MODULE DESCRIPTION

Master Program in Clinical Pharmacy

Faculty of Pharmacy
Universitas Padjadjaran
2020

FOREWORD

Praise our gratitude to God Almighty for His mercy and approval in compiling the Curriculum and Module Description Master Program in Clinical Pharmacy at the Faculty of Pharmacy, Universitas Padjadjaran. This book was prepared to be a reference in the implementation of the Master Program in Clinical Pharmacy.

This book contains a variety of information about Faculty of Pharmacy which is presented systematically starting from an introduction covering the history of the establishment of Faculty of Pharmacy, vision, mission, educational objectives and graduate competencies; curriculum and study load; curriculum content;learning strategies;evaluation system and student affairs. This book is expected to improve the education management system, as well as material in developing education programs at Faculty of Pharmacy Universitas Padjadjaran.

Thank you.

Jatinangor, July 2020

Dean of the Faculty of Pharmacy

Prof. Dr. Ajeng Diantini, M.Sc., Apt.

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CHAPTER 1
INTRODUCTION

VISIONS, MISSIONS, PROFILE, AND LEARNING ACHIEVEMENT

The development of pharmaceutical care is needed and has been very fast to improve the quality of pharmacy service in healthcare facilities. The main purpose was to achieve better pharmacy service, improve efficacy of therapy, health outcome, and increase quality of life of patients. Fundamental pharmacy services are core for good pharmacy service, such as drug order fulfillment, patient education, drug information, and public health–related services. In order to increase the health outcome clinical pharmacy services are required. Clinical Pharmacy plays a critical role in medication safety and management of therapy as well as the value of pharmacist-physician collaboration in patient care. Interventions of pharmacists were shown to help optimize processes of care by improving the quality of the medication use process and disease management through effective interactions with both patients and other health professionals.

Clinical pharmacists should be able to accurately assess patients, evaluate drug therapy, develop and initiate a therapeutic plan, and follow up on and monitor the outcomes of the plan. Clinical pharmacists should also have the experience and skills necessary to educate patients, families, and caregivers from diverse socioeco- nomic and cultural backgrounds. Other skills should also be able to collaborate confidently as members of interprofessional health care teams and apply knowledge of the roles and responsibilities of other team members to accomplish individualized, patient-centered care. Therefore, it is important to do clinical pharmacy services in health care facilities and demand for clinical pharmacists are increasing.

The Faculty of Pharmacy, previously having the status as the Department of Pharmacy, was established on February 19, 1959, as the fifth of the seven departments belonged to the Faculty of Exact and Natural Sciences (FIPPA), Universitas Padjadjaran. At that time, academic activities of the Department of Pharmacy took place at Jl. Ir. H. Juanda No. 4 Bandung and the Institute of Natural Sciences (LIPA) at Jl. Singaperbangsa No. 1 Bandung. In 1978, the location moved to Jl. Maulana Yusuf No. 12 Bandung, which was previously occupied by the Faculty of Dentistry. After the new campus of the Faculty of Mathematics and Natural Sciences (FMIPA) in Jatinangor-Sumedang was completed, the Department of Pharmacy, together with other departments at FMIPA, moved to the campus in Jatinangor in September 1986. On October 17, 2006, the Department of Pharmacy changed its status to become the Faculty of Pharmacy. The Master Program in Clinical Pharmacy is one of the study program in the Faculty of Pharmacy. The Master Program in Clinical Pharmacy was started in the semester period of August - February in Academic Year 2016/2017 and obtained an A accreditation from LAM-PTKes in November 2017.

1.1 Vision

The vision of the Master Program in Clinical Pharmacy is to become an excellent Master Program in Pharmacy in Research and International Competitive by 2024.

1.2 Mission

The mission of the Master Program in Clinical Pharmacy of the Faculty of Pharmacy is:

1. Organizing research-based master of clinical pharmacy education which is relevant to the development of science and technology and meets the demands of the community.
2. Organizing the management of the Master of Clinical Pharmacy Study Program which are professional, accountable and regionally competitive.
3. Carrying out research which oriented towards scientific publications, innovative products and superior policies in the clinical pharmacy field.
4. Carrying out services / community services by utilizing the results of research in the clinical pharmacy field.
5. Organizing cooperation in the clinical pharmacy sector through the pentahelix concept.

1.3 Profile of Master in Clinical Pharmacy

The profiles of graduates of master program in clinical pharmacy are based on the Nine Star Pharmacist including pharmacist as (1) caregiver, (2) teacher/educator, (3) scientific comprehension & research abilities, (4) lifelong learner, (5) leader, (6) decision maker, (7) manager, (8) communicator, (9) teamwork abilities, (10) personal/professional responsibilities with different level of knowledge students should understand according to Frameworks of Indonesian Qualifications Framework (KKNI) compared to bachelor and professional pharmacy.

1. Caregiver

   Caregiver means graduates have comprehensive knowledge and expertise in excellent clinical pharmacy service both promotive, preventive, and curative in order to achieve the best health outcome. This clinical pharmacy service includes monitoring and follow-up of patients in collaboration with other health professionals and in an continued, integrated, complementary and sustainable manner.

2. Teacher/educator

   Teacher or educator means graduates have the ability to teach and educate patients, community and other health professionals regarding clinical pharmacy care and knowledge.

3. Scientific comprehension & research abilities

   Scientific comprehension & research abilities means graduates have the ability to think innovatively in terms of science, technology, superior policy and the latest information in the field of clinical pharmacy, and also have orientation towards scientific publications.

4. Lifelong learner

   Lifelong learner means graduates able to carry out lifelong learning, improve their knowledge and expertise in the field of clinical pharmacy based on research (Transformative Learning) in order to solve problems and serve the community.

5. Leader

   Leader means graduates able to make decisions in the context of solving problems of developing science, knowledge and technology, especially in the field of clinical pharmacy, based on analytical or experimental studies of information and data.

6. Decision maker

   Decision maker means a graduate able to determine steps of therapeutic management in diseases, responsible and accountable for optimizing medication-related outcomes without ignoring the risks that might occur. Decisions taken must be considered wisely in all situations, both planned situations and emergencies.

7. Manager

   Manager means graduates have a role in managing and governance to solve problems in the field of clinical pharmacy in collaboration with other health professionals, as well as able to take initiatives and policies in the clinical pharmacy field or community.

