Traditional Medicine for Body Resistance</i> , Republic of Indonesia Food and Drug Supervisory Agency	10%
9	understand about herbal medicines that describe the potential and limitations of herbal medicines in treating human diseases	Explains herbal medicines that describe the potential and limitations of herbal medicines in treating human diseases	Criteria: essay test 25% while summative and performance assessment 75% Form of Assessment : Participatory Activities		Presentation and discussion 2 X 50 MINUTES	Material: herbal medicines in treating diseases References: 3. Anonymous, 2015. <i>Pocket Book 1 Practical Instructions for Toga and Acupressure</i> , Jakarta: Directorate General of Gizl Development and Maternal and Child Health, Indonesian Ministry of Health	0%
10	Students understand about herbal medicines that can be recommended for their own use by non-medical practitioners (naturopaths, physiotherapists and other health observers) especially in drug prevention efforts	Identify herbal medicines that can be recommended for self-use by non-medical practitioners (naturopaths, physiotherapists and other health observers) especially in drug prevention efforts	Criteria: essay test 25% while summative and performance assessment 75% Form of Assessment : Participatory Activities		Presentation and discussion 2 X 50 MINUTES	Material: herbal medicines that can be recommended for self-use by non-medical practitioners (naturopaths, physiotherapists and other health observers) especially in drug prevention efforts. References: 1. Lully Hanni Endarini, 2016. <i>Pharmacy Printed Teaching Material Module: Pharmacognition and Phytochemistry</i> , Jakarta: Health Human Resources Education Center, Health Human Resources Development and Empowerment Agency, Ministry of Health of the Republic of Indonesia.	5%

11	Students understand the labeling of natural medicines which includes three categories: herbal medicines, standardized herbal medicines, and phytopharmaceuticals.	Explains the labeling of natural medicines which includes three categories: herbal medicines, standardized herbal medicines, and phytopharmaca.	Criteria: essay test 25% while summative and performance assessment 75% Form of Assessment : Participatory Activities, Tests		Presentation and discussion 2 X 50 MINUTES	Material: medicinal plants which can be used as herbal medicine and standardized medicines References: 2. Noorcahyati, 2012. <i>Plants with Medicinal Efficacy of the Alsi Kalimantan Ethnicity, Natural Resources Conservation Technology Research Institute, Forestry Research and Development Agency, Ministry of Forestry.</i>	10%
12	Students understand the introduction to CPOTB regarding personnel and buildings, facilities and equipment, sanitation and hygiene and documentation	Explains the introduction of CPOTB regarding personnel and buildings, facilities and equipment, sanitation and hygiene and documentation.	Criteria: essay test 25% while summative and performance assessment 75%		Presentation and discussion 2 X 50 MINUTES	Material: drug formulation that takes into account the components of facilities and equipment, hygiene Reference: 5. <i>Decree of the Minister of Health of the Republic of Indonesia Number Hk.01.07/Menkes/187/2017 Concerning Formulary for Indonesian Traditional Medicinal Concoctions</i>	5%
13	Students understand the introduction to CPOTB regarding production, quality control, manufacturing and analysis based on contracts, and good methods of storing and shipping traditional medicines	Explaining the introduction of CPOTB regarding production, quality control, manufacturing and analysis based on contracts, and good methods of storing and shipping traditional medicines	Form of Assessment : Participatory Activities, Tests		Presentation and discussion 2 X 50 MINUTES	Material: production, quality control, manufacturing and analysis based on contracts, and good methods of storing and shipping traditional medicines References: 5. <i>Decree of the Minister of Health of the Republic of Indonesia Number Hk.01.07/Menkes/187/2017 Concerning Formulary for Traditional Indonesian Medicines</i>	5%
14	Students understand the preparation of herbal products (including processing IPR applications)	Explaining the preparation of herbal products (including processing IPR applications)	Form of Assessment : Participatory Activities, Project Results Assessment / Product Assessment		Presentation and discussion 2 X 50 MINUTES	Material: Preparation of Herbal Products (including processing IPR applications) References: 4. <i>Efizal, et al. 2020. Handbook of Traditional Medicine for Body Resistance, Republic of Indonesia Food and Drug Supervisory Agency</i>	10%
15	Students understand the preparation of herbal products (including processing MUI Halal and BPOM)	Explaining the preparation of herbal products (including processing MUI Halal and BPOM)	Criteria: essay test 25% while summative and performance assessment 75% Forms of Assessment : Participatory Activities, Project Results Assessment / Product Assessment, Portfolio Assessment		Presentation and discussion 2 X 50 MINUTES	Material: Preparation of Herbal Products (including processing MUI Halal and BPOM) References: 5. <i>Decree of the Minister of Health of the Republic of Indonesia Number Hk.01.07/Menkes/187/2017 Concerning Formulary for Indonesian Traditional Medicinal Herbs</i>	15%
16	All CPMK from weeks 9-15	Material 9-15	Criteria: essay test 25% while summative and performance assessment 75% Form of Assessment : Test		Test Description 2x50 minutes	Material: material 9-15 References: 4. <i>Efizal, et al. 2020. Handbook of Traditional Medicine for Body Resistance, Republic of Indonesia Food and Drug Supervisory Agency</i>	5%

Evaluation Percentage Recap: Project Based Learning

No	Evaluation	Percentage
1.	Participatory Activities	50%
2.	Project Results Assessment / Product Assessment	10%
3.	Portfolio Assessment	5%
4.	Test	20%
		85%

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.