ACADEMIC HANDBOOK

MASTER OF PHARMACEUTICAL SCIENCES

Odd Semester Academic Year of 2022-2023

FACULTY OF PHARMACY

UNIVERSITAS AIRLANGGA

Nanizar Zaman Joenoes Building

Campus C – UNAIR, Jl. Mulyorejo, Surabaya 60115
Phone : 031-5933150 ; Fax : 031-5935249
Website :
http://www.ff.unair.ac.id;
https://s2if.ff.unair.ac.id/
E-mail : s2if@ff.unair.ac.id

2023

Academic Handbook
Master of Pharmaceutical Sciences
Odd Semester Academic Year of 2022-2023

Table of Content

Page

VISSION

The vision of the Master Study Program of Pharmaceutical Sciences is to become an innovative leading postgraduate program at the national and international levels, excellent in pharmaceutical science based on religious morality.

MISSION

1. Organize an innovative education by applying modern learning methods and technology based on religious morality.
2. To develop basic, innovative, and applied pharmaceutical science and technology research.
3. To carry out community service in the form of disseminating pharmaceutical science and technology research as a manifestation of social responsibility for empowering and improving the quality of life of the Indonesian people.
4. To produce superior, formidable, religious, moral, competitive, and collaborative graduates at national and international levels.
5. To develop a collaborative network at the national and international levels, with the target of developing education, research, and community service programs.

OBJECTIVE

1. To produce graduates who are able to develop up-to-date knowledge and technology in the field of pharmaceutical sciences through research and produce innovative and tested work.
2. To produce graduates who are able to solve problems of knowledge and technology in the field of Pharmaceutical Sciences through an inter- or multidisciplinary approach.
3. To produce graduates who are able to manage research and development that are beneficial to society and science and gain national and international recognition.
4. To produce cooperation that supports the implementation of education, research, and community service in Higher Education through the development of quality-oriented management and the ability to compete internationally.

ACADEMIC RULES
MASTER OF PHARMACEUTICAL SCIENCES
FACULTY OF PHARMACY
UNIVERSITAS AIRLANGGA

CHAPTER I

GENERAL REQUIREMENTS

Article 1

In this regulation what is meant by:

1. University is Airlangga University;
2. Chancellor is the Chancellor of Airlangga University;
3. Faculty is the Faculty of Pharmacy, Airlangga University;
4. Dean is the Dean of the Faculty of Pharmacy, Airlangga University;
5. Masters Program is the Pharmacy Science Study Program Masters Program;
6. Lecturers are professional educators and scientists with the main task of transforming, developing and disseminating science and technology through education, research and community service;
7. Permanent Lecturers are permanent lecturers at Airlangga University who have a National Lecturer Identification Number (NIDN), as professional educators and scientists with the main task of transforming, developing and disseminating science and technology through education, research and community service;
8. Study Program Coordinator (KPS) is an academic staff who serves as the coordinator and controller of the implementation of the teaching and learning process who is responsible to the Dean;
9. Study Program Secretary is an academic staff whose job is to assist KPS in terms of controlling the implementation of the teaching and learning process who is responsible to the Dean;
10. Guardian Lecturer is a lecturer who has the duty and authority to provide academic advice to a group of students under his care.
11. Subjects in Charge (PJMK) are academic staff who are responsible for fostering and managing teaching and learning activities in their field of knowledge;
12. The Advisory Team is the Thesis Advisory Team, consisting of the Chief Advisor and the Second Advisor;
13. Consultants are experts in certain scientific fields that are really needed by program participants to help solve problems related to thesis research and special skills with the approval of the Chief Advisor and KPS, determined by the Dean;
14. Study Plan Card (KRS) is a card that contains a list of courses and their study load that will be followed by program participants in the current semester, taken based on obligations, interests and abilities;

15. Study Result Card (KHS) is a card that contains a list of course grades along with their study load that has been followed by program participants in the current semester, which contains cumulative GPA and provisional GPA;
16. Thesis is a final scientific writing which is the result of research using scientific reasoning and fulfilling the methodological requirements of the relevant scientific discipline;
17. Education Fees are fees charged to students while participating in the educational process and consist of Educational Operational Contributions (SOP), Educational Implementation and Development Contributions (SP3).

CHAPTER II

EDUCATIONAL OBJECTIVES

Article 2

The Masters Program education is directed at the results of graduates with the following qualifications:
a. has high integrity, morals, and personality;
b. is open, responsive to advances in science and technology, as well as problems faced by society, especially those related to the pharmaceutical sector;
c. has the ability to develop the pharmaceutical sector both on a national and international scale.

CHAPTER III

MASTER PROGRAM MANAGEMENT

Article 3

The Masters Program Manager consists of:

1. Study Program Coordinator (KPS);
2. Study Program Secretary;

CHAPTER IV

ACCEPTANCE OF PROGRAM PARTICIPANTS

Article 4

Prospective program participants must meet the academic requirements, namely:
a. graduates of the Government-recognized Bachelor Program (SI) with a minimum accreditation of B in linear or non-linear disciplines;
b. prospective participants in the non-linear program are those who do not have a bachelor's degree in pharmacy, but whose education is still related to pharmaceutical science, for example a bachelor's degree in chemistry, biology, medicine, public health;
c. if necessary participants of the non-linear program can take part in the matriculation program;
d. The implementation of matriculation will be regulated by the regulations.

Article 5

The selection basis for prospective program participants is:
1. Cumulative grade point average (IPK) in undergraduate education at least 2.50;
2. Pass the Academic Potential Test (TPA) and the English Test as well as an interview held by the New Student Admissions Center (PPMB).

Article 6

1. Acceptance of prospective program participants is carried out every semester through PPMB.
2. Prospective program participants must fulfill administrative requirements according to the provisions submitted by PPMB through the website.

CHAPTER V

PROGRAM PARTICIPANTS

Article 7

Prospective program participants who are declared accepted as program participants must:
a. Re-register online through the University's Cyber Campus system;
b. Pay tuition fees in accordance with applicable regulations.

Article 8

At the beginning of the semester program participants are required to:
1. fill in the KRS according to the academic calendar;
2. re-register at the end of each semester to be able to take part in the next semester's education according to the applicable requirements;
3. pay the tuition fees for 1 (one) semester.

CHAPTER VI

IMPLEMENTATION OF EDUCATION

Article 9

1. The Masters Program Education consists of 7 (seven) specializations/concentrations determined by the Dean's Decree, namely:
   a. Pharmaceutical Analysis (Pharmaceutical Analysis);
   b. Natural Product Chemistry;
   c. Drug Development (Drug Development);
   d. Pharmaceutical Biomedics (Pharmaceutical Biomedics);
   e. Drug Delivery System (Drug Delivery System);
   f. Cosmetics (Cosmetics);
   g. Pharmaceutical Policy and Management.
2. Based on considerations related to fields of science or disciplines at the level of education in the Undergraduate Program, program participants are required to determine 1 (one) specialization/concentration at the time of registration, which will be confirmed during the Interview Test.

3. The scientific management and development of each specialization/concentration is carried out through coordination with the relevant Departments and/or cross Departments.
4. Study Plan Card
   a. Each student is required to fill out a Study Plan Card (KRS) provided by the Study Program according to the academic calendar;
   b. The study plan is approved by the Lecturer Guardian, and is known by the KPS

Article 10

The academic year is regulated and determined by the Faculty, referring to the academic calendar of Universitas Airlangga and consists of odd semesters and even semesters.

Article 11

The Masters Program Education is an educational program that:

a. consisting of education on basic skills, excellence, specialty, and research;
b. following the Semester Credit System with study load as measured by semester credit units (sks);
c. organizing learning activities with lectures and or other learning methods;
d. at the end of learning activities, program participants are required to make a final scientific work.

Article 12

The educational study load for the Masters Program is at least 38 (thirty eight) credits and a maximum of 40 (forty) credits, which is scheduled for 4 (four) semesters and can be completed within 3 (three) semesters and a maximum of 8 (eight) semesters. eight) semester including the preparation of a thesis, excluding academic leave.

CHAPTER VII

CURRICULUM

Article 13

1. The Master Program Curriculum consists of 2 (two) parts; namely the Core Curriculum and the Institutional Curriculum.
2. The curriculum structure and its implementation are regulated separately in the Curriculum Document for the Master of Pharmacy Study program.
3. Curriculum review is conducted at least once a year at the end of each even semester.

CHAPTER VIII

PROCEDURE OF LECTURING EDUCATION

Article 13

1. Lecturer Qualifications
   a. Permanent lecturers at Airlangga University hold Doctoral degrees;
   b. Non-permanent lecturers are extraordinary lecturers who have expertise in a particular field of knowledge determined by the Dean at the suggestion of the KPS.

2. Guardian Lecturer
   a. Lecturer Guardians are permanent lecturers who are in charge and responsible for accompanying students in following the implementation of education;
   b. The Guardian Lecturer is proposed by the KPS to the Dean
   c. Program participants are required to have a Guardian Lecturer whose willingness is stated by filling out a willingness form as a student companion and is determined based on the Dean's Decree;
   d. Guardian Lecturers cannot directly become the Chief Advisor or Second Advisor.

Article 15

1. Each course in the Masters Program reflects the level of depth and breadth of scientific reasoning.
2. The Masters Program is required to provide Thesis Supporting Courses (MKPT), namely courses required by program participants for in-depth thesis studies.
3. Each course is cared for by a teaching team consisting of the PJMK and a Team of Lecturers consisting of at least 2 people.

Article 16

1. Lecture exams are arranged and scheduled according to the academic calendar.
2. Assessment of learning outcomes is expressed by absolute numerical values and letter grades: A, AB, B, BC, C, D and E; with the following equality:

Letter Value	Quality Value	Score
A	4	86 – 100
AB	3,5	78 – < 86
B	3	70 – < 78
BC	2,5	62 – < 70
C	2	54 – < 62
D	1	40 – < 54
E	0	< 40

3. The college pass grade is equal to or greater than B.
4. Program participants with a score of less than B are given the opportunity to take a remedial exam 1 (one) time with the approval of the GCA.
5. The results of the remedial exam as referred to in paragraph (4) are a maximum grade of B.
6. If the score for the remedial test is less than B, it is mandatory to reprogram the course in the following semester.
7. Program participants with grades less than B are required to reprogram the course in the following semester.

FINAL SCIENTIFIC WORKS

Article 17

1. The thesis consists of:
   a. Thesis Research Proposal; is an academic activity that is planned and arranged according to the principles of scientific research as a thesis research guideline;
   b. Thesis Research; is an academic activity that uses scientific reasoning and meets the methodological requirements of the relevant scientific discipline;
   c. Thesis manuscript; are academic research papers that meet research principles in accordance with the methodological requirements of their respective scientific disciplines.
2. In carrying out the final assignment, program participants are guided by the Advisory Team. If necessary, a consultant may be appointed.

Pasal 18

1. Thesis Advisory Team consists of:
   a. Chief Advisor, is an academic staff from the Faculty; at least hold the position of Lector and Doctor in their field, who are given the task of guiding program participants in completing their final assignment;
   b. Second Advisor, is an academic staff who can come from outside Airlangga University, at least holds the position of Lector with a Doctoral degree in their field or equivalent.
2. The Advisory Team is proposed by KPS and determined by the Dean; no later than the beginning of semester 3 (three), taking into account the aspirations of program participants.

Article 19

The duties and authorities of the Advisory Team are:
a. guide the program participants regularly and continuously to prepare the final project;
b. monitor and evaluate the progress of program participants recorded in the Activity Report Book;
c. report the progress of program participants to the KPS; at the end of each semester;
d. give a warning if there are obstacles in the process of completing research to program participants.

Article 20

1. If the Chief Adviser and/or Second Advisor are permanently unavailable, or resign due to academic and non-academic obstacles; then within 3 (three) months the Dean will appoint a replacement for the Advisory Team at the suggestion of the KPS by taking into account the aspirations of the program participants.
2. During the guidance period, if there are academic or non-academic obstacles to program participants; The Advisory Team can be replaced by the Dean's decision at the suggestion of the KPS.
3. The replacement Advisory Team must pay attention to and prioritize the continuity of the implementation of the final assignment that has been approved by the Thesis Research Proposal Examiner Committee.

Article 21

1. In completing their research, program participants may be assisted by one or more Consultants.
2. The consultant is proposed by the Chief Advisor, known by the KPS and determined by the Dean's decision.
3. The consultant is tasked with accompanying the Chief Advisor to give consideration to the scientific material needed by program participants.
4. Consultant Funding is charged to program participants for at least 1 (one) semester.

Article 22

Implementation and assessment of the thesis consists of the following stages:
a. Pre-Thesis Research Proposal Seminar, intended to provide input for improvement on the Thesis Research Proposal;
b. Thesis Research Proposal Examination, by the Thesis Research Proposal Assessment Committee;

c. Implementation of Thesis Research;
d. Thesis Research Results Seminar, in the form of an open seminar forum, aims to improve the quality of the final project and the program participants' understanding of substance related to research;
e. Thesis Examination, by Thesis Assessment Committee.

Article 23

1. The Final Project Scientific Work Assessment Committee consists of:
   a. Thesis Research Proposal Evaluation Committee, chaired by the Chief Advisor;
   b. The Thesis Assessment Committee, chaired by an assessment committee member who is not the Advisory Team.
2. Appointment of members of the Thesis and Research Proposal Evaluation Committee is carried out by the KPS at the suggestion of the Chief Advisor.
3. The Thesis and Thesis Proposal Evaluation Committee is determined by the Dean based on the KPS proposal.
4. The head of the Thesis Evaluation Committee at least holds the position of Lector and holds a Doctoral degree.
5. Members of the Thesis Evaluation Committee have at least a Doctoral degree.

PROPOSAL RESEARCH THESIS

Article 24

In preparing a Thesis Research Proposal, program participants must:
a. follow the guidance of the preparation of thesis proposal writing thesis and thesis actively and regularly from the Advisory Team and record all activities in the activity report book;
b. prepare a thesis research proposal for a maximum of 3 (three) semesters starting in semester 2 (two);
c. after being approved by the Advisory Team submits a thesis research proposal in accordance with applicable academic provisions, to be further assessed by the Thesis Research Proposal Assessment Team.

Article 25

1. Requirements for Thesis Research Proposal Examination are:
   a. submit a thesis research proposal manuscript that has been approved by the Advisory Team;
   b. complete lectures in the first 2 (two) semesters, with a grade of at least B;
   c. fulfill administrative obligations that have been determined.
2. Implementation of the Thesis Research Proposal Examination is determined by the KPS at the suggestion of the Chief Advisor

Article 26

1. Thesis Research Proposal Examination can be held in semester 2 (two) and no later than the end of semester 5 (five) in a closed forum.
2. If they do not pass the Thesis Research Proposal Examination, program participants are

given the opportunity to re-examine 1 (one) time.

3. If the Thesis Research Proposal is declared to have failed in 2 (two) exams, the program participant must change the title of Thesis Research along with the Advisory Team at the suggestion of the KPS.

Article 27

1. The Thesis Research Proposal Evaluation Committee is tasked with providing assessment and approval of Research Proposals in an assessment forum.
2. The Thesis Research Proposal Evaluation Committee consists of 5 (five) academic staff, including the Advisory Team proposed by the Chief Advisor to the KPS and determined by the Dean.
3. The thesis research proposal examination can be carried out if it is attended by the Chief Advisor and at least 4 (four) members of the judging committee.
4. The maximum time for presenting a Thesis Research Proposal is 15 minutes, while the time for questions and answers is a maximum of 75 minutes.

Article 28

1. Research Proposal Examination aims to assess the feasibility of conducting research and the readiness of program participants to conduct research.
2. Assessment of the Research Proposal includes the writing framework, the problems to be studied, the research objectives, the conceptual framework, the research approaches and methods, including the analytical tools to be used, the appropriate literature.
3. The Thesis Research Proposal Evaluation Committee determines:
    a. research proposals are accepted without improvement;
    b. research proposals are accepted with improvements;
    c. the research proposal was rejected and required to take a re-examination.
    d. the value of the Proposed Research Thesis Examination is the result of the average score of all examiners.

Article 29

1. Improvements to the Proposed Thesis Research Manuscripts must be carried out according to the Assessment Committee's input no later than 1 (one) month after the examination.
2. Re-Examination of Research Proposals Thesis must be carried out no later than 3 (three) months after the implementation of the research proposal examination.

Article 30

1. Proposed Thesis Research Manuscripts that have been corrected and approved by the Advisory Team must be submitted to the Faculty no later than 3 (three) months after the exam.
2. The thesis research proposal is used as a guideline for carrying out the thesis research. Changes in the Thesis Research Proposal Manuscript must be approved by the Advisory Team.

THESIS RESEARCH AND THESIS MANUSCRIPT

Article 31

1. Thesis research is carried out in accordance with the Thesis Research Proposal which has been approved by the Advisory Team and known by the KPS.
2. The results of the thesis research are presented in an open forum, and must be attended by the Advisory Team.
3. The thesis research ends with the preparation and writing of the thesis manuscript.

Article 32

Compilation and writing of thesis manuscripts:

1. is an academic research work that is carried out independently and honestly and does not contain elements of plagiarism;
2. prepared according to the rules of scientific writing and using good and correct Indonesian; and contains contributions to the development of science and technology.