8. Communicator

   Able to compile and communicate ideas, results of thought and scientific arguments responsibly based on academic ethics and scientific evidence to solve therapeutic problems, directly or through the media to the academic community and the wider community.

9. Teamwork abilities

   Teamwork abilities means graduates are able to cooperate in teamwork, communicate ideas, and solve health problems in collaboration with other health professionals to achieve better health outcomes.

10. Personal/professional responsibilities

    Personal or professional responsibilities means graduates are able to act professionally as a clinical pharmacist, commitment to serve patients, pursue optimal health outcomes, and act according to the highest moral, ethics, and legal conduct.

1.4 Learning Outcome and Specific Learning Outcome

Learning achievements of Master Program in Clinical Pharmacy were based on Vision, Mission and Profiles of graduates, and also qualification level of Indonesian Qualifications Framework (KKNI), National Standard for Higher Education (SNPT), and the Indonesian Standard of Apothecary competences (SKAI).

After completing the Master Program in Clinical Pharmacy Universitas Padjadjaran, graduates will be able to:

A. Clinical Pharmacy Concentration

1. Able to develop logical, critical, systematic, and creative thinking in pharmaceutical science and technology through scientific research and compile scientific conceptions from the results of studies based on scientific principles, procedures and ethics in the form of theses that are disseminated in scientific meetings, both national and international and / or published at least in an accredited national journal or international journal (**Scientific comprehension & research abilities, Lifelong learner profile**).
   1.1 Able to develop pharmaceutical care plan to increase patient's quality of life, write and discuss research proposal according to standard rules of scientific paper;
   1.2 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, pediatric and medical intensive care unit.

2. Able to conduct academic studies or studies according to their field of expertise in the field of clinical pharmacy in solving problems in the relevant community or industry through developing their knowledge and expertise, especially in the field of clinical pharmacy (**Lifelong learner profile**).
   2.1 Able to develop pharmaceutical care plan to increase patient's quality of life, write and discuss research proposal according to standard rules of scientific paper;
   2.2 Able to be in a team with other professional health in patient care to give professional participation and contribute to achieve patient's quality of life;
   2.3 Able to identify drug related problems and provide the professional solutions;
   2.4 Able to do therapeutic drug monitoring effectively and efficiently due to drug usage optimalization;
   2.5 Able to calculate and adjustment of drug dosing;
   2.6 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, pediatric and medical intensive care unit.

3. Able to compile and communicate ideas, results of thought and scientific arguments responsibly and based on academic ethics through the media to the academic community and the wider community (**Communicator, Teacher/Educator, and Personal/professional responsibilities profile**).
   3.1 Able to do drug information services to patients, other health professionals, family, and caregivers with up dated and objective information, individually or in a drug information services unit;
   3.2 Able to calculate and adjustment of drug dosing.

4. Able to identify scientific fields that are the object of research and position them into a research map developed through an interdisciplinary or multidisciplinary approach, especially in clinical pharmacy (**Scientific comprehension & research abilities profile**).
   4.1 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, pediatric and medical intensive care unit;
   4.2 Able to do therapeutic drug monitoring effectively and efficiently due to drug usage optimalization.

5. Able to make decisions in the context of solving problems of developing science, knowledge and technology, especially in the field of clinical pharmacy, based on analytical or experimental studies of information and data (**Caregiver, Leader, Decision maker and Personal/professional responsibilities profile**).
   5.1 Able to develop pharmaceutical care plan to increase patient's quality of life;
   5.2 Able to identify drug related problems and provide the professional solutions;
   5.3 Able to calculate nutritional needs and aseptic drug preparation;
   5.4 Able to manage incidence of poisoning or clinical toxicology;
   5.5 Able to calculate and adjustment of drug dosing;
   5.6 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, pediatric and medical intensive care unit.

6. Able to manage, develop and maintain a network of colleagues, colleagues within institutions and the broader research community (**Manager and Teamwork abilities profile**).
   6.1 Able to be in a team with other professional health in patient care to give professional participation and contribution to achieve patient's quality of life.

7. Able to increase the capacity of learning independently, especially in the field of clinical pharmacy (**Lifelong learner profile)**.
   7.1 Able to do therapeutic drug monitoring effectively and efficiently due to drug usage optimalization;
   7.2 Able to calculate nutritional needs and aseptic drug preparation;
   7.3 Able to manage incidence of poisoning or clinical toxicology;
   7.4 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, pediatric and medical intensive care unit.

8. Able to document, store, secure, and rediscover research data in order to ensure validity and prevent plagiarism (**Manager profile**).
   8.1 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, pediatric and medical intensive care unit;
   8.2 Able to be in a team with other professional health in patient care to give professional participation and contribution to achieve patient's quality of life.

B. Clinical Biochemistry Concentration

1. Able to develop logical, critical, systematic, and creative thinking in pharmaceutical science and technology through scientific research and compile scientific conceptions from the results of studies based on scientific principles, procedures and ethics in the form of theses that are disseminated in scientific meetings, both national and international and / or published at least in an accredited national journal or international journal (**Scientific comprehension & research abilities, Lifelong learner profile**).
   1.1 Able to develop pharmaceutical care plan to increase patient's quality of life, write and discuss research proposal according to standard rules of scientific paper;
   1.2 Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories
   1.3 Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories
   1.4 Able to explain mechanism of disease based on molecular biology and genetics knowledge
   1.5 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrin, carviovascular, kidney and vacsular, oncology, infection, respratory, immunology, pediatric and medical intensive care unit

2. Able to conduct academic studies or studies according to their field of expertise in the field of clinical biochemistry in solving problems in the relevant community or industry through developing their knowledge and expertise (**Lifelong learner profile**).
   2.1 Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories
   2.2 Able to explain mechanism of disease based on molecular biology and genetics knowledge
   2.3 Able to identify drug related problems and provide the professional solutions
   2.4 Able to do therapeutic drug monitoring effectively and efficiently due to drug usage optimalization

2.5 Able to calculate and adjustment of drug dosing
2.6 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrin, carviovascular, kidney and vacsular, oncology, infection, respratory, immunology, pediatric and medical intensive care unit
2.7 Able to be in a team with other professional health in patient care to give professional participation and contributeion to achieve patient's quality of life

