

CURRICULUM BOOK YEAR 2020

JULY 2020

**UNDERGRADUATE PHARMACY STUDY PROGRAM
UNIVERSITAS AHMAD DAHLAN**



FOREWORD

Alhamdulillah hirobilalamin, gratitude for the presence of Allah SWT, who has bestowed mercy, tausyah and guidance, so that the curriculum application team of UAD Pharmacy Faculty can compose this 2020 curriculum guidebook.

This guidebook is intended to give instruction especially for guardian lecturers and student in carrying out 2018 curriculum. This book especially load about curriculum structure, equivalence course and transitional rules.

Finally, we arrived thankyou to all parties involved help completion this curriculum guidebook.

Regards,

Curriculum Committee

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PREFACE

A. VISSION, MISSION AND OBJECTIVE

VISSION :

Become a leading, internationally recognized institution in pharmacy higher education based on the Islamic values

MISSION :

1. To organize excellent pharmacy education that is internationally recognized based on the Islamic value
2. To conduct high quality education, research and community service based on the concept of the Islamic da'wah
3. To establish partnership at national and international level in carrying out the implementation of the Tri Dharma Perguruan Tinggi (Three Pillars of Higher Education comprising Education, Research, and Community Service)

OBJECTIVE :

1. To produce pharmacy graduates in the field of clinical community pharmacy, science and pharmaceutical engineering, and natural resources that are in accordance with Islamic values
2. To produce graduates who have entrepreneurial ability and skills, able to cooperate with other people and have experiences in pharmaceutical research
3. To produce graduates who care about the community, which is in accordance with Islamic Da'wah concept
4. To produce quality scientific products in pharmaceutical sciences that are beneficial for the community that are based on partnerships

B. GRADUATES PROFILE AND LEARNING OUTCOME

Graduates Profile of Undergraduate Pharmacy Program Universitas Ahmad Dahlan :

"Pharmacy graduates who are able to carry out pharmaceutical work in production, distribution and health services as well as supervision and policy of pharmaceutical preparations based on Islamic values"

LEARNING OUTCOMES of UNDERGRADUATE PHARMACY PROGRAM

1. Able to perform drug discovery, formulation development and production as well as quality control of both natural-based and synthetic-based pharmaceutical dosage forms/ products according to the current Good Manufacturing Practice.
2. Able to perform good pharmaceutical care and are able to perform good the concept of pharmacotherapy, pharmaceutical community, and service management.
3. Able to think logically, critically, systematically, and innovatively in the development and implementation of pharmaceutical science.
4. Able to plan and do the basic research in pharmacy field.
5. Have good leadership, teamwork skill, and good communication skills both written and verbal
6. Eager to be a lifelong learner to constantly improve and develop knowledge including entrepreneurship
7. Demonstrate responsibility, integrity, and accountability with Islamic moral, Muhammadiyah's spirit, and ethics

LEARNING OUTCOME of UNDERGRADUATE PHARMACY STUDY PROGRAM
UNIVERSITAS AHMAD DAHLAN BASE ON INDONESIAN NATIONAL QUALIFICATION
FRAMEWORK (PERPRES 8 NO 2012)

Graduate learning outcome of undergraduate faculty pharmacy UAD include 4 aspect. That are attitude, knowledge, specific skill, and general skill.

Aspect	Graduate Learning Outcome
Attitude	<ol style="list-style-type: none"> 1. Devoted to God Almighty and able to show religious attitude 2. Upholding human values in carrying out one’s duties based on religion, morals and ethics 3. Making a contribution to improve the quality of life in the society, nation and civilization based on Pancasila values 4. Acting as a citizen who is proud and love the country, have a sense of nationalism responsibility to the nation 5. Respecting the diversity of cultures, views, religions and beliefs, as well as others’ opinions or original findings 6. Cooperating and having social sensitivity and concern for the community and the environment 7. Obeying the law and disciplined as a part of the society and the nation 8. Internalizing academic values, norms and ethics 9. Demonstrating responsibility attitude for work in one’s field of expertise independently 10. Internalizing a sense of independence, unyielding and entrepreneurship
Knowledge	<ol style="list-style-type: none"> 1. Mastering the concept of drug development, including drug discovery and formulation, and distribution of pharmaceutical dosage forms based on the applicable rules and regulations. 2. Mastering the concept of traditional medicine, development and its application in health services 3. Mastering the concept of analysis of medicinal substances, pharmaceutical dosage forms, food and beverage, cosmetics and chemical compounds in the body. 4. Mastering the concept of pharmacy management and services for pharmacies, health centers and hospitals.