Article 33

1. Thesis Assessment is carried out in the examination forum by the Thesis Assessment Committee.
2. Requirements for program participants to take the Thesis Examination:
   a. registered as a participant in the Masters Program;
   b. has completed financial administration;
   c. have passed all courses;
   d. has an ELPT value ≥ 475;
   e. submit the Thesis Manuscript that has been approved by the Advisory Team.

3. The thesis examination is held at the latest at the end of semester VIII (eighth) in a closed forum.

Article 34

1. The Thesis Assessment Committee is chaired by one of the examiners who is not the Advisory Team.
2. Members of the Thesis Review Committee are the same as members of the Thesis Research Proposal Evaluation Committee.
3. The thesis examination can only be carried out if all members of the assessment committee are present.
4. The maximum time for a thesis presentation is 30 minutes, while the time for questions and answers is a maximum of 85 minutes.

Article 35

1. Assessment of the Thesis Examination is carried out on the basis of suitability of the Thesis Research Proposal.
2. Assessment of the Thesis Examination states program participants:
   a. passed;
   b. pass with repair;
   c. ail and must take the re-examination.
3. The Thesis Examination Score is the result of the average score of all examiners; expressed by numbers and by letters.

Article 36

1. Repair of the Thesis Manuscript under the guidance of the Advisory Team is completed no later than 1 (one) month from the date of the Thesis Examination.
2. Program participants who fail, are given the opportunity to re-examine 1 (one) time no later than 6 (six) months from the date of the thesis examination.

Article 37

For program participants who have passed the Thesis Examination, they must:

a. submit a Thesis Manuscript that has been refined in the format according to the Thesis Writing Guidebook and approved by the Advisory Team, and known by the KPS;
b. submit 1 (one) scientific paper in an accredited national journal or international journal with a status of at least accepted or the lowest on the Scopus indexed international conference proceedings.
c. complete all administrative provisions and obligations of the Masters Program.BAB IX

CHAPTER IX

STUDY SUCCESS

Article 38

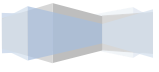
1. The success of the study is decided in a Yudisium meeting chaired by the Dean.
2. Judiciary meetings can be attended by Deputy Deans, KPS, Study Program Secretaries, Heads of Departments within the faculty and Lecturer Guardians.
3. Assessment of academic achievement is expressed by the Cumulative Grade Point Average (GPA) according to the formula:

$$GPA = \frac{\text{(score x credit)}}{\text{credit}}$$

4. Program participants with a GPA greater than or equal to 3.00 are declared to have passed.

Article 39

1. Program participants who have passed are entitled to the academic title Master of Pharmacy (M.Farm.).
2. Awarding of an academic degree accompanied by a graduation predicate:
   a. with honors (cum laude) for program participants:
      - GPA value of 3.75 – 4.00;
      - get an A grade for the Thesis Examination;
      - The study period is not more than 5 (five) semesters.
      - has produced publications in reputable international journals or accredited national journals with accepted status.
   b. very satisfying, GPA 3.41 – 3.74.
   c. satisfactory, GPA value of 3.00 – 3.40.
3. Diplomas are handed over to program participants who have graduated and have attended the University Graduation.



Article 40

Graduates of the Masters Study Program can attend graduation with the following requirements:

a. register with the graduation ceremony organizing committee;
b. meet the administrative requirements that apply to participants in the graduation ceremony;
c. show proof of having submitted a Thesis Manuscript that has been refined in the format according to the Thesis Writing Guidebook and approved by the Advisory Team, and known by the KPS;
d. show proof of ELPT certificate;
e. show evidence of scientific work in accredited national journals or international journals with at least accepted status (minimum Scopus indexed proceedin

CHAPTER X

ACADEMIC LEAVE AND STUDY FAILURE

Article 41

Program participants can take academic leave for a maximum of 2 (two) cumulative semesters with the following conditions:

a. obligated to pay tuition fees during academic leave;
b. during academic leave, study period is not taken into account;
c. has attended the Masters Program education for 2 (two) semesters;
d. academic leave approved by the Dean and determined by the Chancellor's decision;
e. criteria for academic leave are determined by the Chancellor;
f. Existing academic regulations still apply

Article 42

1. Program participants are declared study failures if it is proven that:
   a. does not pay tuition fees for 2 (two) consecutive semesters;
   b. unable to complete education within 8 (eight) semesters;
   c. at the end of the second semester, credits earned are less than half of the required credits;
   d. until the end of semester 5 (five) has not taken the Thesis Research Proposal Examination;
   e. unable to correct the thesis manuscript within one month;
   f. does not take the Thesis Examination within three months;
   g. at the end of the study assessment, obtaining a GPA <3.00;
   h. roven to have plagiarized thesis during the study period.
2. Plagiarism is a form of academic dishonesty that occurs when:
   a. the work of a person or several persons is used and displayed as his own work;
   b. does not mention the source of each quote or material used.
3. Program participants who are declared to have failed their studies are given a certificate of having taken part in the master's program.
4. Failed studies are decided by the Chancellor on the recommendation of the Dean.

CHAPTER XI

TRANSITIONAL PROVISIONS

Chapter 43

These Academic Regulations apply to students from the 2017/2018 batch and after, while students from the 2016/2017 batch and before follow the old academic regulations.

CHAPTER XII

CLOSING STATEMENT

Article 44

1. Other matters that have not been regulated by this Decree will be determined by separate provisions.
2. This decree shall come into effect from the date of stipulation.

Set in: Surabaya
Date: August 19, 2022
Faculty of Pharmacy Universitas Airlangga
Dean

sign

Prof. Junaidi Khotib, S.Si., M.Kes., Ph.D., Apt.
NIP. 197010221995121001

GRADUATE PROFILE AND LEARNING OUTCOME

1 Graduate Profile and Profile Descriptions

Graduates of the Master Study Program of Pharmaceutical Sciences are able to act as:

1. **Researcher:** able to develop the latest knowledge and technology in the field of pharmaceutical science through research, to produce innovative and tested products.
2. **Problem solver*:*** able to solve knowledge and technology problems in Pharmaceutical Science through inter- or multidisciplinary approaches.
3. **Manager/Leader:** able to manage research and science development that is beneficial to the community to gain national and international recognition.

2 Learning Outcomes (LO)

LO is the required competency to carry out a role established as the graduate profiles. LO is established by referring to the qualification level of the Indonesian National Qualifications Framework and the National Standards for Higher Education. LO consists of Attitude, General Skill, Knowledge, and Specific Skill aspects.

A. Attitude

1. AT1 (LO 1) : Able to realize excellence based on religious morals (excellence with morality), able to work together, and show a responsible attitude to work in their field of expertise independently
2. AT2 (LO 2) : Able to internalize the spirit of independence, struggle, and entrepreneurship

B. General Skill

1. GS1(LO 3) : Able to develop and build logical-critical-systematic-creative thinking and scientific conceptions through scientific research, design creation, or artworks of science and technology that pays attention to and applies humanities values through an interdisciplinary or multidisciplinary approach in the form of a thesis or other equivalent forms
2. GS2 (LO 4) : Able to develop a pharmaceutical professional performance with analytical acumen in solving pharmaceutical problems and managing research in the pharmaceutical field related to national and global systems and policies, both inter and inter-disciplinary approaches
3. GS3 (LO 5) : Able to access and review information through an Information and Communication Technology (ICT) system, decide on a specific subject of study, maintain the feasibility of implementing research designs, conduct research, analyze data, conclude research results comprehensively, and create strategic issues based on

the study that reflect the latest updates in the field of pharmaceutical sciences, and communicate them in the media and scientific forums at the national and international level through an interdisciplinary or multidisciplinary approach in the form of a thesis or other equivalent forms

4. GS4 (LO 6) : Able to make decisions in the context of solving problems related to science and technology development based on analytical or experimental studies through collaboration with colleagues, colleagues in institutions and research communities at both national and international levels and utilizing research results for the benefit of the user and other communities

C. Special Skills

1. SS1 (LO 7) : Able to explore natural materials to obtain active ingredients and/or pharmaceutical excipients with due observance of nature conservation
2. SS2 (LO 8) : Able to carry out drug designs through the synthesis of chemical compounds based on the structure-activity relationship
3. SS3 (LO 9) : Able to carry out molecular manipulation of substances and develop formulations and manufacturing of pharmaceutical preparations with active pharmaceutical ingredients derived from natural products and synthetic compounds through the manufacture of polymorphs, nanoparticles, solid dispersions
4. SS4 (LO 10) : Able to develop pharmaceutical management systems and policies related to the referral health care system and the role and function of pharmacists as an integral part of the health care team in order to improve community welfare
5. SS5(LO 11) : Able to develop systems for evaluating the bioavailability of drugs in the body, pharmaceutical products circulation permits, and their in-vitro and in-vivo evaluations with specific delivery systems with appropriate analytical methods
6. SS6 (LO 12) : Able to develop analytical methods to ensure the quality of drugs, cosmetics, foods, and beverages.

D. Knowledge

1. KN1 (LO 13) : Able to design drug development both from natural products and/or synthetic compounds by considering the biological mimicry system
2. KN2 (LO14) : Able to build drug management systems from active pharmaceutical ingredients to finished products that are ready for therapeutic uses
3. KN3 (LO 15) : Able to plan and organize concepts and procedures for quality assurance and recommendations on pharmaceutical products, which include drugs, cosmetics, foods, and beverages as products and therapeutic goods

3 Alignment of Learning Outcomes to Indonesian Qualification Framework

In the Master of Pharmaceutical Sciences, there has been a linear correlation between learning outcomes and the profile of graduates and the Indonesian National Qualifications Framework levels where graduates of the Master of Pharmaceutical Sciences are directed to have the following qualifications:

a) Integrity, morals, and a strong personality;
b) Being open and responsive to advances in science and technology, as well as problems faced by the community, especially those related to the pharmacy sector;
c) Ability to develop the pharmacy sectors on national and international levels.

Strategies designed to achieve the above objectives include, among others, a curriculum arranged in accordance with the order of learning outcomes to meet competencies that refer to predetermined standards. The curriculum implemented in MoPS FP UNAIR contains graduate competencies structured in learning outcomes. Graduates are expected to have the qualifications of Researcher, Problem Solver, and Manager. The curriculum document contains the vision, mission, educational goals, and learning outcomes based on Indonesian National Qualifications Framework.

To achieve these objectives, MoPS establishes learning outcomes according to competency standards. The depth and breadth of the learning content listed in the RPS course are indicators of the suitability of learning outcomes. Learning outcomes for personality development and living in society related to knowledge in the pharmaceutical field are packaged in the main courses (48 courses given over seven fields of interest) such as Philosophy of Science, Research Methodology, Statistics, and others. In addition, mastery of theoretical concepts and more in-depth skills in pharmacy are listed in supporting and special courses.

From the external audit results, MSP-PS obtained an accreditation status of B Score based on SK Dikti No 00242/AK-1-25/UALFAR/IX/2000. During the reaccreditation process in 2010, the MoPS successfully managed to increase its score to A based on BAN-PT Decree No. 009/BAN-PT/Ak-VIII/S2/VIII/2010, started from 6 August 2010 to 6 August 2015. Then reaccreditation process in 2015 resulted in an A rating based on SK LAM-PTKes No. 0404/LAM-PTKes/Akr/Mag/II/2016. Moreover, during the latest assessment, MoPS managed to maintain its Superior accreditation status based on the Decree of Independent Accreditation Institute for Higher Education in Health Sciences in Indonesia (Lembaga Akreditasi Mandiri Perguruan Tinggi Kesehatan/LAM-PTKes) No. 0178/LAM-PTKes/Akr/Mag/V/2021 dated of 27 May 2021.

4. Credit Equivalence

The standard of education used as the reference in implementing education at MSP-PS is the Indonesian National Qualifications Framework year of 2015 and the National Standard for Higher Education listed in the PERMENDIKBUD RI No. 3 of 2020. The National Standard for Higher Education states that the student's study load in the master's program is a minimum of 36 credits. In addition, MoPS also refers to the Rector's Regulation of the Universitas Airlangga No. 350 of 2023 About the Education Guidelines of Universitas Airlangga, which states that the curriculum and stages of learning activities consist of a minimum of 36 and a maximum of 50 credits. Therefore, at MoPS, the study load is 38-40 credits (equivalent to114-120 ECTS) which consist of 8 credits (24 ECTS equivalent) for research and thesis writing and 30-32 credits (equivalent to 90-96 ECTS) of lecture activities.

5. Association of Graduate Profile and Learning Outcome (LO)

A specific curriculum structure is needed in certain course subjects, including topics, learning methods, and assessment methods, to support the achievement of the specified learning outcomes and produce graduates with the expected profiles. The association between the graduate profile and learning outcomes in MoPS can be seen in Table 1.

Table 1 Association of Graduate Profile and Learning Outcome

Profile	Learning Outcome	Course Name	Credit Unit (sks)	ECTS
Researcher	- Attitude: none - General Skill: GS1,3 - Special Skills: none - Knowledge: none	1. PNF697 Research Methodology 2. PHF601Philosophy of Science 3. MAS601Statistics 4. KIA 616 Instrumental Analysis and Electrochemistry A 5. KIA 622 Instrumental Analysis and Electrochemistry B 6. KIA 618 Advanced Spectroscopy A 7. KIA619 Advanced Spectroscopy B 8. KIA617 Advanced Chromatography 9. NUF601 Functional Food 10. KIA635 Bioanalysis 11. KIA636 Food Quality and Safety 12. KIA637 Advanced Clinical Chemistry 13. KIA610 Microbiology Analysis 14. KIA638 Analytical Methods Development and Validation 15. PNF698 Thesis Proposal 16. KIA612 Doping Analysis 17. KIA613 Analysis of chemical contaminants 18. KIA615 Environmental Impact Analysis 19. KIA609 Forensic Analysis 20. KIA614 Genomic and Proteomic Analysis 21. PNF699 Thesis 22. BIS604 Molecular Biology 23. BIT 625 Advanced Pharmaceutical Biotechnology 24. FAB 601Advanced Phytochemistry 25. FAB 605 Phytotherapy 26. FAB 604 Phytopharmaceuticals 27. BIT 616 Genetic Engineering 28. KIO 609 Organic Synthesis	2 2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 2 6 2 2 2 2 2 2 2 2	6 6 6 6 3 6 6 6 6 6 6 6 6 6 6 6 6 6 6 9.6 6 6 6 6 6 6 6 6

		29. KIM 601 Advanced Medicinal Chemistry	2	6
		30. FAB 602 Bioactivity of Natural Product	2	6
		31. BIT 611 Mammalian Cell Culture	2	6
		32. KIA 607 Natural Product Analysis	2	6
		33. FAT 606 Bioethics and Clinical Study	2	6
		34. FAF 604 Advanced Biopharmaceutics	2	6
		35. FAT602 Molecular Pharmacology	2	6
		36. FAK603 Advanced Pharmacokinetics	2	6
		37. KIM606 Drug Development	2	6
		38. FAT603 Pharmacometrics	2	6
		39. FAT621 Advanced Pharmacotherapy	2	6
		40. FAM602 Pharmacogenomics and Proteomics	2	6
		41. KIM 602 Structure Activity Relationship	2	6
		42. FAF635 Drug Delivery and Targeting	2	6
		43. KIM605 Drug Interactions	2	6
		44. FAM609 Drug Surveillance	2	6
		45. BIK613 Molecular Biochemistry	2	6
		46. FAF603 Biopharmaceutical Products	2	6
		47. FAK605 Clinical Pharmacokinetics	2	6
		48. FAK601 Population Pharmacokinetics	2	6
		49. BIK621 Neurobiology	2	6
		50. BII615 Molecular Immunology	2	6
		51. FAM604 Pharmaceutical Services Management	2	6
		52. MNP608 Pharmaceutical Marketing & Consumer Behaviour	2	6
		53. FAM604 Pharmaceutical Logistics Management	2	6
		54. HKD607 Pharmacy Law and Ethics	2	6
		55. FAM606 Pharmacoepidemiology	2	6
		56. KMA613 Policy Analysis	2	6
		57. PSI624 Organizational Behaviour	2	6
		58. PSI624 Health Management	2	6
		59. SOK637 Professional Communication	2	6
		60. FAM603 Pharmacoeconomics	2	6
		61. MNS603 Health Insurance	2	6
		62. FAM601 Pharmaceutical Information Technology	2	6
		63. PSC614 Health Behaviour	2	6
		64. BIK 602 Advanced Bochemistry	2	6
		65. KIO 608 Physical Organic Chemistry	2	6
		66. KIM 603 Drug Designs	2	6