3. Able to compile and communicate ideas, results of thought and scientific arguments responsibly and based on academic ethics through the media to the academic community and the wider community. (**Communicator, Teacher/Educator, and Personal/professional responsibilities profile**).
   3.1 Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories
   3.2 Able to explain mechanism of disease based on molecular biology and genetics knowledge
   3.3 Able to apply knowledge in in vitro diagnostic industry
   3.4 Able to do drug information services to patients, other health professionals, family, and caregivers with up dated and objective information, individually or in a drug information services unit
   3.5 Able to calculate and adjustment of drug dosing

4. Able to identify scientific fields that are the object of research and position them into a research map developed through an interdisciplinary or multidisciplinary approach, especially in clinical biochemistry. (**Scientific comprehension & research abilities profile**).
   4.1 Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories
   4.2 Able to explain mechanism of disease based on molecular biology and genetics knowledge
   4.3 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrin, carviovascular, kidney and vacsular, oncology, infection, respratory, immunology, pediatric and medical intensive care unit

5. Able to make decisions in the context of solving problems of developing science, knowledge and technology, especially in the field of clinical biochemistry, based on analytical or experimental studies of information and data. (**Caregiver, Leader, Decision maker and Personal/professional responsibilities profile**).

5.1 Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories
5.2 Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories
5.3 Able to apply technology knowledge and laboratory information system in clinical laboratories
5.4 Able to apply knowledge in in vitro diagnostic industry
5.5 Able to develop pharmaceutical care plan to increase patient's quality of life
5.6. Able to identify drug related problems and provide the professional solutions
5.7. Able to calculate nutritional needs and aseptic drug preparation
5.8. Able to manage incidence of poisoning or clinical toxicology
5.9. Able to calculate and adjustment of drug dosing
5.10 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, pediatric and medical intensive care unit

6. Able to manage, develop and maintain a network of colleagues, colleagues within institutions and the broader research community (**Manager and Teamwork abilities profile**).
6.1 Able to develop pharmaceutical care plan to increase patient's quality of life
6.2 Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories
6.3 Able to apply knowledge in in vitro diagnostic industry
6.4 Able to be in a team with other professional health in patient care to give professional participation and contribution to achieve patient's quality of life

7. Able to increase the capacity of learning independently, especially in the field of clinical biochemistry (**Lifelong learner profile)**.
7.1 Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories
7.2 Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories
7.3 Able to apply knowledge in in vitro diagnostic industry
7.4 Able to do therapeutic drug monitoring effectively and efficiently due to drug usage optimalization
7.5 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, pediatric and medical intensive care unit

8. Able to document, store, secure, and rediscover research data in order to ensure validity and prevent plagiarism. (**Manager profile**).
    8.1 Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories
    8.2 Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories
    8.3 Able to apply technology knowledge and laboratory information system in clinical laboratories
    8.4 Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, pediatric and medical intensive care unit
    8.5 Able to be in a team with other professional health in patient care to give professional participation and contribution to achieve patient's quality of life

All of courses offered in the Master Program in Clinical Pharmacy from the Faculty of Pharmacy Unpad is based on the profiles of graduates and mastery of skills in each Concentration/Field.

The following steps are taken:

1. Determining matrix of courses to the general and specific learning outcomes in each concentration
2. Identifying the courses based on general compulsory and elective courses in each concentration

Table 1.1 Matrix of courses to the general and specific learning outcomes in Clinical Pharmacy Concentration

No	General Learning outcome	Specialized Learning outcome	Courses names
1	Able to develop logical, critical, systematic, and creative thinking in pharmaceutical science and technology through scientific research and compile scientific conceptions from the results of studies based on scientific principles, procedures and ethics in the form of theses that are disseminated in scientific meetings, both national and international and / or published at least in an accredited national journal or international journal.	Able to develop pharmaceutical care plan to increase patient's quality of life	Philosophy of Science, Research Methodology; Introduction to Clinical Pharmacy and Community; Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory, and System Immunology; Research Seminar, Magister Comprehensive Defense; Scientific Paper
		Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynaecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, paediatrics and medical intensive care unit	Biostatistics; Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacokinetics; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory, and System Immunology; Magister

No	General Learning outcome	Specialized Learning outcome	Courses names
			Comprehensive Defense; Scientific Paper
2	Able to conduct academic studies or studies according to their field of expertise in the field of clinical pharmacy in solving problems in the relevant community or industry through developing their knowledge and expertise	Able to develop pharmaceutical care plan to increase patient's quality of life	Philosophy of Science, Research Methodology; Introduction to Clinical Pharmacy and Community; Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory, and System Immunology; Research Seminar, Magister Comprehensive Defense
		Able to be in a team with other professional health in patient care to give professional participation and contribution to achieve patient's quality of life	Introduction to Clinical Pharmacy and Community; Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Drugs information, Counselling, and Evidence Based Medicine; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory, and System Immunology

No	General Learning outcome	Specialized Learning outcome	Courses names
		Able to identify drug related problems and provide the professional solutions	Introduction to Clinical Pharmacy and Community, Clinical Pharmacokinetics, Research Proposal Seminar, Magister Comprehensive Defense
		Able to do therapeutic drug monitoring effectively and efficiently due to drug usage optimalization	Introduction to Clinical Pharmacy and Community; Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Research Proposal Seminar; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Pharmacoepidemiology and Pharmacoeconomics; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory, and System Immunology; Magister Comprehensive Defense
		Able to calculate and adjustment of drug dosing	Clinical Pharmacokinetics, Magister Comprehensive Defense
		Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynaecology, nerve system, endocrine, cardiovascular, kidney	Biostatistics, Introduction to Clinical Pharmacy and Community; Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynaecology, Nervous Disease;

No	General Learning outcome	Specialized Learning outcome	Courses names
		and vascular, oncology, infection, respiratory, immunology, paediatric and medical intensive care unit	Clinical Pharmacokinetics; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Pharmacoepidemiology and Pharmacoeconomics; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory, and System Immunology; Magister Comprehensive Defense
3	Able to compile and communicate ideas, results of thought and scientific arguments responsibly and based on academic ethics through the media to the academic community and the wider community.	Able to do drug information services to patients, other health professionals, family, and caregivers with up dated and objective informations, individually or in a drug information services unit	Introduction to Clinical Pharmacy and Community; Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacokinetics; Drugs information, Counselling, and Evidence Based Medicine; Scientific Paper
		Able to calculate and adjustment of drug dosing.	Clinical Pharmacokinetics, Magister Comprehensive Defense
4	Able to identify scientific fields that are the object of research and position them into a research map developed through an interdisciplinary or multidisciplinary approach, especially in clinical pharmacy	Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetric and gynecology, nerve system, endocrin, carviovascular, kidney and vacsular, oncology, infection, respratory, immunology, pediatric and medical intensive care unit	Biostatistics; Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacokinetics; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Pharmacoepidemiology and Pharmacoeconomics; Management of Disease III :