	<ol style="list-style-type: none"> 5. Mastering the concept of pharmacotherapy, including pathophysiology, etiology, risk factors and economic factors in therapy management. 6. Mastering the theories of pharmaceutical management, socio-pharmacy, pharmaceutical law and ethics, communication techniques, and basic principles of work safety.
<p>Specific skill</p>	<ol style="list-style-type: none"> 1. Able to carry out and skilled in drug discovery and development, including searching for medicinal substances, conducting pharmacological tests and toxicological tests for synthetic or natural ingredients. 2. Able to carry out and skilled in the design, manufacture, quality assurance and distribution of pharmaceutical dosage forms from synthetic and natural ingredients. 3. Having skills in the analysis of medicinal substances, pharmaceutical dosage forms, food and beverages, cosmetics and chemical compounds in the body. 4. Able to perform drug services according to the applicable procedures to ensure the safety and effectiveness of the drug consumption. 5. Able to find, evaluate, prepare, and provide information about drugs, medication, and rational use of the corresponding drugs. 6. Have skills in the field of pharmaceutical services. 7. Able to apply and put pharmaceutical sciences into practice based on Islamic morals and professional ethics. 8. Able to communicate, adapt, and build interpersonal and interprofessional relationships. 9. Able to carry out and spread Muhammadiyah values in the community. 10. Having skills in analyzing, concluding and conveying pharmaceutical scientific information.
<p>General Skills</p>	<ol style="list-style-type: none"> 1. Able to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing science and technology that is in line with humanity values in one's field of expertise. 2. Able to demonstrate an independent, quality, and measurable performance. 3. Able to study the implications of the development or implementation of science and technology that is in line with humanity values in one's field of expertise based on scientific

	<p>principles, procedures and ethics in order to create solutions, ideas, designs or criticism.</p> <ol style="list-style-type: none"> 4. Able to compile a scientific description of the results of a study in the form of a thesis or final project report, and upload it to the university website. 5. Able to make appropriate decisions in to solve problems in one’s area of expertise based on the results of information and data analysis. 6. Able to maintain and develop networks with supervisors and colleagues, both from inside and outside the institution. 7. Able to be responsible for the achievement of one’s work group and to supervise and evaluate the completion of work assigned to workers under one’s responsibility. 8. Able to carry out the self-evaluation process of the work group under one’s responsibility, and able to manage independence learning 9. Able to document, store, secure, and recover data to ensure its validity and prevent plagiarism
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ALIGNMENT of LEARNING OUTCOMES with KKNi 2012

NO	LEARNING OUTCOMES	KKNI
1	Able to perform drug discovery, formulation development and production as well as quality control of both natural-based and synthetic-based pharmaceutical dosage forms/ products according to the current Good Manufacturing Practice.	<ol style="list-style-type: none"> 1. Mastering the concept of drug development, including drug discovery, drug formulation, and the distribution of pharmaceutical dosage forms based on the applicable rules and regulations 2. Mastering the concept of traditional medicine development and its application in health services 3. Having the ability in the design, manufacture, quality assurance and distribution of pharmaceutical dosage forms from synthetic and natural ingredients
2	Able to perform good pharmaceutical care and are able to perform good the concept of pharmacotherapy, pharmaceutical community, and service management.	<ol style="list-style-type: none"> 1. Mastering the concept of management and pharmacy services for pharmacies, health centers and hospitals 2. Mastering the concept of pharmacotherapy, including pathophysiology, etiology, risk factors, and economic factors in therapy management 3. Able to perform drug services according to the applicable procedure to ensure the safety and effectiveness of the drug consumption 4. Able to find, evaluate, prepare, and provide information about drugs, medication, and rational use of drugs 5. Having the required skills in the field of pharmaceutical services

