



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																																											
Pharmaceutical Chemistry	8420402128		T=2 P=0 ECTS=3.18	5	July 18, 2024																																											
AUTHORIZATION	SP Developer		Course Cluster Coordinator	Study Program Coordinator																																												
	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																																															
		P.O																																														
	PO Matrix at the end of each learning stage (Sub-PO)																																															
		<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td rowspan="2" style="width: 5%;">P.O</td> <td colspan="16" style="text-align: center;">Week</td> </tr> <tr> <td style="width: 2%;">1</td> <td style="width: 2%;">2</td> <td style="width: 2%;">3</td> <td style="width: 2%;">4</td> <td style="width: 2%;">5</td> <td style="width: 2%;">6</td> <td style="width: 2%;">7</td> <td style="width: 2%;">8</td> <td style="width: 2%;">9</td> <td style="width: 2%;">10</td> <td style="width: 2%;">11</td> <td style="width: 2%;">12</td> <td style="width: 2%;">13</td> <td style="width: 2%;">14</td> <td style="width: 2%;">15</td> <td style="width: 2%;">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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Short Course Description	Study of the position of chemistry in pharmaceutical science, and the history of pharmacy. Definition and limitations of drugs, drug dosage forms and administration, routes and processes of drug travel in the body include; Biopharmaceutical phase, Pharmacokinetics (Absorption, Distribution, Metabolism and Excretion / ADME), and Pharmacodynamics, Structureactivity Relationship (HKSA) of drugs, as well as several classes of drugs such as analgesics and antipyretics, antihistamines and antitussives, and antibiotics, Study of vitamins, addictive substances and pharmaceutical analysis, through discussions, questions and answers, assignments, and presentations																																															
References	Main :																																															
	<ol style="list-style-type: none"> 1. Nugroho, Nurfina Aznam. 2001. Materi Pokok Kimia Farmasi. Modul 1-6. Pusat Penerbitan Universitas Terbuka. Jakarta. (online) http://repository.ut.ac.id/4684/1/PEK14421-M1.pdf 2. Schunack, Walter. Et al. 1990. Senyawa Obat. Buku Pelajaran Kimia Farmasi. Gajah Mada University Pers. Yogyakarta 3. Azis, Hubeis, 1996. Ilmu Farmasetika dan Perkembangannya Masa Kini. Jurusan Farmasetika Universitas Airlangga. Surabaya. 4. Moh. Anief. 1997. Apa Yang Perlu Diketahui Tentang Obat. Gajah Mada Uiversity Press. Yogyakarta. 5. Siswandono dan Soekardjo, 2000. Kimia Medisinal. Airlangga University Press. 6. Artikel terkait bahan kajian yang bersumber dari internet 																																															
	Supporters:																																															
Supporting lecturer																																																
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	Explain the position of chemistry in pharmaceutical science and the history of the development of pharmaceutical science	1. Explain the position of chemistry in Pharmaceutical Science 2. Briefly describe the development of pharmaceutical science 3. Distinguish between medical science and drug science	Criteria: 1.question number 1: total score 10 2.question number 2: total score 20 3.question number 3: total score 20	Constructivism / Think pair share strategy class discussion/ Question and answer Literature study 2 X 50			0%																																									

2	Explain the limitations of drugs and how to use them as well as the side effects they cause	<ol style="list-style-type: none"> 1. Defines several boundaries of medicine (traditional medicine, modern medicine, etc 2. Explain the route of drug use based on its dosage form 	Criteria: attached	Think pair share strategy class discussion/Question and answer 2 X 50			0%
3	Explain the dosage forms of drugs and the routes through which drugs travel in the body	<ol style="list-style-type: none"> 1. Mention the types of effects of drug use 2. Explain the effects of using drugs 3. Explain the process of absorption, distribution, metabolism and excretion of drugs in the body 	Criteria: attached	Reading books 1 and 5 reading other sources 2 X 50			0%
4	Explain the relationship between molecular structure and the biological activity of drugs	<ol style="list-style-type: none"> 1. Explain the relationship between solubility and the biological activity of drugs 2. Explain the effect of pH on the activity of drug compounds in ionized and non-ionized forms 	Criteria: attached	Reading books 1 and 5 Discussion and Question and Answer 4 X 50			0%
5	Explain the relationship between molecular structure and the biological activity of drugs	<ol style="list-style-type: none"> 1. Explain the relationship between solubility and the biological activity of drugs 2. Explain the effect of pH on the activity of drug compounds in ionized and non-ionized forms 3. Explain the relationship between stereochemistry and drug activity. Explain the relationship between redox reactions and drug activity 	Criteria: attached	discussion question and answer presentation 2 X 50			0%