No	General Learning outcome	Specialized Learning outcome	Courses names
			Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory; Magister Comprehensive Defense
		Able to do therapeutic drug monitoring effectively and efficiently due to drug usage optimalization	Introduction to Clinical Pharmacy and Community; Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Research Proposal; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Pharmacoepidemiology and Pharmacoeconomics; Pharmacoepidemiology and Pharmacoeconomics; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory; Magister Comprehensive Defense
5.	Able to make decisions in the context of solving problems of developing science, knowledge and technology, especially in the field of clinical pharmacy, based on analytical or experimental studies of information and data.	Able to develop pharmaceutical care plan to increase patient's quality of life	Philosophy of Science, Research Methodology; Introduction to Clinical Pharmacy and Community; Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynaecology, Nervous Disease;

No	General Learning outcome	Specialized Learning outcome	Courses names
			Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory; Magister Comprehensive Defense
		Able to identify drug related problems and provide the professional solutions	Introduction to Clinical Pharmacy and Community; Clinical Pharmacokinetics; Research Proposal Seminar; Magister Comprehensive Defense
		Able to calculate nutritional needs and aseptic drug preparation	Aseptic Techniques, Magister Comprehensive Defense
		Able to manage incidence of poisoning or clinical toxicology	Clinical Toxicology, Magister Comprehensive Defense
		Able to calculate and adjustment of drug dosing	Clinical Pharmacokinetics; Magister Comprehensive Defense

No	General Learning outcome	Specialized Learning outcome	Courses names
		Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetric and gynecology, nerve system, endocrin, carviovascular, kidney and vacsular, oncology, infection, respratory, immunology, pediatric and medical intensive care unit	Biostatistics; Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacokinetics; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory; Magister Comprehensive Defense
6	Able to manage, develop and maintain a network of colleagues, colleagues within institutions and the broader research community	Able to be in a team with other professional health in patient care to give professional participation and contributeion to achieve patient's quality of life	Drugs information, Counselling, and Evidence Based Medicine; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory
7	Able to increase the capacity of learning independently, especially in the field of clinical pharmacy	Able to do therapeutic drug monitoring effectively and efficiently due to drug usage optimalization	Introduction to Clinical Pharmacy and Community; Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Research Proposal Seminar; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Pharmacoepidemiology and Pharmacoeconomics; Management of Disease III :

No	General Learning outcome	Specialized Learning outcome	Courses names
			Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory; Magister Comprehensive Defense
		Able to calculate nutritional needs and aseptic drug preparation	Magister Comprehensive Defense
		Able to manage incidence of poisoning or clinical toxicology	Clinical Toxicology, Magister Comprehensive Defense
		Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynaecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, paediatric and medical intensive care unit	Biostatistics, Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacokinetics; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory; Magister Comprehensive Defense
8	Able to document, store, secure, and rediscover research data in order to ensure validity and prevent plagiarism.	Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynaecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection,	Research Methodology, Biostatistics, Management of Disease I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical Pharmacokinetics; Clinical Pharmacy Practice I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Clinical

No	General Learning outcome	Specialized Learning outcome	Courses names
		respiratory, immunology, paediatric and medical intensive care unit	Pharmacokinetics; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory; Magister Comprehensive Defense; Scientific Paper
		Able to be in a team with other professional health in patient care to give professional participation and contribution to achieve patient's quality of life	Clinical Pharmacokinetics; Clinical Pharmacy Practice I: Psychiatry, Gastroenterology, Obstetrics and Gynaecology, Nervous Disease; Drugs information, Counselling, and Evidence Based Medicine; Management of Disease II: Endocrine, Heart, Blood vessel and Renal; Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal; Management of Disease III : Oncology, Infection, Respiratory, and System Immunology; Clinical Pharmacy Practice III : Oncology, Infection, Respiratory

Table 1.2 Matrix of courses to the general and specific learning outcomes in Clinical Biochemistry Concentration

No	General Learning outcome	Specialized Learning outcome	Courses names
1	Able to develop logical, critical, systematic, and creative thinking in pharmaceutical science and technology through scientific research and compile scientific conceptions from the results of studies based on scientific principles, procedures and ethics in the form of theses that are disseminated in scientific meetings, both national and international and / or published at least in an accredited national journal or international journal.	Able to develop pharmaceutical care plan to increase patient's quality of life, write and discuss research proposal according to standard rules of scientific paper;	Philosophy of Science, Research Methodology; Introduction to Clinical Pharmacy and Community; Research Seminar, Magister Comprehensive Defense
		Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories	Research Methodology; Research Proposal Seminar; Technology and Information System Laboratory; In Vitro Diagnostic Product Development; Research Seminar; Magister Comprehensive Defense; Scientific Paper; Clinical Laboratory Practice
		Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories	Pharmacology, Molecular Mechanism of Disease, Magister Comprehensive Defense
		Able to explain mechanism of disease based on molecular biology and genetics knowledge	Clinical Biochemistry, Cell and Molecular Biology, Genetics, Molecular Mechanism of Disease, Next Generation Medicine, Magister Comprehensive Defense
		Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics	Clinical Pharmacokinetics, Magister

No	General Learning outcome	Specialized Learning outcome	Courses names
		and gynaecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, paediatricsV and medical intensive care unit	
2	Able to conduct academic studies or studies according to their field of expertise in the field of clinical biochemistry in solving problems in the relevant community or industry through developing their knowledge and expertise	Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories	Research Methodology, Biostatistics, Technology and Laboratory information System, In Vitro Diagnostic Product Development, Research Seminar, Magister Comprehensive Defense, Scientific Paper, Clinical Laboratory Practice
		Able to explain mechanism of disease based on molecular biology and genetics knowledge	Clinical Biochemistry, Cell and Molecular Biology, Genetics, Molecular Mechanism of Disease, Next Generation Medicine, Magister Comprehensive Defense
		Able to identify drug related problems and provide the professional solutions	Introduction to Clinical Pharmacy and Community; Clinical Pharmacokinetics, Research Proposal Seminars, Magister Comprehensive Defense
		Able to do therapeutic drug monitoring effectively and efficiently due to drug usage optimalization	Introduction to Clinical Pharmacy and Community; Research Proposal Seminars, Magister Comprehensive Defense
		Able to calculate and adjustment of drug dosing	Clinical Pharmacokinetics, Magister Comprehensive Defense