3	Able to think logically, critically, systematically, and innovatively in the development and implementation of pharmaceutical science	<ol style="list-style-type: none"> 1. Mastering the concept of medicinal substance analysis, pharmaceutical dosage form, food-beverage, cosmetics and chemical compounds in the body 2. Having the required skills in the field of medicinal substance analysis, pharmaceutical dosage form, food-beverage, cosmetics and chemical compounds in the body 3. Able to apply logical, critical, systematic, and innovative thinking in the context of developing or implementing science and technology that is in line with humanity values in one's field of expertise 3 4. Able to study the implications of the development or implementation of science and technology that is in line with humanity values in one's field of expertise based on scientific principles, procedures and ethics in order to produce solutions, ideas, designs or art criticism
4	Able to plan and do the basic research in pharmacy field	<ol style="list-style-type: none"> 1. Able to write a scientific description of the results of a study in the form of a thesis or final project report, and upload it to the university website 2. Able to document, store, secure, and recover data to ensure validity and prevent plagiarism 3. Having the skills to analyze, conclude and convey pharmaceutical scientific information
5	Have good leadership, teamwork skill, and good communication skills both written and verbal	<ol style="list-style-type: none"> 1. Able to communicate, adapt, and build interpersonal and interprofessional relationships 2. Able to make decisions appropriately in solving a problem in one's area of expertise based on the results of information and data analysis 3. Able to maintain and develop networks with supervisors and colleagues, both from inside and outside the institution 4. Able to be responsible for the achievement of group work and to supervise and evaluate the completion of work assigned to workers under one's responsibility 5. Mastering the theories in pharmaceutical management, socio-pharmacy, pharmaceutical law and ethics, communication techniques, and basic principles of work safety 6. Able to show independent, quality, and measurable performance
6	Eager to be a lifelong learner to constantly improve and develop knowledge including entrepreneurship.	<ol style="list-style-type: none"> 1. Able to carry out and skilled in drug discovery and development, including searching for medicinal substances, conducting pharmacological tests and toxicological tests for synthetic or natural ingredients 2. Able to carry out the self-evaluation process of the group work under one's responsibility, and able to manage independent learning

<p>7</p>	<p>Demonstrate responsibility, integrity, and accountability with Islamic moral, Muhammadiyah's spirit, and ethics</p>	<ol style="list-style-type: none"> 1. Devoted to God Almighty and able to show a religious attitude 2. Upholding human values in carrying out duties based on religion, morals and ethics 3. Making a contribution to improve the quality of life in the society, nation, and civilization based on Pancasila values 4. Acting as a citizen who is proud of and love the nation, have a sense of nationalism and responsibility to the nation 5. Respecting the diversity of cultures, views, religions and beliefs, as well as others' opinions or original findings 6. Cooperating and having social sensitivity and concern for the community and the environment 7. Obeying the law and disciplined as a part of the society and the nation 8. Internalizing academic values, norms and ethics 9. Demonstrating responsibility attitude for work in one's field of expertise independently 10. Internalizing the sense of independence, unyielding and entrepreneurship 11. Able to apply and carry out pharmaceutical sciences based on Islamic moral and professional ethics 12. Able to carry out and spread Muhammadiyah values in the community
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CURRICULUM 2019

The current curriculum is curriculum 2019 consists of 147 credits, with 137 credits compulsory courses and 10 credits elective courses.

a. Compulsory courses

Compulsory courses are subjects that must be taken by students each semester and taken after taking pre-req courses (if any). Pre-req courses are required subjects that must be taken before taking certain courses in the following semester.