		67. BIT 633 Proteomics, Genomics & Drug Development	2	6
		68. KIM 604 Enzyme & Drug Development	2	6
		69. BIT 609 Microbiology and Microbe Biotechnology	2	6
		70. BIT 605 Biotransformation and Drug Development	2	6
		71. thsFAF601 Advanced Physical Pharmacy	2	6
		72. FAF619 Nanoparticle Technology	2	6
		73. FAF636 Advanced Drug Delivery System	2	6
		74. FA620 Pharmaceutical Polymer		
		75. FAF623 Transdermal Delivery System		
		76. FAF624 Inhalation Delivery System		
		77. FAF641 Solid Preparation Formulation Plan		
Problem solver	- Attitude: none - General Skill: GS4 - Special Skills: SS1-6 - Knowledge: KN1-3	1. KIA 616 Instrumental Analysis and Electrochemistry A	2	6
		2. KIA 622 Instrumental Analysis and Electrochemistry B	1	3
		3. KIA 618 Advanced Spectroscopy A	2	6
			2	6
		4. KIA619 Advanced Spectroscopy B	2	6
		5. KIA617 Advanced Chromatography	2	6
			2	6
		6. NUF601 Functional Food	2	6
		7. KIA635 Bioanalysis	2	6
		8. KIA636 Food Quality and Safety		
		9. KIA637 Advanced Clinical Chemistry	2	6
			2	6
		10. KIA610 Microbiology Analysis		
		11. KIA638 Analytical Methods Development and Validation	2	6
			2	6
		12. PNF698 Thesis Proposal		
		13. KIA614 Genomic and Proteomic Analysis	6	9.6
			2	6
		14. PNF699 Thesis	2	6
		15. BIS604 Molecular Biology		
		16. BIT625 Advanced Pharmaceutical Biotechnology	2	6
			2	6
		17. FAB601 Advanced Phytochemistry	2	6
			2	6
		18. FAB 605 Phytotherapy	2	6
		19. FAB 604 Phytopharmaceuticals	2	6
		20. BIT 616 Genetic Engineering		
		21. KIO 609 Organic Synthesis	2	6
		22. KIM 601 Advanced Medicinal Chemistry	2	6
		23. FAB 602 Bioactivity of Natural Product	2	6
			2	6
		24. BIT 611 Mammalian Cell Culture		
		25. KIA 607 Natural Product Analysis	2	6

		26. FAT 606 Bioethics and Clinical Study	2	6
		27. FAF 604 Advanced Biopharmaceutics	2	6
		28. FAT602 Molecular Pharmacology	2	6
		29. FAK603 Advanced Pharmacokinetics	2	6
		30. KIM606 Drug Development	2	6
		31. FAT603 Pharmacometrics	2	6
		32. FAT621 Advanced Pharmacotherapy	2	6
		33. FAM602 Pharmacogenomics and Proteomics	2	6
		34. KIM 602 Structure Activity Relationship	2	6
		35. FAF635 Drug Delivery and Targeting	2	6
		36. KIM605 Drug Interactions	2	6
		37. FAM609 Drug Surveillance	2	6
		38. BIK613 Molecular Biochemistry	2	6
		39. FAF603 Biopharmaceutical Products	2	6
		40. FAK605 Clinical Pharmacokinetics	2	6
		41. FAK601 Population Pharmacokinetics	2	6
		42. BIK621 Neurobiology	2	6
		43. BII615 Molecular Immunology	2	6
		44. FAM604 Pharmaceutical Services Management	2	6
		45. MNP608 Pharmaceutical Marketing & Consumer Behaviour	2	6
		46. FAM604 Pharmaceutical Logistics Management	2	6
		47. HKD607 Pharmacy Law and Ethics	2	6
		48. FAM606 Pharmacoepidemiology	2	6
		49. KMA613 Policy Analysis	2	6
		50. PSI624 Organizational Behaviour	2	6
		51. PSI624 Health Management	2	6
		52. SOK637 Professional Communication	2	6
		53. FAM603 Pharmacoeconomics	2	6
		54. MNS603 Health Insurance	2	6
		55. FAM601 Pharmaceutical Information Technology	4	6.4
		56. PSC614 Health Behaviour	2	6
		57. FAF642 Skin & Cosmetics	2	6
		58. FAF607 Cosmetics Formulation	4	6.4
		59. FAF630 Cosmetics Safety	2	6
		60. FAF640 Evaluation &Regulation of Cosmetics	3	4.8
		61. FAF643 Cosmetics Labelling and Packaging	3	4.8
		62. FAF606 Delivery Systems for Cosmetics	2	6
		63. FAF632 Anti-aging Preparations	2	6

		64. FAF633 Skin Whitening Preparations 65. FAF611 Aromatherapy 66. FAF612 Make-up Cosmetics 67. FAF613 Oral Hygiene Cosmetics 68. FAF614 Haircare Cosmetics 69. BIK 602 Advanced Biochemistry 70. KIO 608 Physical Organic Chemistry 71. KIM 603 Drug Designs 72. BIT 633 Proteomics, Genomics & Drug Development 73. KIM 604 Enzyme & Drug Development 74. BIT 609 Microbiology and Microbe Biotechnology 75. BIT 605 Biotransforma-tion and Drug Development 76. FAF601 Advanced Physical Pharmacy 77. FAF619 Nanoparticle Technology 78. FAF636 Advanced Drug Delivery System 79. FA620 Pharmaceutical Polymer 80. FAF623 Transdermal Delivery System 81. FAF624 Inhalation Delivery System 82. FAF641 Solid Preparation Formulation Plan	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	6 6 6 6 6 6 6 6 6 6 6 6 6 6 6
Manager/Leader	- Attitude: none - General Skill: GS2 - Special Skills: none - Knowledge: none	All Courses 1. PHF601 Phylosophy of Science 2. KIA 616 Instrumental Analysis and Electrochemistry A 3. KIA 622 Instrumental Analysis and Electrochemistry B 4. KIA 618 Advanced Spectroscopy A 5. KIA619 Advanced Spectroscopy B 6. KIA617 Advanced Chromatography 7. NUF601 Functional Food 8. KIA635 Bioanalysis 9. KIA636 Food Quality and Safety 10. KIA637 Advanced Clinical Chemistry 11. KIA610 Microbiology Analysis 12. KIA638 Analytical Methods Development and Validation 13. PNF698 Thesis Proposal 14. KIA612 Doping Analysis 15. KIA613 Analysis of chemical contaminants 16. KIA615 Environmental Impact Analysis 17. KIA609 Forensic Analysis	2 2 2 1 2 2 2 2 2 2 2 2 2 2 2 2 2 6	6 6 6 3 6 6 6 6 6 6 6 6 6 6 6 6 6 9.6

		18. KIA614 Genomic and Proteomic Analysis	2 2	6 6
		19. PNF699 Thesis		
		20. BIS604 Molecular Biology	2	6
		21. BIT625 Advanced Pharmaceutical Biotechnology	2 2	6 6
		22. FAB601 Advanced Phytochemistry	2	6
		23. FAB 605 Phytotherapy	2	6
		24. FAB 604 Phytopharmaceuticals	2	6
		25. BIT 616 Genetic Engineering		
		26. KIO609 Organic Synthesis	2	6
		27. FAB 602 Bioactivity of Natural Product	2 2	6 6
		28. BIT 611 Mammalian Cell Culture		
		29. KIA 607 Natural Product Analysis	2	6
		30. FAF604 Advanced Biopharmaceutics	2	6
		31. FAT602 Molecular Pharmacology	2	6
		32. FAK603 Advanced Pharmacokinetics	2	6
		33. KIM606 Drug Development	2	6
		34. FAT621 Advanced Pharmacotherapy	2	6
		35. FAM602 Pharmacogenomics and Proteomics	2	6
		36. KIM602 Structure Activity Relationship	2	6
		37. FAF635 Drug Delivery and Targeting	2 2	6 6
		38. KIM605 Drug Interactions		
		39. FAM609 Drug Surveillance	2	6
		40. FAF603 Biopharmaceutical Products	2	6
		41. FAK605 Clinical Pharmacokinetics	2	6
		42. FAK601 Population Pharmacokinetics	2 2	6 6
		43. BIK621 Neurobiology		
		44. BII615 Molecular Immunology	2	6
		45. FAM604 Pharmaceutical Services Management	2	6
		46. MNP608 Pharmaceutical Marketing & Consumer Behaviour	2	6
		47. FAM604 Pharmaceutical Logistics Management	2 2	6 6
		48. HKD607 Pharmacy Law and Ethics	2	6
		49. FAM606 Pharmacoepidemiology	2	6
		50. KMA613 Policy Analysis	2	6
		51. PSI624 Organizational Behaviour		
		52. PSI624 Health Management	2	6
		53. SOK637 Professional Communication	2 2	6 6
		54. FAM603 Pharmacoeconomics		
		55. MNS603 Health Insurance	2	6
		56. FAM601 Pharmaceutical Information Technology	2	6
		57. PSC614 Health Behaviour	2 2	6 6

		58. FAF636 Advanced Drug Delivery System 59. FA620 Pharmaceutical Polymer 60. FAF623 Transdermal Delivery System 61. FAF624 Inhalation Delivery System 62. FAF641 Solid Preparation Formulation Plan	2 2	6 6

3.6 Association of Courses and Learning Outcome

In the curriculum structure, each course supports specific roles in achieving certain learning outcomes and contributes to the achievement of the graduate profile. The association of courses and learning outcomes is presented in Table 2.

Table 2. Association of Courses and Learning Outcome (mandatory courses for all field of interest)

Courses	Attitude		General Skills				Special Skills						Knowledge		
	AT1	AT2	GS1	GS2	GS3	GS4	SS1	SS2	SS3	SS4	SS5	SS6	KN1	KN2	KN5
SEMESTER 1															
Compulsory Courses for MIF program (all fields of interests)															
PNF697 Research Methodology (2 SCU = 6 ECTS)	√	√	√		√										
PHF601 Philosophy of Science (2 SCU = 6 ECTS)	√	√	√	√	√										
MAS601 Statistics (2 SCU = 6 ECTS)	√				√										
SEMESTER 2															
PNF698 Thesis Proposal (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√
SEMESTER 3 AND 4 (OPEN SEMESTER)															
PNF699 Thesis (6 SCU = 9 ECTS)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	√

Table 3. Association of Courses and Learning Outcome (Field of Interest: Pharmaceutical Analysis)

Courses	Attitude		General Skills				Special Skills						Knowledge		
	AT1	AT2	GS1	GS2	GS3	GS4	SS1	SS2	SS3	SS4	SS5	SS6	KN1	KN2	KN5
SEMESTER 1															
Compulsory Courses for Pharmaceutical Analysis															
KIA 616 Instrumental Analysis and Electrochemistry A (2 SCU = 6 ECTS)	√	√		√	√	√					√	√			√
KIA 622 Instrumental Analysis and Electrochemistry B (1 SCU = 3 ECTS)	√	√		√	√	√					√	√			√
KIA 618 Advanced Spectroscopy A (2 SCU = 6 ECTS)	√	√		√	√	√					√	√			√
KIA619 Advanced Spectroscopy B (2 SCU = 6 ECTS)	√	√		√	√	√					√	√			√
KIA617 Advanced Chromatogra-phy (2 SCU = 6 ECTS)	√	√		√	√	√					√	√			√
NUF601 Functional Food (2 SCU = 6 ECTS)	√	√		√	√	√	√								√
SEMESTER 2															
KIA635 Bioanalysis (2 SCU = 6 ECTS)	√	√		√	√	√					√				√
KIA636 Food Quality and Safety (2 SCU = 6 ECTS)	√	√		√	√							√			√

KIA637 Advanced Clinical Chemistry (2 SCU = 6 ECTS)	√	√		√	√	√					√			√
KIA610 Microbiology Analysis (2 SCU = 6 ECTS)	√	√		√	√						√	√		√
KIA638 Analytical Methods Development and Validation (2 SCU = 6 ECTS)	√	√		√	√							√		√
Supporting Thesis Courses (optional) minimum 4 SCU														
KIA612 Doping Analysis (2 SCU = 6 ECTS)	√	√		√	√									√
KIA613 Analysis of chemical contaminants (2 SCU = 6 ECTS)	√	√		√	√									√
KIA615 Environmental Impact Analysis (2 SCU = 6 ECTS)	√	√		√	√									√
KIA609 Forensic Analysis (2 SCU = 6 ECTS)	√	√		√	√									√
KIA614 Genomic and Proteomic Analysis (2 SCU = 6 ECTS)	√	√		√	√						√			√

Table 4. Association of Courses and Learning Outcome (Field of Interest: Natural Product Chemistry)

Courses	Attitude		General Skills				Special Skills						Knowledge		
	AT1	AT2	GS1	GS2	GS3	GS4	SS1	SS2	SS3	SS4	SS5	SS6	KN1	KN2	KN3
SEMESTER 1															
Compulsory Courses for Natural Product Chemistry															
KIA 616 Instrumental Analysis and Electrochemistry A (2 SCU = 6 ECTS)	√	√		√	√	√					√	√			√
KIA 618 Advanced Spectroscopy A (2 SCU = 6 ECTS)	√	√		√	√	√					√	√			√
KIA 617 Advanced Chromatography (2 SCU = 6 ECTS)	√	√		√	√	√					√	√			√
BIS 604 Molecular Biology (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
BIT 625 Advanced Pharmaceutical Biotechnology (2 SCU = 6 ECTS)	√	√		√	√	√									
SEMESTER 2															
FAB 601 Advanced Phytochemistry (2 SCU = 6 ECTS)	√	√		√	√	√	√								
FAB 605 Phytotherapy (2 SCU = 6 ECTS)	√	√		√	√		√		√					√	

FAB 604 Phytopharmaceuticals (2 SCU = 6 ECTS)	√	√		√	√	√			√		√	√		√	√
BIT 616 Genetic Engineering (2 SCU = 6 ECTS)	√	√		√	√	√	√	√	√				√		√
KIO 609 Organic Synthesis (2 SCU = 6 ECTS)	√	√		√	√			√					√		
KIM 601 Advanced Medicinal Chemistry (2 SCU = 6 ECTS)	√	√			√	√		√					√		
Supporting Thesis Courses (optional) minimum 4 SCU															
FAB 602 Bioactivity of Natural Product (2 SCU = 6 ECTS)	√	√		√	√	√	√				√				
BIT 611 Mammalian Cell Culture (2 SCU = 6 ECTS)	√	√		√	√	√	√				√				
KIA 607 Natural Product Analysis (2 SCU = 6 ECTS)	√	√		√	√	√	√				√	√			
FAT 606 Bioethics and Clinical Study (2 SCU = 6 ECTS)	√	√			√	√					√			√	
FAF 604 Advanced Biopharmaceutics (2 SCU = 6 ECTS)	√	√	√	√	√								√		

Table 5. Association of Courses and Learning Outcome (Field of Interest: Biomedical Pharmacy)

Courses	Attitude		General Skills				Special Skills						Knowledge		
	AT1	AT2	GS1	GS2	GS3	GS4	SS1	SS2	SS3	SS4	SS5	SS6	KN1	KN2	KN3
SEMESTER 1															
Compulsory Courses for Biomedical Pharmacy															
BIS604 Molecular Biology (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√	√	√				
FAT602 Molecular Pharmacology (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√	√	√		√	√	
FAF 604 Advanced Biopharmaceutics (2 SCU = 6 ECTS)	√	√	√	√	√								√		
FAK603 Advanced Pharmacokinetics (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√		√		√	√	
KIM606 Drug Development (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√		√		√	√	
SEMESTER 2															
FAT603 Pharmacometrics (2 SCU = 6 ECTS)	√				√	√					√				
FAT621 Advanced Pharmacotherapy (2 SCU = 6 ECTS)	√	√	√	√	√	√				√	√				√
FAM602 Pharmacogenomics and Proteomics (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√		√		√	√	
KIM 602 Structure Activity Relationship	√	√		√	√			√					√		

(2 SCU = 6 ECTS)															
FAF635 Drug Delivery and Targeting (2 SCU = 6 ECTS)	√	√		√	√	√			√		√				√
Supporting Thesis Courses (optional) minimum 4 SCU															
FAT 606 Bioethics and Clinical Study (2 SCU = 6 ECTS)	√	√			√	√					√			√	
KIM605 Drug Interactions (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√		√		√	√	
FAM609 Drug Surveillance (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√		√		√	√	
BIK613 Molecular Biochemistry (2 SCU = 6 ECTS)	√	√			√	√		√					√		
FAF603 Biopharmaceutical Products (2 SCU = 6 ECTS)	√	√		√	√	√			√		√			√	√
FAK605 Clinical Pharmacokine-tics (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√		√		√	√	
FAK601 Population Pharmacokinetics (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√		√		√	√	
KIA637 Advanced Clinical Chemistry (2 SCU = 6 ECTS)	√	√		√	√	√					√				√
KIA635 Bioanalysis (2 SCU = 6 ECTS)	√	√		√	√	√					√				√

BIK621 Neurobiology (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√		√		√	√	
BII615 Molecular Immunology (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√		√		√	√	

Table 6. Association of Courses and Learning Outcome (Field of Interest: Pharmacy Policy and Management)

Courses	Attitude		General Skills				Special Skills						Knowledge		
	AT1	AT2	GS1	GS2	GS3	GS4	SS1	SS2	SS3	SS4	SS5	SS6	KN1	KN2	KN3
SEMESTER 1															
Compulsory Courses for Pharmacy Policy & Management															
FAM604 Pharmaceutical Services Management (2 SCU = 6 ECTS)	√	√		√	√	√				√				√	√
MNP608 Pharmaceutical Marketing & Consumer Behaviour (2 SCU = 6 ECTS)	√	√		√	√	√				√				√	
FAM604 Pharmaceutical Logistics Management (2 SCU = 6 ECTS)	√	√		√	√	√				√				√	
HKD607 Pharmacy Law and Ethics (2 SCU = 6 ECTS)	√	√		√	√	√				√				√	
FAM606 Pharmacoepide-miology (2 SCU = 6 ECTS)	√	√		√	√	√				√	√				