No	General Learning outcome	Specialized Learning outcome	Courses names
		Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynaecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, paediatrics and medical intensive care unit	Clinical Pharmacokinetics, Magister Comprehensive Defense
		Able to be in a team with other professional health in patient care to give professional participation and contributeion to achieve patient's quality of life	Drugs information, Counselling, and Evidence Based Medicine;
3	Able to compile and communicate ideas, results of thought and scientific arguments responsibly and based on academic ethics through the media to the academic community and the wider community.	Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories	Pharmacology, Molecular Mechanism of Disease, Magister Comprehensive Defense, Scientific Paper
		Able to explain mechanism of disease based on molecular biology and genetics knowledge	Clinical Biochemsitry, Cell and Molecular Biology, Genetics, Molecular Mechanism of Disease, Next Generation Medicine, Magister Comprehensive Defense
		Able to apply knowledge in in vitro diagnostic industry	Genetics, Technology and Laboratory information System, In Vitro Diagnostic Product Development, Magister Comprehensive Defense, Scientific Paper

No	General Learning outcome	Specialized Learning outcome	Courses names
		Able to do drug information services to patients, other health professionals, family, and caregivers with up dated and objective informations, individually or in a drug information services unit	Introduction to Clinical Pharmacy and Community; Drugs information, Counselling, and Evidence Based Medicine
		Able to calculate and adjustment of drug dosing	Clinical Pharmacokinetics, Magister Comprehensive Defense
4	Able to identify scientific fields that are the object of research and position them into a research map developed through an interdisciplinary or multidisciplinary approach, especially in clinical biochemistry	Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories	Research Methodology, Biostatistics, Research Proposal Seminar, Technology and Laboratory information System, In Vitro Diagnostic Product Development, Research Seminar, Magister Comprehensive Defense, Scientific Paper, Clinical Laboratory Practice
		Able to explain mechanism of disease based on molecular biology and genetics knowledge	Clinical Biochemistry, Cell and Molecular Biology, Genetics, Molecular Mechanism of Disease, Next Generation Medicine, Magister Comprehensive Defense
		Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynaecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, paediatrics	Clinical Pharmacokinetics, Magister Comprehensive Defense

No	General Learning outcome	Specialized Learning outcome	Courses names
		and medical intensive care unit	
5.	Able to make decisions in the context of solving problems of developing science, knowledge and technology, especially in the field of clinical pharmacy, based on analytical or experimental studies of information and data.	Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratori	Research Methodology, Biostatistics, Research Proposal Seminars, In Vitro Diagnostic Product Development, Research Seminar, Magister Comprehensive Defense, Scientific Paper, Clinical Laboratory Practice
		Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories	Pharmacology, Molecular Mechanism of Disease, Magister Comprehensive Defense, Clinical Laboratory Practice
		Able to apply technology knowledge and laboratory information system in clinical laboratories	Technology and Laboratory information System, Next Generation Medicine, Magister Comprehensive Defense, Clinical Laboratory Practice
		Able to apply knowledge in in vitro diagnostic industry	Genetics, Technology and Laboratory information System, In Vitro Diagnostic Product Development, Magister Comprehensive Defense, Clinical Laboratory Practice
		Able to develop pharmaceutical care plan to increase patient's quality of life	Introduction to Clinical Pharmacy and Community;

No	General Learning outcome	Specialized Learning outcome	Courses names
			Research Seminar, Magister Comprehensive Defense,
		Able to identify drug related problems and provide the professional solutions	Introduction to Clinical Pharmacy and Community, Clinical Pharmacokinetics, Magister Comprehensive Defense,
		Able to calculate nutritional needs and aseptic drug preparation	Aseptic Techniques, Magister Comprehensive Defense
		Able to manage incidence of poisoning or clinical toxicology	Clinical Toxicology, Magister Comprehensive Defense
		Able to calculate and adjustment of drug dosing	Clinical Pharmacokinetics, Magister Comprehensive Defense
		Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynaecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, paediatrics and medical intensive care unit	Clinical Pharmacokinetics, Magister Comprehensive Defense
6	Able to manage, develop and maintain a network of colleagues, colleagues within institutions and the broader research community	Able to develop pharmaceutical care plan to increase patient's quality of life	Introduction to Clinical Pharmacy and Community, Magister Comprehensive Defense

No	General Learning outcome	Specialized Learning outcome	Courses names
		Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories	Pharmacology, Molecular Mechanism of Disease, Magister Comprehensive Defense, Scientific Paper
		Able to apply knowledge in in vitro diagnostic industry	Genetics, Technology and Laboratory information System, In Vitro Diagnostic Product Development, Magister Comprehensive Defense, Clinical Laboratory Practice
		Able to be in a team with other professional health in patient care to give professional participation and contribution to achieve patient's quality of life	Drugs information, Counselling, and Evidence Based Medicine
7	Able to increase the capacity of learning independently, especially in the field of clinical pharmacy	Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories	Research Methodology, Research Proposal, Molecular Mechanism of Disease, Technology and Laboratory information System, In Vitro Diagnostic Product Development, Research Seminar, Magister Comprehensive Defense, Scientific Paper, Clinical Laboratory Practice
		Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories	Pharmacology, Magister Comprehensive Defense, Clinical Laboratory Practice

No	General Learning outcome	Specialized Learning outcome	Courses names
		Able to apply knowledge in in vitro diagnostic industry	Technology and Laboratory information System, In Vitro Diagnostic Product Development, Magister Comprehensive Defense, Clinical Laboratory Practice
		Able to do therapeutic drug monitoring effectively and efficiently due to drug usage optimalization	Introduction to Clinical Pharmacy and Community, Magister Comprehensive Defense
		Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynaecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, paediatrics and medical intensive care unit	Clinical Pharmacokinetics, Magister Comprehensive Defense
8	Able to document, store, secure, and rediscover research data in order to ensure validity and prevent plagiarism.	Able to apply various chemical and biochemical analysis method, and manage data analysis in clinical laboratories	Research Methodology, Research Proposal Seminars, Technology and Laboratory information System, In Vitro Diagnostic Product Development, Research Seminar, Magister Comprehensive Defense, Clinical Laboratory Practice
		Able to apply knowledge in molecular mechanism of diseases and in vitro technology to support diagnosis determination in clinical laboratories	Pharmacology, Molecular Mechanism of Disease, Magister Comprehensive Defense, Scientific Paper, Clinical Laboratory Practice