Sem	No	Code	Subjects	Credits	Pre Req
SEMESTER I	1	182310120	Islamic Studies I (Quran and Hadist)	2	
	2	182310220	Molekuler and Cell Biology	2	
	3	182310320	Pharmacognosy	2	
	4	182310420	Pharmaceutics	2	
	5	182310520	Analytical Chemistry I	2	
	6	182310620	Basic of Pharmaceutical Chemistry	2	
	7	182310720	Organic Chemistry I	2	
	8	182310820	Microbiology and Virology	2	
	9	182310920	Pancasila	2	
	10	182311011	Laboratory Practice of Pharmacognosy	1	
	11	182311111	Laboratory Practice of Basic Pharmaceutical Chemistry	1	
	12	182311211	Laboratory Practice of Microbiolgy	1	
	13	182320100	Certification I (Tahsinul Quran)*	0	
Total				21	

*) Certification is carried out between semester changes.

SEMESTER II	1	182320120	Human Anatomy and Physiology	2	
	2	182320220	Indonesian Language	2	
	3	182320320	Pharmacology **	2	
	4	182320420	Physical Pharmacy	2	
	5	182320520	Phytochemistry I	2	
	6	182320620	Formulation & Technology of Solid Dosage Forms **	2	
	7	182320720	Prescription I	2	
	8	182320820	Analytical Chemistry II	2	
	9	182320920	Organic Chemistry II	2	
	10	182321011	Laboratory Practice of Physical Pharmacy	1	
	11	182321111	Laboratory Practice of Analytical Chemistry	1	
	12	182321211	Laboratory Practice of Organic Chemistry	1	
	13	182320200	Drug Specialist I	0	
	14	182360100	Certification III (Kemuhammadiyahah)*		
Total				21	
SEMESTER III	1	182330120	Islamic Studies II (Aqidah of Islam)	2	
	2	182330220	Biochemistry	2	
	3	182330320	Pharmacokinetics	2	Pharmacology
	4	182330420	Pharmacotherapy I **	2	Pharmacology
	5	182330520	Instrumental Analytical Chemistry	2	Analytical Chemistry II
	6	182330620	Medicinal Chemistry	2	Organic Chemistry II
	7	182330720	Civics Education	2	
	8	182330811	Laboratory Practice of Biochemistry	1	Biochemistry
	9	182330911	Laboratory Practice of Pharmaceutics	1	Pharmaceutics
	10	182331011	Laboratory Practice of Formulation & Technology of Solid Dossage Forms	1	Formulation & Technology of Solid Dosage Forms
	11	182331120	Preformulation	2	Physical Pharmacy
	12	182331220	Toxicology	2	
	13	182330100	Drug Specialist II		
	14	182340100	Certification II (Fiqh of Worship)*		
Total				21	

*) Certification is carried out between semester changes.

**) Pre-Requisite Courses

SEMESTER IV	1	182340120	English	2	
	2	182340220	Biopharmaceutics	2	Pharmacokinetics
	3	182340320	Pharmacotherapy II **	2	Pharmacology
	4	182340420	Phytochemistry II	2	Phytochemistry I
	5	182340520	Formulation & Technology of Liquid and Semi Solid Dosage Forms	2	Pharmaceutics
	6	182340620	Enterpreneurship	2	
	7	182340720	Chromatography	2	
	8	182340911	Laboratory Practice of Instrumental Analysis	1	Instrumental Analytical Chemistry
	9	182341011	Laboratory Practice of Pharmacology	1	Pharmacology
	10	182341111	Laboratory Practice of Phytochemistry	1	Phytochemistry I
	11	182341220	Structure and Drug Activity	2	Medicinal Chemistry
	12	182350320	Islamic Studies III (Ahlaq)	2	
	13	182340200	Drug Specialist III	0	
	14	182380100	Certification IV (Fiqh of Worship)*	0	
Total				21	
SEMESTER V	1	182350120	Pharmacotherapy III	2	Pharmacology
	2	182360320	Pharmacoepidemiology	2	Pharmacology
	3	182350420	Formulation & Technology of Sterile Dosage Forms	2	Microbiology and Virology
	4	182350520	Prescription II **	2	Pharmaceutics
	5	182350620	National Drug Policy	2	
	6	182340820	Pharmacy Management	2	
	7	182350711	Laboratory Practice of Biopharmaceutics	1	Biopharmaceutics
	8	182350811	Laboratory Practice of Formulation & Technology of Liquid and Semi Solid Dosage Forms	1	Formulation & Technology of Liquid and Semi Solid Dosage Forms
	9	182350911	Laboratory Practice of Prescription **	1	Pharmaceutics
	10	182351020	Drug Delivery System	2	Biopharmaceutics
	11	182351120	Drug Stability	2	Physical Pharmacy
	12	182350100	Drug Specialist IV	2	
	13		Elective I		
Total				21	