SEMESTER 2															
KMA613 Policy Analysis (2 SCU = 6 ECTS)	√	√		√	√	√				√				√	

Table 7. Association of Courses and Learning Outcome (Field of Interest: Cosmetics)

Courses	Attitude		General Skills				Special Skills						Knowledge		
	AT1	AT2	GS1	GS2	GS3	GS4	SS1	SS2	SS3	SS4	SS5	SS6	KN1	KN2	KN3
SEMESTER 1															
Compulsory Courses for Cosmetics															
FAF642 Skin & Cosmetics (2 SCU = 6 ECTS)	√	√													√
FAF607 Cosmetics Formulation (2 SCU = 6 ECTS)	√	√							√						√
FAF630 Cosmetics Safety (2 SCU = 6 ECTS)	√	√													√
FAF640 Evaluation &Regulation of Cosmetics (4 SCU = 6.4 ECTS)	√	√										√			√
FAF643 Cosmetics Labelling and Packaging (2 sks = 6 ECTS)	√	√							√						√
SEMESTER 2															
FAF606 Delivery Systems for Cosmetics (4 SCU = 6.4 ECTS)	√								√						√
FAF632 Anti-aging Preparations (3 SCU = 4.8 ECTS)	√	√							√						√
FAF633 Skin Whitening Preparations (3 SCU = 4.8 ECTS)	√	√							√						√
Supporting Thesis Courses (optional) minimum 4 SCU															
FAF611 Aromatherapy (2 SCU = 6 ECTS)	√	√							√						√
FAF612 Make-up Cosmetics (2 SCU = 6 ECTS)	√	√							√						√

FAF613 Oral Hygiene Cosmetics (2 SCU = 6 ECTS)	√	√							√						√
FAF614 Haircare Cosmetics (2 SCU = 6 ECTS)	√	√							√						√
KIA610 Microbiological Analysis (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√		√		√	√	

Table 8. Association of Courses and Learning Outcome (Area of Interest: Drug Development)

Courses	Attitude		General Skills				Special Skills						Knowledge		
	AT1	AT2	GS1	GS2	GS3	GS4	SS1	SS2	SS3	SS4	SS5	SS6	KN1	KN2	KN3
SEMESTER 1															
Compulsory Courses for Drug Development															
KIA622 Instrumental Analysis and Electrochemistry A (2 SCU = 6 ECTS)	√	√		√	√	√					√	√			√
KIA 618 Advanced Spectroscopy A (2 SCU = 6 ECTS)	√	√		√	√	√					√	√			√
BIS 604 Molecular Biology (2 sks 6 ECTS)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
BIK 602 Advanced Bochemistry (2 SCU = 6 ECTS)	√	√			√	√		√					√		
SEMESTER 2															
KIO 609 Organic Synthesis (2 SCU = 6 ECTS)	√	√		√	√			√					√		
KIO 608 Physical Organic Chemistry (2 SCU = 6 ECTS)	√	√		√	√			√					√		
FAT6002 Molecular Pharmacology (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√	√	√		√	√	

FAT 603 Pharmaco metrics (2 SCU = 6 ECTS)	√	√			√	√					√				
KIM 602 Structure-Activity Relationshi p (2 SCU = 6 ECTS)	√	√		√	√			√					√		
KIM 603 Drug Designs (2 SCU = 6 ECTS)	√	√			√	√		√					√		
Supporting Thesis Courses (optional) minimum 4 SCU															
KIM 601 Advanced Medicinal Chemistry (2 SCU = 6 ECTS)	√	√			√	√		√					√		
BIT 633 Proteomics , Genomics & Drug Developm ent (2 SCU = 6 ECTS)	√	√			√	√		√					√		
KIM 604 Enzyme & Drug Developm ent (2 SCU = 6 ECTS)	√	√			√	√		√					√		
BIT 609 Microbiolo gy and Microbe Biotechnol ogy (2 SCU = 6 ECTS)	√	√	√	√	√	√					√	√		√	√
BIT 605 Biotransfor ma-tion and Drug Developm ent (2 SCU = 6 ECTS)	√	√	√	√	√	√			√				√		

Table 9. Association of Courses and Learning Outcome (Field of Interest: Drug Delivery System)

Courses	Attitude		General Skills				Special Skills						Knowledge		
	AT1	AT2	GS1	GS2	GS3	GS4	SS1	SS2	SS3	SS4	SS5	SS6	KN1	KN2	KN3
SEMESTER 1															
Compulsory Courses for Drug Delivery Systems															
KIA616 Instrumental Analysis and Electrochemistry A (2 SCU = 6 ECTS)	√	√		√	√	√					√	√			√
BIS 604 Molecular Biology (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√	√	√	√	√	√	
FAT6002 Molecular Pharmacology (2 SCU = 6 ECTS)	√	√	√	√	√	√	√	√	√	√	√		√	√	
FAF 604 Advanced Biopharma-ceutics (2 SCU = 6 ECTS)	√	√	√	√	√								√		
FAF601 Advanced Physical Pharmacy (2 SCU = 6 ECTS)	√	√		√	√		√	√	√		√		√	√	√
SEMESTER 2															
FAF619 Nanoparticle Technology (2 SCU = 6 ECTS)	√	√		√	√				√		√		√	√	

FAF635 Drug Delivery and Targeting (2 SCU = 6 ECTS)	√	√		√	√	√			√		√				√
FAF636 Advanced Drug Delivery System (2 SCU = 6 ECTS)	√	√		√	√	√			√		√	√	√		√
FA620 Pharmaceu-tical Polymer (2 SCU = 6 ECTS)	√	√		√	√	√			√						√
FAF603 P Biopharma-ceutical Products (2 SCU = 6 ECTS)	√	√		√	√	√			√		√			√	√
Supporting Thesis Courses (optional) minimum 4 SCU															
FAF623 Transderma l Delivery System (2 SCU = 6 ECTS)	√	√		√	√	√			√	√			√	√	√
FAF624 Inhalation Delivery System (2 SCU = 6 ECTS)	√	√		√	√	√			√		√				√
FAF641 Solid Preparation Formulatio n Plan (2 SCU = 6 ECTS)	√	√		√	√	√					√	√		√	√

CURRICULUM MAP AND MATRIX

The structured curriculum of MSP-PS is divided into 7 (seven) fields of interest. The MSP-PS offers the following field of interest: **Pharmaceutical Analysis, Natural Product Chemistry, Biomedical Pharmacy, Pharmacy Policy & Management, Cosmetics, Drug Development, and Drug Delivery Systems**.

1. Curriculum Structure

The following tables describe the structured curriculum based on each field of interest.

Table 10. Curriculum Structure of Study Program (Mandatory Courses)

No.	Courses		Credit Unit (sks)	ECTS
	Code	Name		
(1)	(2)	(3)	(5)	
Compulsory Courses for MoPS (all research interests)				
1	PNF697	Research Methodology	2	6
2	PHF601	Philosophy of Science	2	6
3	MAS601	Statistics	2	6
Sub Total Semester Credit Unit			**6**	**18**

Table 11. Curriculum Structure of Study Program (Field of Interest: Pharmaceutical Analysis)

No.	Courses		Credit Unit (sks)	ECTS
	Code	Name		
(1)	(2)	(3)	(5)	
Semester 1				
Compulsory Courses for MoPS (all research interests)			**6**	**18**
Compulsory Courses for Pharmaceutical Analysis				
4	KIA616	Instrumental Analysis and Electrochemistry A	2	6
5	KIA622	Instrumental Analysis and Electrochemistry B	1	3
6	KIA618	Advanced Spectroscopy A	2	6
7	KIA619	Advanced Spectroscopy B	1	3
8	KIA617	Advanced Chromatography	2	6
9	NUF601	Functional Foods	2	6
Sub Total Semester Credit Unit Semester 1			**16**	**48**
Semester 2				
10	KIA635	Bioanalysis	2	6
11	KIA636	Food Quality and Safety	2	6
12	KIA637	Advanced Clinical Chemistry	2	6
13	KIA610	Microbiological Analysis	2	6
14	KIA638	Analytical Methods Development and Validation	2	6
15	PNF698	Thesis Proposal	2	6
Supporting Thesis Courses (optional) minimum 4 SCU				
16	KIA612	Doping Analysis (2 SCU, 6 ECTS)		
17	KIA613	Analysis of Chemical Contaminants (2 SCU, 6 ECTS)		
18	KIA615	Environmental Impact Analysis (2 SCU, 6 ECTS)		
19	KIA609	Forensic Analysis (2 SCU, 6 ECTS)		
20	KIA614	Genomic and Proteomic Analysis (2 SCU, 6 ECTS)		
Sub Total Semester Credit Unit Semester 2			**16**	**48**
Semester 3 & 4 (open semester)				
21	PNF699	Thesis	6	18
Sub Total Semester Credit Unit Semester 3 & 4			**6**	**18**
Total Semester Credit Unit			**38**	**114**

Table 12. Curriculum Structure of Study Program (Field of Interest: Natural Product Chemistry)

No.	Courses		Credit Unit (sks)	ECTS
	Code	Name		
(1)	(2)	(3)	(5)	
Semester 1				
Compulsory Courses for MoPS (all research interests)			**6**	**18**
Compulsory Courses for Natural Product Chemistry				
4	KIA616	Instrumental Analysis and Electrochemistry A	2	6
6	KIA618	Advanced Spectroscopy A	2	6
8	KIA617	Advanced Chromatography	2	6
22	BIS604	Molecular Biology	2	6
23	BIT625	Advanced Pharmaceutical Biotechnology	2	6
Sub Total Semester Credit Unit Semester 1			**16**	**48**
Semester 2				
24	FAB601	Advanced Phytochemistry	2	6
25	FAB605	Phytotherapy	2	6
26	FAB604	Phytopharmaceuticals	2	6
27	BIT616	Genetic Engineering	2	6
28	KIO609	Organic Synthesis	2	6
29	KIM601	Advanced Medicinal Chemistry	2	6
15	PNF698	Thesis Proposal	2	6
Supporting Thesis Courses (optional) minimum 4 SCU				
30	FAB602	Bioactivity of Natural Products (2 SCU, 6 ECTS)		
31	BIT611	Mammalian Cell Culture (2 SCU, 6 ECTS)		
32	KIA607	Natural Products Analysis (2 SCU, 6 ECTS)		
33	FAT606	Bioethics and Clinical Trials (2 SCU, 6 ECTS)		
34	FAT604	Advanced Biopharmaceutics (2 SCU, 6 ECTS)		
Sub Total Semester Credit Unit Semester 2			**18**	**54**
Semester 3 & 4 (open semester)				
21	PNF699	Thesis	6	18
Sub Total Semester Credit Unit 3 & 4			**6**	**18**
Total Semester Credit Unit			**40**	**120**

Table 13. Curriculum Structure of Study Program (Field of Interest: Biomedical Pharmacy)

No.	Courses		Credit Unit (sks)	ECTS
	Code	Name		
(1)	(2)	(3)	(5)	
Semester 1				
Compulsory Courses for MoPS (all research interests)			**6**	**18**
Compulsory Courses for Biomedical Pharmacy				
22	BIS604	Molecular Biology	2	6
35	FAT602	Molecular Pharmacology	2	6
34	FAF604	Advanced Biopharmaceutics	2	6
36	FAK603	Advanced Pharmacokinetics	2	6
37	KIM606	Drug Development	2	6
Sub Total Semester Credit Unit Semester 1			**16**	**48**
Semester 2				
38	FAT603	Pharmacometrics	2	6
39	FAT621	Advanced Pharmacotherapy	2	6
40	FAM602	Pharmacogenomics and Proteomics	2	6
41	KIM602	Structure - Activity Relationship	2	6
42	FAF635	Drug Delivery and Targeting	2	6
15	PNF698	Thesis Proposal	2	6
Supporting Thesis Courses (optional) minimum 4 SCU				
43	FAT606	Bioethics and Clinical Trial (2 SCU, 6 ECTS)		
44	KIM605	Drug Interactions (2 SCU, 6 ECTS)		
45	FAM609	Drug Surveillance (2 SCU, 6 ECTS)		
46	BIK613	Molecular Biochemistry (2 SCU, 6 ECTS)		
47	FAF603	Biopharmaceutical Products (2 SCU, 6 ECTS)		
48	FAK605	Clinical Pharmacokinetics (2 SCU, 6 ECTS)		
49	FAK601	Population Pharmacokinetics (2 SCU, 6 ECTS)		
50	KIA621	Advanced Clinical Chemistry (2 SCU, 6 ECTS)		
10	KIA635	Bioanalysis (2 SCU, 6 ECTS)		
51	BIK621	Neurobiology (2 SCU, 6 ECTS)		
52	BII615	Molecular Immunology (2 SCU, 6 ECTS)		
Sub Total Semester Credit Unit Semester 2			**16**	**48**
Semester 3 and 4				
21	PNF699	Thesis	6	18
Sub Total Semester Credit Unit Semester 3 and 4			**6**	**18**
Total Semester Credit Unit			**38**	**114**

Table 14. Curriculum Structure of Study Program (Field of Interest: Pharmacy Policy & Management)

No.	Courses		Credit Unit (sks)	ECTS
	Code	Name		
(1)	(2)	(3)	(5)	
Semester 1				
Compulsory Courses for MoPS (all research interests)			**6**	**18**
Compulsory Courses for Pharmacy Policy & Management				
53	FAM604	Pharmaceutical Services Management	2	6
54	MNP608	Pharmaceutical Marketing & Consumer Behaviour	2	6
55	FAM604	Pharmaceutical Logistics Management	2	6
56	HKD607	Pharmacy Law and Ethics	2	6
57	FAM606	Pharmacoepidemiology	2	6
Sub Total Semester Credit Unit Semester 1			**16**	**48**
Semester 2				
58	KMA613	Policy Analyses	2	6
59	PSI624	Organizational Behaviour	2	6
60	PSI624	Health Management	2	6
61	SOK637	Professional Communication	2	6
62	FAM603	Pharmacoeconomics	2	6
15	PNF698	Thesis Proposal	2	6
Supporting Thesis Courses (optional) minimum 4 SCU				
39	FAT621	Advanced Pharmacotherapy (2 SCU, 6 ECTS)		
63	MNS603	Health Insurance (2 SCU, 6 ECTS)		
64	FAM601	Pharmaceutical Information Technology (2 SCU, 6 ECTS)		
65	PSC614	Health Behaviour (2 SCU, 6 ECTS)		
Sub Total Semester Credit Unit Semester 2			**16**	**48**
Semester 3 & 4 (Open Semester)				
21	PNF699	Thesis	6	18
Sub Total Semester Credit Unit Semester 3 & 4			**6**	**18**
Total Semester Credit Unit			**38**	**114**

Table 15. Curriculum Structure of Study Program (Field of Interest: Cosmetics)

No.	Courses		Credit Unit (sks)	ECTS
	Code	Name		
(1)	(2)	(3)	(5)	
Semester 1				
Compulsory Courses for MoPS (all research interests)			**6**	**18**
Compulsory Courses for Cosmetics				
66	FAF642	Skin & Cosmetics	2	6
67	FAF607	Cosmetics Formulation	2	6
68	FAF630	Cosmetics Safety	2	6
69	FAF640	Evaluation & Regulation of Cosmetics	4	12
70	FAF643	Cosmetics Labelling and Packaging	2	6
Sub Total Semester Credit Unit Semester 1			**18**	**54**
Semester 2				
71	FAF606	Delivery Systems for Cosmetics	4	12
72	FAF632	Anti-aging Preparations	3	9
73	FAF633	Skin Whitening Preparations	3	9
15	PNF698	Thesis Proposal	2	6
Supporting Thesis Courses (optional) minimum 4 SCU				
74	FAF611	Aromatherapy (2 SCU, 6 ECTS)		
75	FAF612	Make-up Cosmetics (2 SCU, 6 ECTS)		
76	FAF613	Oral Hygiene Cosmetics (2 SCU, 6 ECTS)		
77	FAF614	Haircare Cosmetics (2 SCU, 6 ECTS)		
13	KIA610	Microbiological Analysis (2 SCU, 6 ECTS)		
Sub Total Semester Credit Unit Semester 2			**16**	**48**
Semester 3 & 4 (Open Semester)				
21	PNF699	Thesis	6	18
Sub Total Semester Credit Unit Semester 3 & 4			**6**	**18**
Total Semester Credit Unit			**40**	**120**

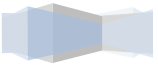


Table 16. Curriculum Structure of Study Program (Field of Interest: Drug Development)