No	General Learning outcome	Specialized Learning outcome	Courses names
		Able to apply technology knowledge and laboratory information system in clinical laboratories	Technology and Laboratory information System, Next Generation Medicine, Clinical Laboratory Practice
		Able to manage therapeutical plan effectively to patients in the field of psychiatry, gastrology, obstetrics and gynaecology, nerve system, endocrine, cardiovascular, kidney and vascular, oncology, infection, respiratory, immunology, paediatrics and medical intensive care unit	Clinical Pharmacokinetics, Magister Comprehensive Defense
		Able to be in a team with other professional health in patient care to give professional participation and contribution to achieve patient's quality of life	Drugs information, Counselling, and Evidence Based Medicine, Magister Comprehensive Defense

1.5 Competence Analysis

Master program in Clinical Pharmacy consists of two concentrations; clinical pharmacy and clinical biochemistry. Students have to complete 44 credit for clinical pharmacy field, divided into general compulsory 29 credit (65.9%) and elective courses 15 credit (34.1%). In clinical biochemistry field, students have to complete 47 credit, divided into general compulsory 31 credit (66%) and elective courses 15 credit (34%). To achieve competence of a clinical pharmacist, in clinical pharmacy field there are practical works in hospital for three semesters that are divided into 13 stages. Practical work in clinical biochemistry is only in one semester and is divided into 3 topics. The students must complete all the courses and have at least one scientific publication (accepted in national or international journals) in order to pursue comprehensive defense.