SEMESTER VI	1	182360120	Food, Drug and Cosmetic Analysis **	2	Instrumental Analytical Chemistry
	2	182360220	Evidence Based Medicines	2	Pharmacology
	3	182360420	Pharmacotherapy IV	2	Pharmacotherapy III
	4	182360520	Industrial Pharmaceutics**	2	
	5	182360620	Development of Traditional Medicine	2	Phytochemistry II
	6	182360711	Laboratory Practice of Formulation & Technology of sterile Dosage Forms	1	Formulation & Technology of Sterile Dosage Forms
	7	182360811	Laboratory Practice of Basic Communication, Information, and Education	2	
	8	182360911	Laboratory Practice of Development of Traditional Medicine	1	Laboratory Practice of Phytochemistry
	9	182361020	Thesis I	1	
	10	182360200	Drug Specialist V	1	Has taken 100 credits without score E
	11	182370320	Islamic Studies IV (Interdisciplinary of Islam)	2	
	12		Elective II	2	
	13		Elective III	2	
Total				21	
SEMESTER VII	1	182370120	Pharmaceutical Care	2	Pharmacotherapy I
	2	182350220	Hospital Pharmacy and Drug Store	2	
	3	182370220	Interprofessional Education for Pharmacy	2	
	4	182370411	Laboratory Practice of Drugs, Food & Cosmetic Analysis	1	Instrumental Analytical Chemistry
	5	182370511	Laboratory Practice Of Pharmaceutical Care	1	
	6	182370611	Internship	1	
	7		Elective IV	2	
	8		Elective V	2	
Total				13	

*) Certification is carried out between semester changes.

**) Pre-Requisite Courses

SEMESTER VIII	1	182380244	Field Study Service	4	Minimal pass 120 credits, pass 3 certificated course, IPK > 2,0 and pass Al-Qur'an reading test
	2	182380340	Thesis II	4	Has taken thesis I and has taken 120 credits without score E
	Total			8	

a. Elective Course

Elective Course is course must be taken by student according to their interest

Semester	No	Code MK	Subject	Credits
ODD	1	182351220	Antibiotics and Resistance	2
	2	182351320	Structure Elucidation	2
	3	182351420	Forensic Pharmacy	2
	4	182351520	Phytoterapy	2
	5	182351620	Hystopathology	2
	6	182351720	Halalness of Product	2
	7	182351820	Computational Chemistry	2
	8	182351920	Cosmetology	2
	9	182352020	Material Handling and Packaging	2
	10	182352120	Development of Products and Exipients	2
	11	182352220	Phrophetic Medical	2
	12	182352320	Radiopharmacy	2
EVEN	1	182361220	Biotechnology	2
	2	182361320	Pharmacogenetic	2
	3	182361420	Immunopharmacology	2
	4	182361520	Cancer and Carcinogenesis	2
	5	182361620	Computational Pharmacy	2
	6	182361720	Drug Discovery	2
	7	182361820	Veterinary Medicine	2
	8	182361920	Product Knowledge	2
	9	182362020	Free Radical and Oxidative Stress	2
	10	182362120	Drug Synthesis	2
	11	182362220	Validation	2

Pre-Requisite Courses

Is courses with minimum pass score C

No	Courses	Semester
1	Formulation & Technology of Solid Dosage Forms	II
2	Pharmacotherapy I	III
3	Pharmacotherapy II	IV
4	Prescription II	V
5	Laboratory Practice of Prescription	V
6	Food, Drug, and Cosmetic Analysis	VI
7	Industrial Pharmaceutics	VI
8	Development of Traditional Medicine	VI

NOTE