No.	Courses		Credit Unit (sks)	ECTS
	Code	Name		
(1)	(2)	(3)	(5)	
Semester 1				
Compulsory Courses for MoPS (all research interests)			**6**	**18**
Compulsory Courses for Drug Development				
4	KIA616	Instrumental Analyss and Electrochemistry A	2	6
6	KIA618	Advanced Spectroscopy A	2	6
22	BIS604	Molecular Biology	2	6
78	BIK602	Advanced Biochemistry	2	6
Sub Total Semester Credit Unit Semester 1			**14**	**42**
Semester 2				
28	KIO609	Organic Synthesis	2	6
79	KIO608	Physical Organic Chemistry	2	6
35	FAT602	Molecular Pharmacology	2	6
38	FAT603	Pharmacometrics	2	6
41	KIM602	Structure-Actrivity Relationship	2	6
80	KIM603	Drug Designs	2	6
15	PNF698	Thesis Proposal	2	6
Supporting Thesis Courses (optional) minimum 4 SCU				
29	KIM601	Advanced Medicinal Chemistry (2 SCU, 6 ECTS)		
81	BIT633	Proteomics, Genomics & Drug Development (2 SCU, 6 ECTS)		
82	KIM604	Enzyme & Drug Development (2 SCU, 6 ECTS)		
83	BIT609	Microbiology and Microbe Biotechnology (2 SCU, 6 ECTS)		
84	BIT605	Biotransformation and Drug Development (2 SCU, 6 ECTS)		
Sub Total Semester Credit Unit Semester 2			**18**	**54**
Semester 3 & 4 (Open Semester)				
21	PNF699	Thesis	6	18
Sub Total Semester Credit Unit Semester 3 & 4			**6**	**18**
Total Semester Credit Unit			**38**	**114**

Table 17. Curriculum Structure of Study Program (Field of Interest: Drug Delivery Systems)

No.	Courses		Credit Unit (sks)	ECTS
	Kode	Name		
(1)	(2)	(3)	(5)	
Semester 1				
Compulsory Courses for MoPS (all research interests)			**6**	**18**
Compulsory Courses for Drug Delivery Systems				
4	KIA616	Instrumental Analysis and Electrochemistry A	2	6
22	BIS604	Molecular Biology	2	6
35	FAT602	Molecular Pharmacology	2	6
34	FAF604	Advanced Biopharmaceutics	2	6
85	FAF601	Advanced Physical Pharmacy	2	6
Sub Jumlah Beban Studi Semester 1			**16**	**48**
Semester 2				
86	FAF619	Nanoparticle Technology	2	6
42	FAF635	Drug Delivery and Targeting	2	6
87	FAF636	Advanced Drug Delivery System	2	6
88	FAF620	Pharmaceutical Polymer	2	6
47	FAF603	Biopharmaceutical Products	2	6
15	PNF698	Thesis Proposal	2	6
Supporting Thesis Courses (optional) minimum 4 SCU				
89	FAF623	Transdermal Delivery System (2 SCU, 6 ECTS)		
90	FAF624	Inhalation Delivery System (2 SCU, 6 ECTS)		
91	FAF641	Solid Preparation Formulation Plan (2 SCU, 6 ECTS)		
Sub Jumlah Beban Studi Semester 2			**16**	**48**
Semester 3 and 4				
21	PNF699	Thesis	6	18
Sub Jumlah Beban Studi Semester 3 and 4			**6**	**18**
Jumlah Beban Studi Prodi			**38**	**114**

LIST OF COURSES
STUDY PROGRAM OF MASTER OF PHARMACEUTICAL SCIENCES
FACULTY OF PHARMACY
UNIVERSITAS AIRLANGGA

No	Code	Course Name	Credits	Lecturer
1.	PNF697	Research Methodology	2	Prof. Dr. Djoko Agus Purwanto, M.Si., Apt. Prof. Dr. rer. nat. M. Yuwono, MS., Apt. Prof. Dr. Muhammad Zainudin, Apt. Prof. Dr. Umi Athiyah, MS., Apt.
2.	PHF601	Philosophy of Science	2	Prof. Dr. Umi Athiyah, MS., Apt. Prof. Dr. Muhammad Zainudin, Apt.
3.	MAS601	Statistics	2	Prof. Dr.rer.nat. Mochammad Yuwono, MS., Apt. Prof. Dr. Djoko Agus Purwanto, M.Si., Apt. Prof. Dr. Amirudin Prawita, Apt.
4.	KIA638	Instrumental Analysis and Electrochemistry A	2	Prof. Dr. rer.nat. apt. M. Yuwono, MS Prof. Dr. apt. Amirudin Prawita
5.	KIA622	Instrumental Analysis and Electrochemistry B	2	Prof. Dr. rer.nat. apt. M. Yuwono, MS Prof. Dr. apt. Amirudin Prawita
6.	KIA618	Advanced Spectroscopy A	2	Drs. Marcellino Rudyanto, Apt., MSi., PhD. Prof. Dr. Achmad Syahrani, Apt., MS. Drs. Hadi Poerwono, Apt., MSc., PhD.
7.	KIA619	Advanced Spectroscopy B	2	Prof. Dr. Sudjarwo, MS, Apt.
8.	KIA617	Advanced Chromatography	2	Prof. Dr.rer.nat. apt. M. Yuwono, MS. Prof. Dr. apt. Djoko Agus Purwanto, M.Si. Dr. apt. Riesta Primaharinastiti, M.Si.
9.	NUF601	Functional Foods	2	Prof. Dr. Purwanto, Apt. Dr. Nuzul Wahyuning Diyah, Apt., M.Si. Dr. Bambang Tri Purwanto, Apt., M.S.
10.	PNF698	Thesis Proposal	2	Supervisors and Examiners
11.	PNF699	Thesis	6	Supervisors and Examiners
12.	BIS604	Molecular Biology	2	Prof. Junaidi Khotib, S.Si., Apt., M.Kes.,Ph.D. Prof. Dr. Djoko Agus Purwanto, Apt., M. Si Prof. Dr. Sukardiman, MS., Apt. Prof. Dr. Sudjarwo, MS., Apt. .
13.	BIT625	Advanced Pharmaceutical Biotechnology	2	Prof. Sukardiman, MSi., Apt. Prof. Dr. Achmad Syahrani, MS., Apt. Dr. Achmad Toto Poernomo, M.Si., Apt.
14.	FAT602	Molecular Pharmacology		Prof. apt. Junaidi Khotib, S.Si., M.Kes.,Ph.D apt. Mahardian Rahmadi,S.Si.,MSc.,Ph.D. apt. Chrismawan Ardianto, S.Farm., M.Sc., Ph.D

15.	FAT602	Advanced Biopharmaceutics	2	Dr. apt. Budi Suprapti, M.Si. Prof. apt. Junaidi Khotib, S.Si., M.Kes.,Ph.D. Prof. Dra. apt. Esti Hendradi, M.Si., Ph.D.
16.	FAT602	Advanced Pharmacokinetics	2	Prof. Dr. Suharjono, MS., Apt. Dr. Budi Suprapti, M.Si., Apt.
17.	KIM 606	Drug Development	2	Prof. Dr. Siswandono, MS., Apt. Prof. Dr. Bambang Tri Purwanto, MS., Apt. Dr. Tri Widiandani
18.	FAM604	Pharmaceutical Services Management	2	Prof. Dr. Umi Athiyah, MS, Apt. Dr. Wahyu Utami, MS, Apt. Hanni Prihhastuti Puspitasari, SSi, MPhil, PhD, Apt.
19.	MNP608	Pharmaceutical Marketing & Consumer Behaviour	2	Prof. Dr. Umi Athiyah, M.S., Apt Dr. Liza Pristianty, MSi.,MM.,Apt Dr. Yunita Nita, S.Si.,M.Pharm.Klin, Apt. Andi Hermansyah,S.Farm.,M.Sc.,Ph.D.,Apt.
20.	FAM604	Pharmaceutical Logistics Management	2	Dr. apt. Abdul Rahem, M.Kes. Prof. Dr. apt. Umi Athiyah, MS. Dr. apt. Wahyu Utami, MS. Dr. apt. Liza Pristianty, M.Si., MM. Dr. apt. Yunita Nita, S.Si., M.Pharm.
21.	HKD607	Pharmacy Law and Ethics	2	Prof. Dr. apt. Umi Athiyah, MS. Dr. apt. Abdul Rahem, M.Kes. Dr. Lilik Pudjiastuti, SH., MH. apt. Andi Hermansyah, S.Farm., M.Sc., Ph.D. Dr. Faiq Bahfen, S.H.
22.	FAM606	Pharmacoepidemiology	2	apt. Elida Zairina, S.Si., MPH., Ph.D. Prof. Dr. apt. Umi Athiyah, MS. Dr. apt. Abdul Rahem, M.Kes. Dr. apt. Yunita Nita, S.Si., M.Pharm.
23.	FAF642	Skin & Cosmetics	2	Prof. Dr. Widji Soeratri, DEA, Apt. Dipl. Cosm. Sci Prof. Dr. Cita Rosita, Sp KK (K) Dr. Tristiana Erawati M., M.Si., Apt. Dr. Noorma Rosita, M.Si., Apt..
24.	FAF607	Cosmetics Formulation	2	Prof. Dr. Widji Soeratri, DEA., Apt. Dr. Tristiana Erawati M., M.Si., Apt. Dr. Noorma Rosita, M.Si.,Apt.
25.	FAF630	Cosmetics Safety	2	Prof. Dr. Widji Soeratri, DEA, Apt. Dr. Tristiana Erawati M., M.Si., Apt. Dr. Noorma Rosita, M.Si., Apt. Prof. Dr. Cita Rosita Sigit Prakoeswa dr.,Sp.KK(K),FINSDV
26.	FAF640	Evaluation & Regulation of Cosmetics	2	Prof. Dr. Widji Soeratri, DEA, Apt. Dra. Tristiana Erawati, MSi, Apt. Dra. Noorma Rosita, Msi, Apt.

27.	FAF643	Cosmetics Labelling and Packaging	2	Prof. Dr. Widji Soeratri, DEA, Apt. Dra. Tristiana Erawati, MSi, Apt. Dra. Noorma Rosita, Msi, Apt.
28.	BIK602	Advanced Biochemistry	2	Dr. apt. Nuzul Wahyuning Diyah, M.Si. Prof. Dr. apt. Purwanto Prof. Dr. apt. Juni Ekowati, M.Si. Dr. apt. Riesta Primaharinastiti, S.Si., M.Si.
29.	FAF601	Advanced Physical Pharmacy	2	Dra.Esti Hendradi MSi., Ph.D., Apt. Dr. Dewi Isadiartuti, M.Si., Apt. Dr. Noorma Rosita, M.Si., Apt. Prof. Dr. Dwi Setyawan, S.Si., M.Si., Apt.

LIST OF NAMES OF PERMANENT & NON-PERMANENT LECTURERS OF MASTER OF PHARMACEUTICAL SCIENCES, FACULTY OF PHARMACY, UNIVERSITAS AIRLANGGA

No.	PERMANENT LECTURERS	NIDN
1.	Prof. Dr. Siswandono, MS., Apt.	0002105207
2.	Prof. Dr. Widji Soeratri, DEA., Apt.	0006105103
3.	Prof. Dr. Sukardiman, MS., Apt.	0001096305
4.	Prof. Dr. Umi Athiyah, MS., Apt.	0004075605
5.	Prof. Dr. Sudjarwo, MS., Apt.	0023095809
6.	Prof. Dr. Bambang Tri Purwanto, MS., Apt.	0010065702
7.	Prof. Dr. Djoko Agus Purwanto, M.Si., Apt.	0008055906
8.	Prof. Dra. Esti Hendradi, Apt., M.Si., Ph.D.	0014115703
9.	Prof. Dr. Retno Sari, Apt., M.Sc.	0008106303
10.	Prof. Dr. Tristiana Erawati Munandar, M.Si., Apt	0018055803
11.	Prof. Dr.rer.nat. H. Mochamad Yuwono, MS., Apt.	0005056003
12.	Prof. Junaidi Khotib, S.Si., M.Kes., Ph.D.	0022107001
13.	Prof. Dr. Dwi Setyawan, S.Si., M.Si., Apt	0030117104
14.	Prof. Dr. AtyWidyawaruyanti, M.Si., Apt.	0026046210
15.	Prof. Dr. Juni Ekowati, M.Si., Apt	0006026703
16.	Prof. Dr. Noorma Rosita, M.Si., Apt	0025126506
17.	Dr. Nuzul Wahyuning Diyah, M.Si., Apt	0028126608
18.	Drs. Marcellino Rudyanto, Apt., M.Si., Ph.D	0018056604
19.	Dr. Wahyu Utami, MS, Apt.	0012105805
20.	Drs. Hadi Poerwono, Apt., M.Sc., Ph.D.	0022086302
21.	Dr. Yunita Nita, S.Si., M.Pharm., Apt.	0018067402
22.	Dr. Riesta Primaharinastiti, S.Si., MSi., Apt.	0018047203
23.	Elida Zairina, S.Si., MPH., Ph.D., Apt	0007107801
24.	Mahardian Rahmadi, S.Si.,MSc.,Ph.D.,Apt.	0014038102
25.	Chrismawan Ardianto, S.Farm., M.Sc., Apt., Ph.D.	0029028403
26.	Andi Hermansyah, S.Farm., Apt., M.Sc., Ph.D.	0027098303
27.	Dr. Abdul Rahem, M.Kes., Apt.	0005026611
28.	Andang Miatmoko, M.Pharm.Sci. Ph.D. Apt.	0002108503
29.	Helmy Yusuf, S.Si., Apt., M.Sc., Ph.D	0015077901
30.	Dr. ldha Kusumawati, M.Si., Apt.	0004087003
31.	Dr. rer.nat. Maria Lucia Ardhaniari, S.Si., Pharm.Sci.	0026048006
32.	Suciati, S.Si., M.Phil., Ph.D., Apt.	0004117905
33.	Rr. Retno Widyowati, S.Si., Apt., M.Pharm., Ph.D	0005017701
34.	Tutik Sri Wahyuni, S.Si., M.Si, Apt., Ph.D.	0025107704

NON-PERMANENT LECTURERS		
No.	**Nama Dosen**	**NIDN**
1.	Dr. Tri Murti Andayani, Apt., SpFRS.	0024026904
2.	Dr. Lilik Pudjiastuti, S.H., M.H.	0017016602
3.	Prof. Dr. Muhamad Zainudin, Apt.	8858370018
4.	Prof. Dr. Amirudin Prawita., Apt.	8816660018

Curriculum Content

The following tables describe each course offered by the MoPS with all fields interests. The course description is available on the MoPS's Program book that can be accessed by the student. The course descriptions presented in this document includes mandatory courses and representatives of courses per field of interest.

Course Description of Research Methodology

1	Course Name	Research Methodology
2	Code	PNF697
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-2, General Skills: GS1,3 Special skills: - Knowledge: -
7	Description	This course is taught through lecture and discussion methods. The topics covered include understanding, conceptual framework, systematics, types of research; experimental research design; observational research design; sampling method and determining sample size, survey research design, and statistical application research.
8	Soft Skills Attribute	Honesty, teamwork collaboration, discipline and presentation skills
9	Learning method	Lecture, Discusson and Assigments
10	Learning media	Power Point, LCD Projectors, Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	1. Prof. Dr. Djoko Agus Purwanto, M.Si., Apt. 2. Prof. Dr. rer. nat. M. Yuwono, MS., Apt. 3. Prof. Dr. Muhammad Zainudin, Apt. 4. Prof. Dr. Umi Athiyah, MS., Apt.
13	Exams and assessment formats	Final exam (100 minutes), presentation (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 40% performance on final exams, 25% quizzes, 25% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Anonim, 2011, Panduan Penulisan Tesis Magister Ilmu Farmasi UNAIR 2. Zainuddin, M, 201, Metodologi Penelitian Kefarmasian dan Kesehatan, Airlangga University Press, Surabaya, Indonesia

		3. Mishra, S.B., and Alok, S, 2011, Handbook of Research Methodology, New Delhi: New Delhi: Educreation Publishing 4. Suyitno, 2018, Metode Penelitian Kuantitatif, Akademia Pustaka, Tulungagung, Indonesia 5. I Made Indra P. & Ika Cahyaningrum, 2019, Cara Mudah Memahami Metodologi Penelitian, Penerbit Buku Pendidikan Deepublish, Yogyakarta, Indonesia 6. Fathnur Sani, 2018, Metodologi Penelitian Farmasi Komunitas dan Eksperimental, Penerbit Buku Pendidikan Deepublish, Yogyakarta, Indonesia

Course Description of Philosophy of Science

1	Course Name	Philosophy of Science
2	Code	PHF601
3	Credits	2 (6ECTS)
4	Semester	1 & 2 (Open Semester)
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-2, General Skills: GS1-3 Special skills: - Knowledge: -
7	Description	This course covers philosophy, human potential, how humans gain knowledge, the relationship between science's history and philosophy, scientific truth theory, scientific thinking tools, scientific developments, scientific activities, the relationship between science and philosophy, art, technology, and the evolution of social scientists.
8	Soft Skills Attribute	Honesty, teamwork, discipline and presentation skills
9	Learning method	Lecture, Discusson and Assigments
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	1.Prof. Dr. Umi Athiyah, MS., Apt. 2.Prof. Dr. Muhammad Zainudin, Apt.
13	Exams and assessment formats	Final exam (100 minutes), presentation (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 40% performance on final exams, 25% presentation 25% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Singh, M.S., 1988, Filsafat Para Suci, Radha Soami Beas, Jakarta, Indonesia 2. Sivananda, S.S., 2005, Pikiran, Misteri, dan Penaklukannya, Penerbit Paramita, Surabaya, Indonesia

		3. M.T.Zen, 1981, Sain, Teknologi dan Hari Depan Manusia, PT.Gramedia, Jakarta, Indonesia 4. Zohar, D. dan Marshall, I, 2007, Kecerdasan Spiritual, Milzan Media Utama, Bandung, Indonesia 5. Heriyanto H, 2003, Paradigma Holistik, Khazanah Pustaka Keilmuan, Bandung, Indonesia 6. Mudhofir, A, 2001, Kamus Filsafat Barat, Pustaka Pelajar Offset, Yogyakarta, Indonesia 7. Lavine, T. Z, 2003, Descartes, Penerbit Jendela, Yogyakarta, Indonesia 8. Idzam Fautunu, 2012, Filsafat Ilmu Teori dan Aplikasi, UIN Sunan Gunung Djati, Bandung, Indonesia

Course Description of Statistics

1	Course Name	Statistics
2	Code	MAS601
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-2 General Skills: GS3 Special skills: - Knowledge: -
7	Description	After completing this course, the students can: 1. Explain the fundamental concepts of statistics and their role in pharmaceutical research 2. Using SPSS, explain the fundamental concepts of descriptive statistics and their application. 3. Using SPSS, explain the fundamental concepts of t-test statistics and their application. 4. Explain the fundamental concepts of statistics, such as correlation and regression tests, as well as their applications. 5. Using SPSS, explain the fundamental concepts of non-parametric statistics and their applications. 6. Using SPSS, explain the fundamental concepts of ANOVA Test Statistics.
8	Soft Skills Attribute	Honesty, teamwork, discipline and presentation skills
9	Learning method	Lecture, Discusson, Presentation and Assigments
10	Learning media	Power Point, LCD Projectors, Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	1.Prof. Dr.rer.nat. Mochammad Yuwono, MS., Apt. 2.Prof. Dr. Djoko Agus Purwanto, M.Si., Apt. 3.Prof. Dr. Amirudin Prawita, Apt.
13	Exams and assessment formats	Final exam (100 minutes), presentation (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 40% performance on final exams, 25% presentation 25% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. P. Rowe, 2016. Essential Statistics for the Pharmaceutical Sciences, second edition, Second Edition, John Wiley & Sons, UK 2. R. Liu and Y.Tsong, 2016, Pharmaceutical Statistics, Springer Verlag, Indiana USA 3. S. Bolton and C. Bon, 2010, Pharmaceutical Statistics-Practical and Clinical Applications, Informa Healthcare, USA.