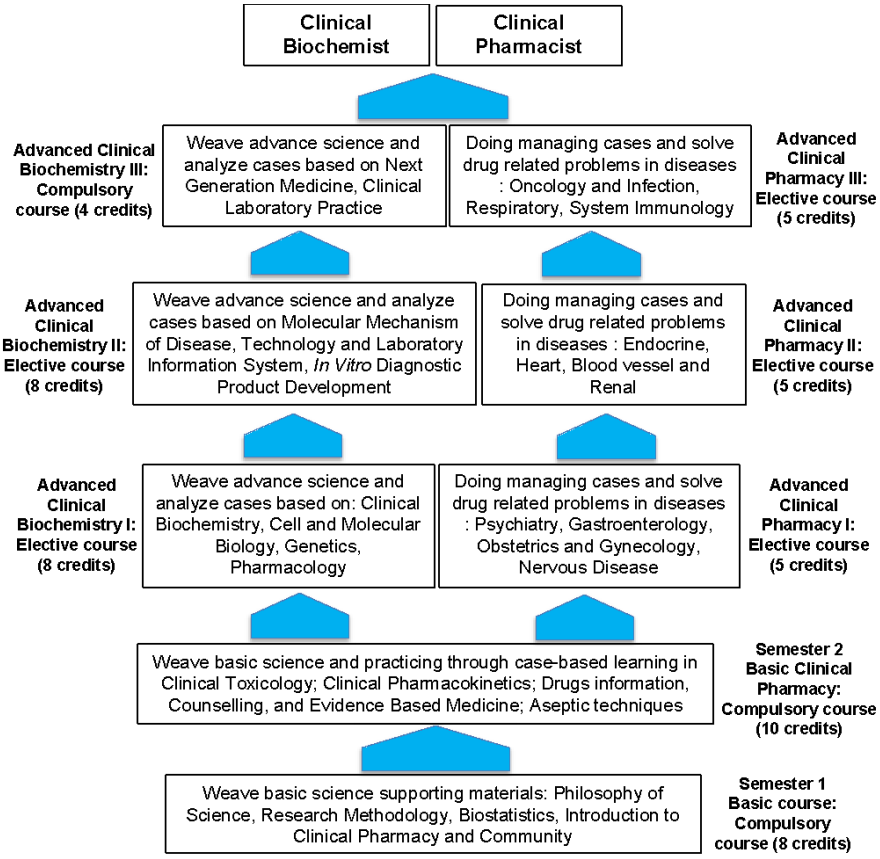

Figure 1.1 Competence Analysis of Master program in Clinical Pharmacy

1.6 Material of Organization

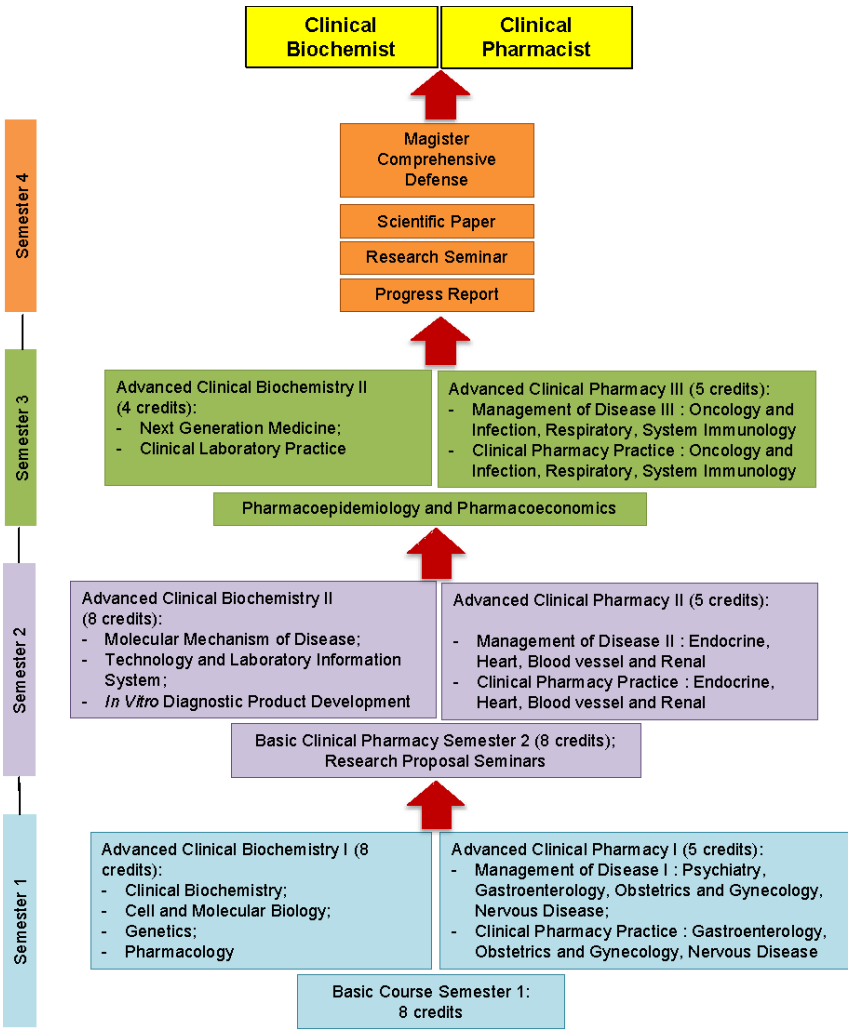

Figure 1.2 Material Organization of Master program in Clinical Pharma

CHAPTER 2
CURRICULUM AND COST STRUCTURE OF STUDY

Curriculum structure of magister program in Clinical Pharmacy are listed in Table 2.1 (Clinical Pharmacy concentration) and Table 2.2 (Clinical Biochemistry concentration). The study load consists of academics and profession. The learning activities (Table 2.4 and 2.5) consist of 3 methods of delivery, 1) Lectures, 2) Tutorial in the form of discussions, presentation, task cases, scientific journal reading and review, and 3) Practice in the form of project assistant, therapy guided practice, drug monitoring and evaluation, and independent practice.

Table 2.1 Outline of Study Load Academic of Clinical Pharmacy Concentration

Semester and Stages		Study Load (ECTS)		Amount (ECTS)
		Academic	Profession	
Semester 1	Compulsory Course	Academic package 1: 12	0	12
	Elective Course	3	6	9
Subtotal		15	6	21
Semester 2	Compulsory Course	Academic package 2: 28	0	28
	Elective Course	3	6	9
Subtotal		31	6	37
Semester 3	Compulsory Course	3	0	3
	Elective Course	3	6	9
Subtotal		6	6	12
Semester 4	Compulsory Course	54	0	54
	Elective Course	0	0	0
Subtotal		54	0	54
Amount		106	18	124

Table 2.2 Outline of Study Load Academic of Clinical Biochemistry Concentration

Semester and Stages		Study Load (ECTS)		Amount (ECTS)
		Academic	Profession	
Semester 1	Compulsory Course	Academic package 1: 12	0	12
	Elective Course	12	0,00	12
Subtotal		24	0	24

Semester 2	Compulsory Course	Academic package 2: 26	0	26
	Elective Course	12	0	12
Subtotal		38	0	38
Semester and Stages		Study Load (ECTS)		Amount (ECTS)
		Academic	Profession	
Semester 3	Compulsory Course	3	6	9
	Elective Course	0	0	0
Subtotal		3	6	9
Semester 4	Compulsory Course	52	0	52
	Elective Course	0	0	0
Subtotal		52	0	52
Amount		115	6	123

Table 2.3 Curriculum Structure Studies of Clinical Pharmacy Concentration

No.	Subjects		No. Module	Study Load on Activities (ECTs)				Elements of Competence	Type Competence
	Code	Name		Lecture	Tutorial	Practice	Tot		
1	2	3	4	5	6	7	8	9	10
Semester 1 : Basic Course			1						
1	P20B.01001	Philosophy of Science		3	-	-	3	MPK	Support
2	P20B.01002	Research Methodology		3	-	-	3	MKK	Support
3	P20B.01003	Biostatistics		3	-	-	3	MKK	Support
4	P20B.01004	Introduction to Clinical Pharmacy and Community		3	-	-	3	MKK	Support
5	P20B.01005	Management of Disease I : Psychiatry, Gastroenterology, Obstetrics and Gynecology, Nervous Disease		3	-	-	3	MKK	Main
6	P20B.01006	Clinical Pharmacy Practice I: Gastroenterology, Obstetrics and Gynecology, Nervous Disease			3	3	6	MKK, MKB	Main
Burden Studies in Semester 1				15	3	3	21		
Semester 2:			2						
7	P20B.02014	Clinical Toxicology		3	-	-	3	MKK	Support
8	P20B.02015	Clinical Pharmacokinetics		3	-	-	3	MKK	Support

Commented [ANH1]:

No.	Subjects		No. Module	Study Load on Activities (ECTs)				Elements of Competence	Type Competence
	Code	Name		Lecture	Tutorial	Practice	Tot		
9	P20B.02016	Drugs information, Counselling, and Evidence Based Medicine		3	-	-	3	MKK	Support
10	P20B.02017	Aseptic Techniques		3	-	-	3	MKK	Support
11	P20B.02020	Research Proposal Seminars			16	-	16	MKK, MKB	Main
12	P20B.02018	Management of Disease II: Endocrine, Heart, Blood vessel and Renal		3	-	-	3	MKK	Main
No.	Subjects		No. Module	Study Load on Activities (ECTs)				Elements of Competence	Type Competence
	Code	Name		Lecture	Tutorial	Practice	Tot		
13	P20B.02019	Clinical Pharmacy Practice II: Endocrine, Heart, Blood vessel and Renal		-	3	3	6	MKK, MKB	Main
	Burden Studies in Semester 2			15	19	3	37		
Semester 3			3						
14	P20B.03026	Pharmacoepidemiology and Pharmacoeconomics		3	-	-	3	MKK	Main
15	P20B.03027	Management of Disease III: Oncology, Infection, Respiratory, System Immunology		3	-	-	3	MKK	Main
16	P20B.03028	Clinical Pharmacy Practice III : Oncology, Infection, Respiratory, System Immunology		-	3	3	6	MKK, MKB	Main
	Burden Studies in Semeseter 3			6	3	3	12		
Semester 4			4						
17	P20B.04033	Progress Report		-	11	-	11	MKK, MKB	Main
18	P20B.04034	Research Seminar		-	14	-	14	MKK, MKB	Main
19	P20B.04003	Magister Comprehensive Defense		-	14	-	14	MKK, MKB	Main
20	P20B.04035	Scientific Paper		-		14	14	MKK, MKB	Main
	Burden Studies in Semester 4			-	39	14	54		