6	Explain the meaning and provide several examples of drug classes based on their function	<ol style="list-style-type: none"> 1.Explain the function, structure and preparation of compounds classified as analgesics and antipyretics 2.Identify the presence of compounds that are classified as analgesics 3.Explain the function, structure and manufacture of compounds classified as antibiotics 4.Explain the function, structure and manufacture of compounds classified as antihistamines and antitussives 	Criteria: attached	Reading books 1 and 5 Discussion and Question and Answer 2 X 50		0%
7	Explain the meaning and provide several examples of drug classes based on their function	<ol style="list-style-type: none"> 1. Explain the function, structure and manufacture of compounds classified as analgesics and antipyretics 2. Identify the existence of compounds classified as analgesics 3. Explain the function, structure and manufacture of compounds classified as antihistamines and antitussives 4. Explain the function, structure and manufacture of compounds classified as antibiotics 	Criteria: attached	Reading books 1 and 5 Discussion and Question and Answer 2 X 50		0%

8	<p>1.UTS 2.Explain the position of chemistry in pharmaceutical science and the history of the development of pharmaceutical science 3.Explain the dosage forms of drugs and the routes through which drugs travel in the body 4.Explain the relationship between molecular structure and the biological activity of drugs 5.Explain the meaning and provide several examples of drug classes based on their function</p>	<p>1.Explain the position of chemistry in Pharmaceutical Science 2.Explain the route of drug use based on its dosage form 3.Explain the effects of using drugs 4.Explain the process of absorption, distribution, metabolism and excretion of drugs in the body 5.Explain the effect of pH on the activity of drug compounds in ionized and non-ionized forms 6.Explain the function, structure and preparation of compounds classified as analgesics and antipyretics 7.Identify the presence of compounds that are classified as analgesics 8.Explain the function, structure and manufacture of compounds classified as antihistamines and antitussives 9.Explain the function, structure and manufacture of compounds classified as antibiotics</p>	<p>Criteria: 1.maximum score 2.no.1 10 3.no. 2 10 4.no.3 10 5.no.4 15 6.no. 5 15 7.no. 6 15 8.no. 7 15</p>	2 X 50 test		0%
9	<p>Explain the meaning and provide several examples of drug classes based on their function</p>	<p>Explain the function and structure of compounds classified as antibiotics and sulfonamides Explain how to use and classify antibiotics</p>	<p>Criteria: late</p>	<p>Reading books 1 and 5 Discussion and Question and Answer Presentation 2 X 50</p>		0%
10	<p>Explain the types of water-soluble and water-insoluble vitamins based on their function, deficiencies, how they work and their sources</p>	<p>1.Distinguish between water-soluble and water-insoluble vitamin groups 2.Mention each use of vitamins 3.Mention the sources of each vitamin 4.Explain the consequences of deficiency of each vitamin</p>	<p>Criteria: according to the presentation assessment criteria</p>	<p>presentation 2 X 50</p>		0%

11	Explain several categories of addictive substances based on their chemical properties and effects on body health	<ol style="list-style-type: none"> 1.Mention compounds that are classified as addictive substances 2.Explain the effects of addictive substance abuse 3.Explain how to overcome addictive substance abuse 	Criteria: according to the assessment criteria for the clipping task	question and answer discussion 2 X 50			0%
12	Explain several categories of addictive substances based on their chemical properties and effects on body health	<ol style="list-style-type: none"> 1.Mention compounds that are classified as addictive substances 2.Explain the effects of addictive substance abuse 3.explains how to overcome addictive substance abuse 	Criteria: attached	presentation and assignment 2 X 50			0%
13	Explain the procedures for sample preparation and analysis from pharmaceutical preparations using appropriate methods	<ol style="list-style-type: none"> 1. Explain sample preparation procedures. 2. Apply various analytical techniques for pharmaceutical preparations 	Criteria: according to the assignment assessment criteria	Discussion, Question and answer, assignment 2 X 50			0%
14	Explain the procedures for sample preparation and analysis from pharmaceutical preparations using appropriate methods	<ol style="list-style-type: none"> 1. Explain sample preparation procedures. 2. Apply various analytical techniques for pharmaceutical preparations 	Criteria: attached	Discussion, Q&A, assignments, presentations 2 X 50			0%
15	Explain the procedures for sample preparation and analysis from pharmaceutical preparations using appropriate methods	<ol style="list-style-type: none"> 1. Explain sample preparation procedures. 2. Apply various analytical techniques for pharmaceutical preparations 	Criteria: in accordance with the pr observation criteria	Discussion, Question and answer, practice, presentation assignment 2 X 50			0%

16	<p>1.Final exams 2.Explain the meaning and provide several examples of drug classes based on their function 3.Explain the types of water-soluble and water-insoluble vitamins based on their function, deficiencies, how they work and their sources 4.Explain the procedures for sample preparation and analysis from pharmaceutical preparations using appropriate methods 5.Explain several categories of addictive substances based on their chemical properties and effects on body health</p>	<p>1.Explain the function, structure and preparation of compounds classified as analgesics and antipyretics 2.Identify the presence of compounds that are classified as analgesics 3.Explain the function, structure and manufacture of compounds classified as antihistamine and antitussive 4.Explain the function and structure of compounds classified as antibiotics and sulfonamides 5.Explain how to use and classify antibiotics 6.Mention compounds that are classified as addictive substances 7.Explain the effects of addictive substance abuse explain how to overcome addictive substance abuse 8. Explain sample preparation procedures in analysis 8.Applying various analytical techniques for pharmaceutical preparations</p>	Criteria: attached	2 X 50 test method			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.

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.