		4. J. Cleophas, A. H. Zwinderman, 2016, SPSS for Starters and second Levelers, Second Edition, Springer, London

Course Description of Instrumental Analysis and Electrochemistry A

1	Course Name	Analysis and Electrochemistry A
2	Code	KIA616
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-2, General Skills: GS1-3 Special skills: - Knowledge: -
7	Description	Instrumental & Electrochemical Analysis Courses present material on Flame Atomic Absorption Spectroscopy (FAAS), Graphite Furnance AAS, Cold Vapor Technique, Hydride Methode, Flame Atomic Emission Spectroscopy (FAES), ICP-AES, UV-Vis Spectrophotometry, FT-IR Spectrophotometry (NIR-MIR), Mass Spectrometry, Gas Chromatography, HPLC, TLC, Voltammetry, and Polarography and Their Development.
8	Soft Skills Attribute	Honesty, teamwork, and discipline
9	Learning method	Lecture and discusson
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. Dr. rer.nat. apt. M. Yuwono, MS Prof. Dr. apt. Amirudin Prawita
13	Exams and assessment formats	take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 25% presentation 65% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Skoog, DA, 2007, Principles of Instrumental Analysis, 6th Ed., Canada Thomson Corporation 2. AOAC, 2012, AOAC Guidelines for standard Methode Performance Requirement, Arlington, AOAC 3. Davis R et al, 1991, Mass Spectrometry, John Wiley & Sons, Toronto 4. Watson, DG, 2000, Pharmacetucal Analysis A Textbooks for Pharmacy Student and Pharmaceutical Chemist. Churchill Living Stone Harcourt. Publisher Limited

		5. The USP Convention, 2015, United States Pharmacopeia, 38th Ed. Washington DC., American Pharmaceutical Association and Pharmaceutical Press 6. Keliner R ett al, 1998, Analytical Chemistry, Wiley-VCH, New York 7. Harris PI, 2003, Spectroscopy International Journals, Vol. 17 No. 2,3 8. Ahuja S, and Dong M. W Eds. 2005. Handbook of Pharmaceutical Analysis by HPLC 1st Ed. United Kingdom, Elsevier Inc

Course Description of Instrumental Analysis and Electrochemistry B

1	Course Name	Analysis and Electrochemistry B
2	Code	KIA622
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-2, General Skills: GS1-3 Special skills: - Knowledge: -
7	Description	Instrumental & Electrochemical Analysis Course presents material on applications and problems as well as problem solving Flame Atomic Absorption Spectroscopy (FAES) Analysis, ICP-AES, UV-Vis Spectrophotometry, FT-IR Spectrophotometry (NIR-MIR), Mass Spectrometry, Gas Chromatography, HPLC , TLC, Voltammetry and Polarography on samples Analysis of pharmaceutical preparations
8	Soft Skills Attribute	Honesty, teamwork, and discipline
9	Learning method	Lecture and discusson
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. Dr. rer.nat. apt. M. Yuwono, MS Prof. Dr. apt. Amirudin Prawita
13	Exams and assessment formats	take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 25% presentation 65% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Skoog, DA, 2007, Principles of Instrumental Analysis, 6th Ed., Canada Thomson Corporation 2. AOAC, 2012, AOAC Guidelines for standard Methode Performance Requirement, Arlington, AOAC

		3. Davis R et al, 1991, Mass Spectrometry, John Wiley & Sons, Toronto 4. Watson, DG, 2000, Pharmacetucal Analysis A Textbooks for Pharmacy Student and Pharmaceutical Chemist. Churchill Living Stone Harcourt. Publisher Limited 5. The USP Convention, 2015, United States Pharmacopeia, 38th Ed. Washington DC., American Pharmaceutical Association and Pharmaceutical Press 6. Keliner R ett al, 1998, Analytical Chemistry, Wiley-VCH, New York 7. Harris PI, 2003, Spectroscopy International Journals, Vol. 17 No. 2,3 8. Ahuja S, and Dong M. W Eds. 2005. Handbook of Pharmaceutical Analysis by HPLC 1st Ed. United Kingdom, Elsevier Inc

Course Description of Advanced Spectroscopy A

1	Course Name	Advanced Spectroscopy A
2	Code	KIA618
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	After completing this course, students will be able to explain the basic principles of spectroscopy and determine the structure of organic compounds based on mass spectroscopic data, infrared, ultraviolet-visible and nuclear magnetic resonance. Attitude:AT1-5 General Skills: GS2,5,7,8,16 Special skills: SS9,10 Knowledge: KN3,4
7	Description	This course describes various types of spectroscopies commonly used in determining the structure of organic compounds, namely mass spectroscopy, infrared, ultraviolet-visible and nuclear magnetic resonance spectroscopy.
8	Soft Skills Attribute	Honesty, discipline, teamwork, communication skills
9	Learning method	Lecture, seminar, assignment, group discussion
10	Learning media	LCD, animation models, Zoom e learning
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	1. Drs. Marcellino Rudyanto, Apt., MSi., PhD. 2. Prof. Dr. Achmad Syahrani, Apt., MS. 3. Drs. Hadi Poerwono, Apt., MSc., PhD.
13	Exams and assessment formats	Final exam or take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 25% presentation 65% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Silverstein RM, Webster FX, Kiemle DJ, Bryce DL (2015). Spectrometric Identification of Organic Compounds, 8th ed. Hoboken: Wiley. 2. Pavia DL, Lampman GM, Kriz GS, Vyvyan JR (2015). Introduction to Spectroscopy, 5th ed. Stamford: Cengeage Learning. 3. Field LD, Sternhell S, Kalman JR (2013). Organic Structures from Spectra. 5th ed. Chichester: Wiley.

Course Description of Advanced Spectroscopy B

1	Course Name	Advanced Spectroscopy B
2	Code	KIA619
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	After completing this course, students will be able to design and apply the analytical theories of qualitative and quantitative assays of active pharmaceuitcal ingredients in various kinds of dosage forms by using uv-vis spectrophotometry, spectrofluorometry and AAS methods. Attitude:AT1-5 General Skills: GS2,5,7,8,16 Special skills: SS9,10 Knowledge: KN3,4
7	Description	The advanced spectrophotometry course describes techniques for solving the problems of quantitative analysis, validation and development of method validation, sample preparation, active ingredient in pharmaceutical products, food, beverages, using spectroscopic methods i.e., UV-vis spectrophotometry, spectrofluorometry and AAS methods.
8	Soft Skills Attribute	Honesty, discipline, teamwork, communication skills
9	Learning method	Lecture, seminar, assignment, group discussion
10	Learning media	LCD, animation models, Zoom e learning
11	Grading criteria	Written exams and/or assignments Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	1. Prof. Dr. Sudjarwo, MS, Apt.
13	Exams and assessment formats	Final exam or take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 25% presentation 65% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1) Mishira P, Shah K and Gupta A; 2009; Spectrophotometric methods for simultaneous estimation of nebivolol hydrochloride and amlodipine besylate in tablets; Int. J Pharmacy and Pharmaceutical Sciences; 1; 2; Oct-Des; 55-61 2) 2. Ederveen J; 2010; Apratical Approach to Biological Assay Validation; Progress, Project Management & Engineering, Netherlands 3) Jain V and Sharma R; 2010; Simultaneous Spectrophotometric estimation and validation of domperidone, tramadol hydrochloride andacetaminophen in tablet dosage form; S.J. Pharm. Sci. 3 (1) : 28-33

		4) Patel AH, Patel JK, Patel KN, Rajput GC, Rajgor NB; 2010; Development and validation of derivative spectrophotometric method for simultaneous estimation of domperidone and rabeprazole sodium in bulk and dosage forms; Int. J. On Pharmaceutical and Biological Research; 1 (1)

Course Description of Advanced Chromatography

1	Course Name	Advanced Chromatography
2	Code	KIA617
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-2, General Skills: GS1-3 Special skills: - Knowledge: -
7	Description	The Advanced Chromatography course presents the development of chromatographic instrumentation and sample preparation. Provide an explanation of the application of chromatographic methods for the analysis and development of pharmaceutical materials and preparations, including preparative chromatography.
8	Soft Skills Attribute	Honesty, teamwork, and discipline
9	Learning method	Lecture and discusson
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	PJMK: Prof. Dr.rer.nat. apt. M. Yuwono, MS. Prof. Dr. apt. Djoko Agus Purwanto, M.Si. Dr. apt. Riesta Primaharinastiti, M.Si.
13	Exams and assessment formats	Final exam or take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 25% presentation 65% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. S. Ahuja and M.W. Dong, 2005. Handbook of Pharmaceutical Analysis by HPLC, Elsevier, Amsterdam. 2. N. Grinberg and Rodriguez, 2019, Ewing's Analytical Instrumentation Handbook, Fourth Edition, CRC Press, Taylor & Francis Group, New York 3. D. A. Skoog F. J. Holler, Stanley and R. Crouch, 2018, Principles of Instrumental Analysis,Seventh Edition, Cengage Learning, Boston USA.

		4. B. N. Pramanik, A. K. G. Stevens, M L. Gross, 2002, Applied Electrospray Mass Spectrometry, Marcel Dekker, New York 5. H. S Traub, M. Schulte and A. S. Morgenstern, 2012, Preparative Chromatography, Wiley-VCH Verlag, Weinheim, Germany

Course Description of Functional Foods

1	Course Name	Functional Foods
2	Code	NUF601
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-2, General Skills: GS1-3 Special skills: - Knowledge: -
7	Description	The Functional Food course presents and explains about: a. Definition, scope, consensus on Functional Food in terms of Pharmaceutical Science b. Characteristics and Requirements for Functional Food c. Basic Function and Classification of Functional Food d. Functions and benefits of Functional Foods for health based on the bioactive components they contain, as well as the physicochemical properties of each bioactive compound, including: carbohydrate derivatives, functional lipids, probiotics, amino acids/peptides and other components (isoflavones, polyphenols, carotenoids) e. Food Development based on Traditional Food
8	Soft Skills Attribute	Honesty, teamwork, and discipline
9	Learning method	Lecture and discusson
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. Dr. Purwanto, Apt. Dr. Nuzul Wahyuning Diyah, Apt., M.Si. Dr. Bambang Tri Purwanto, Apt., M.S.
13	Exams and assessment formats	Final exam or take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 25% presentation 65% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass

15	Primary Reference	1. Yoshinori Mine, Y., Eunice Li-Chan, E., Jiang, B. 2010, Bioactive Proteins and Peptides as Functional Foods and Nutraceuticals, Blackwell Institute of Food Technologists, Iowa. 2. Liu, KS., 2004, Soybeans as Functional Foods and Ingredients, AOCS Press, Champaign. 3. Rai, RV., Bai, JA., 2015, Beneficial Microbes in Fermented and Functional Foods, Taylor & Francis, New York. 4. Packer, L., Kraemer, K., Uber-Mueller, J., Sies,H., 2005, Carotenoids and Retinoids Molecular Aspect and Health Issues, AOCS Publishing, Champaign.

Course Description of Thesis Proposal

1	Course Name	Thesis Proposal
2	Code	PNF698
3	Credits	1 (3ECTS)
4	Semester	Open semester
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-2 General Skills: GS1-4 Special skills: SS1-6 Knowledge: KN1-3
7	Description	The following topics are covered in this lecture: issues related to research, research topics, how to write a proposal, how to do preliminary research, and research feasibility
8	Soft Skills Attribute	Honesty, teamwork, discipline and presentation skills
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Proposal Exam Defense Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Supervisors and Examiners
13	Exams and assessment formats	Thesis Proposal Examination
14	Study and examination requirements	Students must have a final grade of 70% or higher to pass
15	Primary Reference	Depending on the field of research taken by the student

Course Description of Thesis

1	Course Name	Thesis
2	Code	PNF699
3	Credits	6 (18 ECTS)
4	Semester	3 & 4 (open semester)
5	Prerequisite	-
6	Expected Learning Outcomes	Students can: 1. Identify fundamental problems in the field and the arguments for selecting the problem as research material after completing thesis research. 2. Determine the factors causing the problem, the consequences of the incident/evidence, and the potential impact. 3. Maintaining the hypothesis stated in the problem formulation for solving the problem 4. Develop a conceptual framework that connects theories into hypotheses and symptom manifestations, as well as benchmarks that will be used to prove the hypothesis. 5. Create a research design that adheres to the guidelines. methodology for research 6. Perform data collection and processing data using a statistical approach and application computer-aided analysis software Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	Research clerkship
8	Soft Skills Attribute	Teamwork and Creativity
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Thesis Exam Defense Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Supervisors and Examiners
13	Exams and assessment formats	Thesis Examination
14	Study and examination requirements	Students must have a final grade of 70% or higher to pass
15	Primary Reference	Depending on the field of research taken by the student

Course Description of Molecular Biology

1	Course Name	Molecular Biology
2	Code	BIS604
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	The Molecular Biology course presents the scope and benefits of molecular biology; Demonstrate the relationship of molecular biology with physiological and pathological conditions, drug effects and drug development; molecular biochemistry of cells, structure and function of organelles and biomembranes; inter and intracellular signal delivery pathways (MAP Kinase, JAK/STAT signaling, TLR Signaling); changes in signal delivery pathways in physiological and pathophysiological conditions (diabetes mellitus, cardiovascular disease and cancer); changes in signal delivery pathways due to exposure to agonists; genetic code, gene expression and protein synthesis in prokaryotes and eukaryotes; cell cycle and control of cell growth/development; applying molecular techniques in drug development research
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. Junaidi Khotib, S.Si., Apt., M.Kes.,Ph.D. Prof. Dr. Djoko Agus Purwanto, Apt., M. Si Prof. Dr. Sukardiman, MS., Apt. Prof. Dr. Sudjarwo, MS., Apt.
13	Exams and assessment formats	Mid term exam and final exam
14	Study and examination requirements	The final grade in the module is composed of 45% mid term exam, 45% final exam, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Albert B, Johnson A, Lewis J, Raff M, Molecular Biology of The Cell, 6th edition, Garland Science, 2014 2. Lodish H, Berk A, Kaiser CA, Krieger M, Molecular Cell Biology, 9th edition, Massachusetts Institute of Technology, 2021 3. Franklin TJ and Snow GA, 2005, Biochemistry and Molecular Biology of Antimicrobial Drug Action, 6th edition, USA: Springer 4. Anonim, Inside The Cell, NIH, 2005

		5. Bolsover SR, Shephard EA, White HA, Hyams JS, Cell Biology, 3nd edition, USA, Willey Lis, 2011 6. Watson JD, Baker TA, Bell SP, Gann A, Levine M, Losick R, Molecular Biology of the Gene, (7th Edition), 2013

Course Description of Advanced Pharmaceutical Biotechnology

1	Course Name	Advanced Pharmaceutical Biotechnology
2	Code	BIT625
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-5 General Skills: GS2-5, 8-15, 18-19 Special skills: SS1-3, 4-8, 11,12 Knowledge: KN1,2
7	Description	The Advanced Pharmaceutical Biotechnology course presents material on the meaning and scope of biotechnology; meaning of the system vitro and fermenters and their optimization for microorganisms, plant cells, the notion of engineered cell fusion genetics; biotechnology and enzyme technology for the production and biotransformation of medicinal substances; downstream process and production optimization methods, marine and environmental biotechnology.
8	Soft Skills Attribute	Active in the discussion, innovation in expressing opinions, accuracy in collecting assignments according to the agreement in the learning process.
9	Learning method	Lecture, Discussion, Presentation skills and assignment
10	Learning media	Powerpoint & LCD projector, white-board, Zoom Platform, E-learning Airlangga
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	1. Prof. Sukardiman, MSi., Apt. 2. Prof. Dr. Achmad Syahrani, MS., Apt. 3. Dr. Achmad Toto Poernomo, M.Si., Apt.
13	Exams and assessment formats	Take-home assigment
14	Study and examination requirements	The final grade in the module is composed of 25% presentation 65% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Bhatia, S., 2018, Introduction to Pharmaceutical Biotechnology (History, Scope, and development of Biotechnology), Vol.1, IOP Science 2. Glazer, AN, Nikaido H, 2007, Microbial Biotechnology. Fundamental of Microbiology, 2nd Ed, Cambridge University Press 3. P.F. Standbury, A. Whitaker, S.J. Hall, 2007, Principles of Fermentation Technology, 2nd Ed, Butterwoth Heinemann, Elsevier Sciences 4. Barredo, Jose Luis (Ed), 2005, Microbial enzyme and biotransformatrion 5. Pervaiz, S. Ahmad, M. A. Madni, H. Ahmad, and F. H. Khaliq, 2013, Microbial Biotransformasion: a tool for drug designing, Vol. 49, No. 5, pp. 437–450, Pleiades Publishing, Inc.,

		6. Dillip K, Arora, Randy M., Berka, Goutam B. Singh, 2006, Applied Mycology and Biotechnology, Volume 6, Elsevier B.V 7. Basso, A., Serban, S., 2019, Industrial applications of immobilized enzymes, Elsevier 8. Ram Prasad Elisabet Aranda Editors, 2018, Approaches in Bioremediation, Springer 9. Neumann K., Kumar A., Imani J., 2019, Plant and cell tissue cultures, Springer

Course Description of Molecular Pharmacology

1	Course Name	Molecular Pharmacology
2	Code	FAT602
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	After taking this course, students of the Master of Pharmacy Science Study Program are expected to be able to: 1. Explain the basic molecular concepts and mechanism of drug action 2. Describe the activation of signaling pathways by both endogenous and exogenous agonists 3. Predicting the effects of agonists, competitive antagonists and non-competitive antagonists based on signaling pathway activation 4. Applying molecular aspects in assessing dose-effect relationships and estimating drug safety 5. Applying aspects of polymorphism to the effectiveness of agonists and their variations. Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	The Molecular Pharmacology course presents the basic concepts of the molecular mechanisms of drug action; prediction of the effects of agonists, competitive antagonists and non-competitive antagonists; activation of signaling pathways by both endogenous and exogenous agonists (intra and intercellular signal delivery systems, MAPK signaling pathways, Toll-like signaling pathways, Notch signaling pathways, Insulin signaling pathways, Ras signaling pathways, Jak stat signaling pathways, Nfkb signaling pathways) ; molecular aspects in assessing dose-effect relationship and estimation of drug safety (molecular action of antimicrobials (mechanisms of eradication, signaling, effectiveness and resistance), molecular action of PNS and CNS drugs (activation, inhibition and effects), molecular action of drugs for endocrine disorders , drugs for cancer); aspects of polymorphism on the effectiveness of agonists and their variations (polymorphism, genetic influences on metabolism, genetic influences on drug pharmacological effects); Effects of long-term drug use – resistance and tolerance)
8	Soft Skills Attribute	Honesty, discipline, and teamwork
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. apt. Junaidi Khotib, S.Si., M.Kes.,Ph.D apt. Mahardian Rahmadi,S.Si.,MSc.,Ph.D. apt. Chrismawan Ardianto, S.Farm., M.Sc., Ph.D

13	Exams and assessment formats	Mid term exam and final exam
14	Study and examination requirements	the final grade in the module is composed of 45% mid term exam, 45% final exam, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. RA Dixon, Plant Cell Cultures: A Practical Approach, IRL Press: Washington, 1985 2. OL Gamborgs, GC Phillips, Plant Cell, Tissue and Organ Cultures, Springer, 1995.

Course Description of Advanced Biopharmaceutics

1	Course Name	Advanced Biopharmaceutics
2	Code	FAT604
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	After following this lesson, students are able to explain the absorption of conventional drugs and biotarmaceuticals through the gastrointestinal tract and other nutes, the availability of drugs in the systemic circulation and their clinical significance, bioavailability, bioequivalence biosimilarity and the development of drugs based on proteins and endogenous compounds. Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	Advanced Biopharmaceuticals course presents molecular absorption and transport of compounds through cell membranes, bioavailability of drug compounds in systemic situations, drug bioequivalence of biosimilar drugs, development of protein-based drugs and endogenous compounds
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Dr. apt. Budi Suprapti, M.Si. Prof. apt. Junaidi Khotib, S.Si., M.Kes.,Ph.D. Prof. Dra. apt. Esti Hendradi, M.Si., Ph.D.
13	Exams and assessment formats	Mid term exam and final exam
14	Study and examination requirements	the final grade in the module is composed of 45% mid term exam, 45% final exam , 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Shargel L, Wu-Pong S. Yu ABC, 2012, Applied Biopharmaceutics and Pharmacokinetics, 6 edition, Mc Graw Hill Education. 2. Ritschel WA Kearns GL, 2009, Handbook of Basic Pharmacokinetics 6th edition, Washington: American Pharmacists Association. 3. Aldeel A, 2003, Absorption and drug development solubility, permeability and charge state, New Jersey: A John Wiley and Sons. 4. Gibaldi, M, 2005, Biopharmaceutics and clinical Pharmacokinetic, 4" edition, Philadelphia: Lea Febiger.

Course Description of Advanced Pharmacokinetics

1	Course Name	Advanced Pharmacokinetics
2	Code	FAK603
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-5 General Skills: GS1-19 Special skills: SS1-3,7-9, 11, 12 Knowledge: KN1,2
7	Description	The advanced Pharmacokinetics course describes: pharmacokinetic concepts and physiologycal-based modeling (understanding of pharmacokinetics, scope and benefits, pharmacokinetic models, pharmacokinetic predictions based on QSAR); Drug absorption (gastrointestinal physiology, transfer membranes and barriers, absorption processes, absorption and potential estimation models absorption); Drug distribution in the body (transfer access through membranes at the target, distribution and drug-protein binding); Drug metabolism (biotransformation, oxidative metabolism, enzymes and catalytic); Drug elimination (clearance processes and the role of transport proteins, kidney, renal physiology and roles in drug excretion, lipophilicity and reabsorption in the kidney, renal clearance); Multiple dose concept and clinical applications; Relationship of physiological changes to drug kinetics; Pharmacokinetic-based drug development and population
8	Soft Skills Attribute	Accuracy in explaining, Honesty, self-confidence, discipline, respect for others and teamwork, systematic thinking
9	Learning method	Lecture, discussion, homework
10	Learning media	PPT presentation
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	1. Prof. Dr. Suharjono, MS., Apt. (PJMK) 2. Dr. Budi Suprapti, M.Si., Apt.
13	Exams and assessment formats	Take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 30% discussion, 30% presentation, 30% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Shargel L, Wu-Pong S, Yu ABC, 2016. Applied Biopharmaceutics and Pharmacokinetics, 7th edition, McGraw Hill Medical, 2. Tozer TN and Rowland M, 2006. Introduction to Pharmacokinetics and Pharmacodynamics: The Quantitative Basis of Drug Therapy, 1 edition, Lippincott Williams & Wilkins

		3. Burton ME, Shaw LM, Schentag JJ, and Evans WE, 2005.Applied Pharmacokinetics and Pharmacodynamics: Principles of Therapeutic Drug Monitoring Fourth Edition, Lippincott Williams & Wilkins 4. Gabrielsson J and Weiner D, 2007Pharmacokinetic and Pharmacodynamic Data Analysis: Concepts and Applications, Fourth Edition, Swedish Pharmaceutic, 5. Bauer L, Clinical Pharmacokinetics 2005, 1 edition by, McGraw-Hill Medical, 6. John E. Murphy, 2016. Clinical Pharmacokinetics, American Society of Health-System Pharmacists, 7. Robin Southwood, Virginia H. Fleming, Gary Huckaby, 2018. Concepts in Clinical Pharmacokinetics *[7th Edition]*, American Society of Health-System Pharmacists 8. Hartmut Derendorf Ph.D. 2011. Clinical Pharmacokinetics and Pharmacodynamics: Concept and Applications *[4th Ed*]. Wolters Kluwer

Course Description of Drug Development

1	Course Name	Drug Development
2	Code	KIM602
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-5 General Skills: GS1-19 Special skills: SS1-3,7-9, 11, 12 Knowledge: KN1,2
7	Description	New Drug Development Course describes the scope and benefits of new drug development, activities in drug development, development of agonist and antagonist compounds, and rational drug development, steps in new drug development, structural modification in drug development, quantitative relationships structure with activity in drug development, optimization method of parent compound, and relationship of structure, metabolism with drug development.
8	Soft Skills Attribute	Accuracy of analysis, creativity of ideas, presentation skills, communication skills
9	Learning method	Lecture, discussion
10	Learning media	PPT presentation
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	1. Prof. Dr. Siswandono, MS., Apt.(PJMK) 2. Prof. Dr. Bambang Tri Purwanto, MS., Apt. 3. Dr. Tri Widiandani, Sp.FRS
13	Exams and assessment formats	Take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 30% discussion, 30% presentation, 30% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Siswandono, ed., 2016. *Kimia Medisinal I*, Edisi Kedua. Surabaya: Airlangga University Press. 2. Siswandono, *2014*. *Pengembangan Obat Baru*. Surabaya: Airlangga University Press. 3. Stroomgaard, K., Krogsgaard-Larsen, P., Madsen, U., 2017. *Textbook of Drug Design and Discovery*, 5th ed., Boca Raton: CRC Press. 4. Lemke, T.L., Williams, D.A., Roche, V.F. and Zito, S.W. eds., 2013. *Foye's Principles of Medicinal Chemistry*. 7th ed., Baltimore: Lippincott Williams & Wilkins. 5. Klebe, G., 2013. *Drug Design, Methodology, Concepts, and Mode-of-Action*, Heidelberg: Springer-Verlag.

Course Description of Pharmaceutical Services Management

1	Course Name	Pharmaceutical Services Management
2	Code	FAM604
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	1. Students are expected to be able to apply theories about understanding the development of the health system, its background, concepts and issues; and how pharmaceuticals fit into and function within these systems, and in research as they relate to health care systems. 2. After attending this course, students are expected to be able to: a. Explain, evaluate and develop patient treatment service management plans in community, inpatient, and long-term care settings, Explaining strategic management and pharmaceutical service change innovations as well as formulating pharmaceutical service development innovation plans Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	This course is delivered face-to-face in class, combined with literature studies and project-based learning methods that utilize e-learning facilities. Lecture material on pharmaceutical care as a philosophy of practice and pharmaceutical strategic management is presented as an introduction before students conduct a literature study on articles accessed through relevant databases in order to devise treatment service management designs in various service settings as well as design innovative pharmaceutical service development following the dynamics of community needs.
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. Dr. Umi Athiyah, MS, Apt. Dr. Wahyu Utami, MS, Apt. Hanni Prihhastuti Puspitasari, SSi, MPhil, PhD, Apt.
13	Exams and assessment formats	Final exam (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 50% performance on final exams and 50% take-home assignments. Students must have a final grade of 70% or higher to pass

15	Primary Reference	1. Stone P, Curtis SJ, 2002, Pharmacy practice 3rd ed, London: Pharmaceutical Press. 2. Gennaro AR, 2005, Remington's the science and practice of pharmacy 21st ed, Philadelphia: Lippincott Williams & Wilkins. 3. Whalley BJ, Fletcher RE, Weston SE, Howard RL, Rawlinson CF, 2008, Foundation in pharmacy practice, London: Pharmaceutical Press. 4. Cipolle RJ, Strand L, Morley P, 2012, Pharmaceutical care practice: the patient centered approach to medication management 3rd ed, New York: McGraw Hill Companies, Inc. 5. Roberts A, Benrimoj C, Dunphy D, Palmer I, 2007, Community pharmacy strategic change management, Sydney: McGraw Hill Companies, Inc.

Course Description of Pharmaceutical Marketing & Consumer Behaviour

1	Course Name	Pharmaceutical Marketing & Consumer Behaviour
2	Code	MNP608
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	After taking this course, students are able to analyze the application of marketing science and entrepreneurial marketing in various fields of pharmaceuticals both products and services taking into account consumer behavior, are able to adapt to pharmaceutical marketing developments in the 4.0 era and are able to conduct pharmaceutical research Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	The material for this course will be delivered face-to-face in the form of lectures, discussions, and assignment presentations. The material discussed includes the Marketing Concept and Its Development, the Marketing Concept of Pharmaceutical Products, the Marketing Concept of Pharmaceutical Services, the Price Concept in pharmaceutical services, Consumer Behavior, Professional Pharmaceutical Services in Pharmaceutical Practice, Marketing in the E-Commerce Era, Pharmaceutical Marketing Research and Entrepreneurial Marketing
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	1. Prof. Dr. Umi Athiyah, M.S., Apt 2. Dr. Liza Pristianty, MSi.,MM.,Apt 3. Dr. Yunita Nita, S.Si.,M.Pharm.Klin, Apt. 4. Andi Hermansyah,S.Farm.,M.Sc.,Ph.D.,Apt.
13	Exams and assessment formats	Final exam (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 50% performance on final exams and 50% take-home assignments. Students must have a final grade of 70% or higher to pass

15	Primary Reference	1. David A. 2003. Holford Marketing For Pharmacists.. American Pharmaceutical Association 2. Pharmaceutical Care Practice, The Clinician's Guide . 2007. Cipole R.J., Strand L.M., Morley P.C.,Second Edition, Mc Graw-Hill, Health Professions Devision, New York, 3. Suyoto D. 2012. Konsep Dasar Riset Pemasaran dan Prilaku Konsumen. 4. Entrepreneural Marketing. 2017. Hermawan Kertajaya , Jacky Mussry. Gramedia Pustaka Utama 5. Altman, S., Valenzi, E. and Hodgetts, R.M., 2013. Organizational behavior: Theory and practice. Elsevier. 6. Borkowski, N., 2016. Organizational behavior in health care. Jones & Bartlett Publishers. 7. Wagner III, J.A. and Hollenbeck, J.R., 2014. Organizational behavior: Securing competitive advantage. Routledge

Course Description of Pharmaceutical Logistics Management

1	Course Name	Pharmaceutical Logistics Management
2	Code	FAM604
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Students are able to think and apply a logistics management approach in a systematic, objective and comprehensive manner. Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	This course will be delivered by lecture method, literature review, case discussion and presentation of case analysis results. The material discussed includes the basic concepts of logistics management, management systems, theoretical concepts and logistics practices, logistics management processes to logistics classification and evaluation systems.
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Dr. apt. Abdul Rahem, M.Kes. (PJMK) Prof. Dr. apt. Umi Athiyah, MS. Dr. apt. Wahyu Utami, MS. Dr. apt. Liza Pristianty, M.Si., MM. Dr. apt. Yunita Nita, S.Si., M.Pharm.
13	Exams and assessment formats	Final exam (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 50% performance on final exams and 50% take-home assignments. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Jonathan D. Quick, 2012, Managing Access to Medicines and Health Technologies, Management Sciences for Health 2. Lilian M Azzopardi, 2010, Lecture Notes in Pharmacy Practice, Pharmaceutical Press 2010 3. World Health Organization, 2004, Management of Drugs at Health Centre Level, Brazzaville 4. Andrew M. Peterson, 2005, Managing Pharmacy Practice“ Principles, Strategies, and Systems”, CRC Press Pharmacy Education Series 5. Shane P. Desselle , David P. Zgarrick, 2009, Pharmacy Management Essentials for All Practice Settings 6. UNHCR, 2006, Drug Management Manual, “Policies, Guidelines, UNHCR Essential Drugs List.

Course Description of Pharmacy Law and Ethics

1	Course Name	Pharmacy Law and Ethics
2	Code	HDK607
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	After attending this course students are expected to be able to: 1. Explain health and pharmaceutical legal theories and concepts 2. Explain the ethical principles and professional behavior of health workers 3. Analyze and evaluate cases related to pharmaceutical and health law and ethics 4. Develop a problem-solving plan related to legal and ethical problems in pharmacy and health Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	This course is delivered face-to-face in class, combined with a review of literature and cases as well as learning methods based on the active role of students.
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. Dr. apt. Umi Athiyah, MS. (PJMK) Dr. apt. Abdul Rahem, M.Kes. Dr. Lilik Pudjiastuti, SH., MH. apt. Andi Hermansyah, S.Farm., M.Sc., Ph.D. Dr. Faiq Bahfen, S.H.
13	Exams and assessment formats	Final exam (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 50% performance on final exams and 50% take-home assignments. Students must have a final grade of 70% or higher to pass

15	Primary Reference	1. WHO Health law and ethics 2. Perangkat peraturan, perundangan dan kebijakan kesehatan dan kefarmasian di Indonesia 3. Perangkat peraturan dan perundangan untuk peredaran produk Farmasi dan kesehatan 4. Australian pharmacy law and practice 5. Dale and applebe's pharmacy law and ethics 6. Law and ethics in pharmacy practice 7. Journal of law, medicine and ethics 8. The international journal of risk and safety in medicine 9. Koleksi kasus hukum dan etik farmasi

Course Description of Pharmacoepidemiology

1	Course Name	Pharmacoepidemiology
2	Code	FAM606
3	2 (6ECTS)	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Students are expected to be able to apply theories regarding pharmacoepidemiology, background, concepts and issues; as well as how it is applied, and in research related to the implementation of pharmacoepidemiology. Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	This course will be delivered by lecture method, literature review, case discussion and presentation of case analysis results. The material discussed includes pharmacoepidemiological concepts and theories, principles of pharmacoepidemiological studies, advantages and disadvantages of pharmacoepidemiological studies, data sources and data extraction, measurement of therapy and outcomes as well as types of research on pharmacoepidemiology.
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	apt. Elida Zairina, S.Si., MPH., Ph.D.(PJMK) Prof. Dr. apt. Umi Athiyah, MS. Dr. apt. Abdul Rahem, M.Kes. Dr. apt. Yunita Nita, S.Si., M.Pharm.
13	Exams and assessment formats	Final exam (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 25% performance on final exams, 65% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass

15	Primary Reference	1. Textbook of Pharmacoepidemiology, 5th Edition. Editors: ISBN-13: 978-0-470-65475-0. 2. Etminan M, Gill S, FitzGerald M, Samii A. Challenges and opportunities for pharmacoepidimiology in drug therapy decision making. J Clin Pharmacol. 2006; 46(1):6-9. 3. Garrison Jr. LP,Neumann PJ,Erickson P et al. Using real-world data for coverage and payment decisions: The ISPOR Real-World Data Task Force Report. Value in Health. 2007;10(5):326-335. 4. Wettermark B. The intriguing future of pharmacoepidemiology. Eur J Clin Pharmacol. 2013;69 (Suppl 1):S43–S51. 5. Etminan M & Samii A. Pharmacoepidemiology I: A review of pharmacoepidemologic study designs. Pharmacotherapy 2004;24:964. 6. Etminan M. Pharmacoepidemiology II: the nested case-control study-a novel approach in pharmacoepidemiologic research. Pharmacotherapy 2004;1105-1109. 7. Johnsen SP. Risk of hospitalization for myocardial infarction among users of rofecoxib, celecoxib and other NSAIDs. Arch Intern Med 2005;165;978-984. 8. Block GA. Cinacalcet hydrochloride treatment significantly improves all-cause and cardiovascular survival in a large cohort of hemodialysis patients. Kidney International 2010;78:578-89. 9. Delgado-Rodrıguez M and Llorca J. Bias. J Epidemiol Community Health 2004;58:635–641 10. Clark TG, Bradburn MJ, Love SB, Altman DG. Survival analysis part I: basic concepts and first analyses. Br J Cancer. 2003 Jul 21;89(2):232-8 11. Bradburn MJ, Clark TG, Love SB, Altman DG. Survival analysis part II: multivariate data analysis--an introduction to concepts and methods. Br J Cancer. 2003 Aug 4;89(3):431-6 12. Quartey G et al. Opportunities for minimization of confounding in observational research. 13. Pharm Stat. 2011; 10(6):539-547 14. Schneeweiss S. Sensitivity analysis and external adjustment for unmeasured confounders in epidemiologic database studies of therapeutics. Pharmacoepidemiol Drug Saf. 2006; 15: 15. 291-303 16. Ray WA. Evaluating medication effects outside of clinical trials: New-user designs. Am J Epidemiol. 2003;158:915–920. 17. Stürmer T et al. Adjustments for unmeasured confounders in pharmacoepidemiologic database studies using external information. Med Care. 2007 Oct;45(10 Supl 2):S158-65. 18. Glynn RJ et al. Indications for propensity scores and review of their use in pharmacoepidemiology. Basic

Course Description of Skin & Cosmetics

1	Course Name	Skin & Cosmetics
2	Code	FAF642
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	At the end of the course, students are expected to be able to a) explain the anatomy and physiology of the skin as well as skin problems and disorders, especially those that can be treated with cosmetics; b) Differences in drugs, cosmetics, and cosmeseutics c) Leather quality Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	This course discusses a) anatomy and physiology/function of the skin; b) Skin disorders/problems and their relation to cosmetics, c) Similarities and differences between drugs, cosmetics and cosmetics, d) Skin quality and its indicators, e) Types of cosmetics
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. Dr. Widji Soeratri, DEA, Apt. Dipl. Cosm. Sci Prof. Dr. Cita Rosita, Sp KK (K) Dr. Tristiana Erawati M., M.Si., Apt. Dr. Noorma Rosita, M.Si., Apt..
13	Exams and assessment formats	Final exam (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 40% performance on final exams, 25% presentations, 25 take-home assignments, and 10% softskills. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Farmakope Indonesia Ed. V 2. United States Pharmacopoea 3. British Pharmacopoea 4. Physical Pharmacy 5. Pharmaceuties The Science of Dosage Form Design 6. The Theory and Practice of Industrial Pharmacy 7. Pharmaceutical Dosage Forms: Disperse Systems 8. Megaw J.M., Drake L.A., 1986, Photobiology an overview dalam Jackson E.M. (ed), *Photobiology of the Skin and Eye*, Marcel Dekker Inc., NY-Basel:1-31 9. Bose S.K., Ortonne J.P., 1994, Pigmentatio : Dyschromia dalam Baran R., Maibach H.I., (eds), Cosmetic Dermatology, Martin

		Dunitz, London : 277-285 10. Mosher D.B., 1993, Disorder of Melanocytes dalam Ftzpatricks T.B., Eisen A.Z., et. Al. (eds), *Dermatology in General Medicine*, 4th ed., Mc Graw Hill, NY: 967-971 11. Castanet J., Orthone J.P., 1995, Melasma : New Approached to Treatment, Martin Dunitz, London : 1-5

Course Description of Cosmetics Formulation

1	Course Name	Cosmetics Formulation
2	Code	FAF607
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	
6	Expected Learning Outcomes	Attitude:AT1-5 General Skills: - Special skills: SS4 Knowledge: KN3
7	Description	This lecture describes: a) Principles of cosmetic preparations, b) The purpose of cosmetic use, c) Formulation of cosmetics including the use of polymers, surfactants, preservatives), d) Manufacturing of cosmetic preparations including the selection of tools, designing the manufacturing process, scaling-up production
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and teamwork
9	Learning method	Lecture, discussion, presentation
10	Learning media	PPT presentation, LCD, whiteboard, Zoom Platform
11	Grading criteria	Written exams (40%), Assignment (25%), Presentation (25%), Soft skills (10%) Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, not passed)
12	Lecturer	1. Prof. Dr. Widji Soeratri, DEA., Apt. (PJMK) 2. Dr. Tristiana Erawati M., M.Si., Apt. 3. Dr. Noorma Rosita, M.Si.,Apt.
13	Exams and assessment formats	Final exam (100 minutes), Presentations (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 40% performance on final exams, 25% presentations, 25% take-home assignments, and 10 % in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Balsam, Sagarin, 1972, Cosmetics Science and Technology, Willey Interscience, New York. 2. Barry, Brian W. 1983. Dermatological Formulations. New York: Marcel dekker, Inc. 3. Breuer, M.M., 1980, Cosmetic Science, Vol 2, Academic Press, London. 4. Magdassi S., Touitou E., 1999. Novel Cosmetic Delivery System, Marcel Dekker Inc, New York.p 1-331. 5. Mitsui, Takeo. 1993. New Cosmetic Science. The Netherlands: Elsevier Science B.V. 6. Wilkinson J.B., Moore R.J., 1982, Harry's Cosmetology 7th Ed, Chemical Publishing Company Inc., New York Wade Ainley, 1980. Pharmaceutical Handbook 19" Ed.The Pharmaceutical Press. London.

Course Description of Cosmetics Safety

1	Course Name	Cosmetics Safety
2	Code	FAF630
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	After participating in this study with a load of 2 credits, at the end of the course, students are expected to be able to design a safety test for cosmetic preparations Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	This Cosmetics Safety course presents material covering aspects that cause cosmetic insecurity and its mechanisms, as well as various cosmetic safety tests
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. Dr. Widji Soeratri, DEA, Apt. (PJMA) Dr. Tristiana Erawati M., M.Si., Apt. Dr. Noorma Rosita, M.Si., Apt. Prof. Dr. Cita Rosita Sigit Prakoeswa dr.,Sp.KK(K),FINSDV
13	Exams and assessment formats	Final exam (100 minutes), Presentations (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 40% performance on final exams, 50% presentations and take-home assignments, and 10 % in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Farmakope Indonesia Ed. V 2. United States Pharmacopoea 3. British Pharmacopoea 4. Physical Pharmacy 5. Pharmaceuties The Science of Dosage Form Design 6. The Theory and Practice of Industrial Pharmacy 7. Pharmaceutical Dosage Forms: Disperse Systems

Course Description of Evaluation & Regulation of Cosmetics

1	Course Name	Evaluation & Regulation of Cosmetics
2	Code	FAF640
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	After participating in this study with a load of 2 credits, at the end of the course, students are expected to be able to design a safety test for cosmetic preparations Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	This Cosmetics Safety course presents material covering aspects that cause cosmetic insecurity and its mechanisms, as well as various cosmetic safety tests
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. Dr. Widji Soeratri, DEA, Apt. Dra. Tristiana Erawati, MSi, Apt. Dra. Noorma Rosita, Msi, Apt.
13	Exams and assessment formats	Final exam (100 minutes), Presentations (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 40% performance on final exams, 50% presentations and take-home assignments, and 10 % in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Sarah Adier et a 2011 Alternative (non anımali methods for cosmetics testing current status and future prospects, Arch Toxicology, 2. 85. 387-485 3. The SCCS's Notes of Guidance for the testing of cosmetic substance opinion at its 17m plenary meeting of 11 December 2012 4. ASEAN Guidelines for safety evaluation of cosmetic products, Vol and their safety evaluation Sth Revision. The SCCS adopted this 5. Cosmetics Europe Guidelines for the evaluation of the efficacy of cosmetics products. 2008

Course Description of Cosmetics Labelling and Packaging

1	Course Name	Cosmetics Labelling and Packaging
2	Code	FAF643
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Students are able to plan the packaging and labeling of various types of cosmetic preparations appropriately, and in accordance with regulations. Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	This lesson discusses a) the purpose of packaging cosmetic preparations, b) principles of packaging, c) types of materials and forms of packaging, d) purposes and principles of marking, e) forms of marking, f) marking requirements related to regulations
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Prof. Dr. Widji Soeratri, DEA, Apt. Dra. Tristiana Erawati, MSi, Apt. Dra. Noorma Rosita, Msi, Apt.
13	Exams and assessment formats	Final exam (100 minutes), Presentations (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 40% performance on final exams, 25% presentations, 25% take-home assignments, and 10 % in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Peraturan Kepala BPOM Nomor HK.03.1.23.12.10.12459 Tahun 2010 tentang Persyaratan Teknis Kosmetika 2. Peraturan Kepala BPOM Nomor HK.03.1.23.12.11.10051 Tahun 2011 3. Peraturan Kepala BPOM RI Nomor HK.00.05.1.42.4974 Tahun 2008 tentang Pengawasan Pemasukan Bahan Kosmetik 4. Keputusan Menteri Kesehatan Republik Indonesia Nomor 386/Men.Kes/SK/IV/1994 Tentang Pedoman Periklanan: Obat Bebas, Obat Tradisional, Alat Kesehatan, Kosmetika, Perbekalan Kesehatan Rumah Tangga Dan Makanan-Minuman 5. The Theory and Practice of Industrial Pharmacy 6. Magdassi S., Touitou E., 1999. Novel Cosmetic Delivery System, Marcel Dekker Inc, New York.p 1-331. 7. Mitsui, Takeo. 1993. New Cosmetic Science. The Netherlands: Elsevier Science B.V.

Course Description of Advanced Biochemistry

1	Course Name	Advanced Biochemistry
2	Code	FAF643
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	After attending the lecture, students are expected to be able to apply the theories of Biochemistry on chemical aspects, functions and metabolism of biomolecules, especially those related to the place and mechanism of action of drugs, in research related to drug development in particular, as well as in the field of medicine and health in general Attitude:AT1-2 General Skills: GS1-4 Special skills: 1-6 Knowledge: KN1-3
7	Description	The Advanced Biochemistry course presents and discusses more about the chemical aspects, functions, and metabolism of the main biomolecules, which include: - the important role of intermolecular interactions in biochemical processes - biomolecules belonging to the protein group (secondary and tertiary structure of proteins, conformation and protein folding, enzymes, hemoglobin, complementary protein–ligand interactions; carbohydrate group (sugar derivatives, heteroglycans, proteoglycans, glycolipids, glucuronic acid function); lipids group (fatty acids essential, cholesterol and other sterols, glycolipids, phospholipids, eicosanoids) nucleic acid and nucleotide groups - Biological membranes and transport (ion channels, ion pumps, transmembrane receptors), membrane proteins as transporters - Biosignaling, including: signal transduction; GPCRs and second messengers; receptor tyrosine kinase, cell cycle regulation; oncogenes, tumor suppressor genes, and apoptosis. techniques in protein biochemistry: enzyme assay, electrophoresis, protein purification, chromatography, ELISA.
8	Soft Skills Attribute	Honesty, confidence, discipline, respect for others and cooperation
9	Learning method	Lecture, Discusson, and Presentation
10	Learning media	Power Point, LCD Projectors and Whiteboard
11	Grading criteria	Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, Failed)
12	Lecturer	Dr. apt. Nuzul Wahyuning Diyah, M.Si. (PJMK) Prof. Dr. apt. Purwanto Prof. Dr. apt. Juni Ekowati, M.Si. Dr. apt. Riesta Primaharinastiti, S.Si., M.Si.

13	Exams and assessment formats	Take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 30% discussion, 30% presentation, 30% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Murray, R.K., et al., 2009. Harper's Illustrated Biochemistry. 28th ed. China:The McGraw-Hill Co. 2. Nelson, D.L. and Fox, M.M., 2005. Lehninger Principles of Biochemistry. 4th ed, New York: WH Freeman and Co. 3. Berg, J.M., Tymoczko, J.L. and Stryer, L., 2006. Biochemistry. 6th ed. New York: WH Freeman and Co. 4. Wenk, M.R. and Fernandis, A.Z., 2006. A Manual for Biochemistry Protocols. New Jersey: World Scientific. Laberge, M., 2008. Biochemistry. New York: Chelsea House Publ.

Course Description of Advanced Physical Pharmacy

1	Course Name	Advanced Physical Pharmacy
2	Code	FAF601
3	Credits	2 (6ECTS)
4	Semester	1
5	Prerequisite	-
6	Expected Learning Outcomes	Attitude:AT1-5 General Skills: GS2,4,5,7,8 Special skills: SS1-4,7-9 Knowledge: KN1-3
7	Description	This course presents topics about the characterization of solids, strategies to increase solubility, particle size analysis, diffusion and dissolution systems, stability and kinetics of active pharmaceutical ingredients, flow and rheological properties, and the concept of dispersion systems.
8	Soft Skills Attribute	Ability to search, summarize, and present scientific papers by journal citations, ability to present the paper, disciplines
9	Learning method	Lecture, discussion
10	Learning media	Ability to search, summarize, and present scientific papers by journal citations, ability to present the paper, disciplines
11	Grading criteria	Assigment and presentation Grading system for learning outcome assessment: Score: 86 to 100 (Grade: A, Point: 4.0) Score: 78 to <86 (Grade: AB, Point: 3.5) Score: 70 to <78 (Grade: B, Point: 3.0) Score: 62 to <70 (Grade: BC, Point: 2.5) Score: 54 to <62 (Grade: C, Point: 2.0) Score: 40 to <54 (Grade: D, Point: 1.0) Score: <40 (Grade: E, Point: 0.0, not passed)
12	Lecturer	1. Dra.Esti Hendradi MSi., Ph.D., Apt. 2. Dr. Dewi Isadiartuti, M.Si., Apt. 3. Dr. Noorma Rosita, M.Si., Apt. 4. Prof. Dr. Dwi Setyawan, S.Si., M.Si., Apt.
13	Exams and assessment formats	Final exam (100 minutes), Presentation (100 minutes), take-home written assignments
14	Study and examination requirements	the final grade in the module is composed of 40% performance on final exams, 50% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass
15	Primary Reference	1. Martin A.N., et al., 1993, Physical Pharmacy 4th Ed, Lea & Febiger, Philadelphia. 2. Florence A.T., and Attwood D., 1987, Physicocemical Principles of Pharmacy, 2nd Ed, Mac Millan Education, London. 3. Sjoblom, J., 2006. Emulsions and Emulsions Stability, 2nd Ed, CRC Taylor & Francis, New York. 4. Advanced Pharmaceutics, Physicochemical Principles, CRC Press, New York