Commented [ANH1]:

Table 2.4 Curriculum Structure Studies of Clinical Biochemistry Concentration

No.	Subjects		No. Module	Studi Load on Activities (ECTs)				Elements of Competence	Type Competence
	Code	Name		Lecture	Tutorial	Practice	Tot		
1	2	3	4	5	6	7	8	9	10
Semester 1 : Basic Course			1						
1	P20B.01001	Philosophy of Science		3	-	-	3	MPK	Support
2	P20B.01002	Research Methodology		3	-	-	3	MKK	Support
3	P20B.01003	Biostatistics		3	-	-	3	MKK	Support
4	P20B.01004	Introduction to Clinical Pharmacy and Community		3	-	-	3	MKK	Support
5	P20B.01010	Clinical Biochemistry		3	-	-	3	MKK	Main
6	P20B.01011	Cell and Molecular Biology		3	-	-	3	MKK	Main
7	P20B.01012	Genetics		3	-	-	3	MKK	Support
8	P20B.01013	Pharmacology		3	-	-	3	MKK	Support
Burden Studies in Semester 1				22	-	-	22		
Semester 2:			2						
7	P20B.02014	Clinical Toxicology		3	-	-	3	MKK	Support

No.	Subjects		No. Module	Studi Load on Activities (ECTs)				Elements of Competence	Type Competence
	Code	Name		Lecture	Tutorial	Practice	Tot		
8	P20B.02015	Clinical Pharmacokinetics		3	-	-	3	MKK	Support
9	P20B.02016	Drugs information, Counselling, and Evidence Based Medicine		3	-	-	3	MKK	Support
10	P20B.02017	Aseptic Techniques		3	-	-	3	MKK	Support
11	P20B.02020	Research Proposal Seminars			14	-	14	MKK, MKB	Main
12	P20B.02023	Molecular Mechanism of Disease		5	-	-	5	MKK	Main
13	P20B.02024	Technology and Laboratory Information System		5	-	-	5	MKK	Main
14	P20B.02025	In Vitro Diagnostic Product Development		3	-	-	3	MKK	Main
	Burden Studies in Semester 2			24	14	-	38		
Semester 3			3						
14	P20B.03031	*Next Generation Medicine*		3	-	-	3	MKK	Main
15	P20B.03032	Clinical Laboratory Practice		-	-	6	6	MKK, MKB	Main

No.	Subjects		No. Module	Studi Load on Activities (ECTs)				Elements of Competence	Type Competence
	Code	Name		Lecture	Tutorial	Practice	Tot		
	Burden Studies in Semeseter 3			3	-	6	9		
Semester 4			4						
17	P20B.04033	Progress Report		-	11	-	11	MKK, MKB	Main
18	P20B.04034	Research Seminar		-	14	-	14	MKK, MKB	Main
19	P20B.04003	Magister Comprehensive Defense		-	14	-	14	MKK, MKB	Main
20	P20B.04035	Scientific Paper		-	-	12	12	MKK, MKB	Main
	Burden Studies in Semester 4				39	12	52		

Table 2.5 Percentage Study Load (ECTS) on the type of Competence in Clinical Pharmacy Concentration

No.	Semester	Expenses Research and Competence			Amount
		Main	Support	Special	
1	1st Semester	9	12	0	21
2	2nd Semester	25	12	0	37
3	3rd Semester	12	0	0	12
4	4th Semester	54	0	0	54
Amount		100 ECTS	24 ECTS	0 ECTS	124 ECTS
		80.6%	19.40%	0%	
Requirements		(40-80%)	(20-40%)	(0-30%)	

Table 2.6 Percentage Study Load (ECTS) on the type of Competence in Clinical Biochemistry Concentration

No.	Semester	Expenses Research and Competence			Amount
		Main	Support	Special	
1	1st Semester	9	15	0	24
2	2nd Semester	26	12	0	38
3	3rd Semester	9	0	0	9
4	4th Semester	52	0	0	52
Amount		96 ECTS	27 ECTS	0 ECTS	123 ECTS
		79%	22%	0%	
Requirements		(40-80%)	(20-40%)	(0-30%)	

Table 2.7 Percentage Study Load (ECTS) on Learning Activity in Clinical Pharmacy Concentration

No.	Semester	Burden Study on Learning			Amount
		Lecture	Tutorial	Practice	
1	1st Semester	15	3	3	21
2	2nd Semester	15	19	3	37

3	3rd Semester	6	3	3	12
4	4th Semester	0.00	40	14	54
Amount		36 ECTS	64 ECTS	23 ECTS	124 ECTS

Table 2.7 Percentage Study Load (ECTS) on Learning Activity in Clinical Biochemistry Concentration

No.	Semester	Burden Study on Learning			Amount
		Lecture	Tutorial	Practice	
1	1st Semester	24	0.00	0.00	24
2	2nd Semester	24	14	0.00	38
3	3rd Semester	3	0	6	9
4	4th Semester	0	40	12	52
Amount		49 ECTS	54 ECTS	18 ECTS	123 ECTS

Table 2.8 Relationships Elements of Competency and Learning Outcomes in Clinical Pharmacy Concentration

No.	Element of Competency	Sub-Learning Achievement	Eyes Festive/Modules
1	Competency Element Personality Development (MPK)	Number 2; 4; 5	- Philosophy of Science
2	Elements of scientific competence and skills (MKK)	Number 1.1; 1.2; 2.1; 2.2;2.3; 2.4; 2.6;3.1;4.1;4.2;5.2; 5.3; 5.4; 5.5;6.1;7.1;7.3;7.3;8.2	- Research Methodology - Biostatitics - Introduction to Clinical Pharmacy and Community - Management of Disease I : Psychiatry, Gastroenterology, Obstetrics and Gynecology, Nervous Disease - Clinical Pharmacy Practice : Gastroenterology, Obstetrics and Gynecology, Nervous Disease - Clinical Toxicology - Clinical Pharmacokinetics - Drugs information, Counselling, and Evidence Based Medicine - Aseptic Techniques - Research Proposal Seminars - Management of Disease Associated and Practical with Endocrine, Heart, Blood vessel and Renal - Clinical Pharmacy Practice: Endocrine Heart Blood vessel and Renal - Pharmacoepidemiology and Pharmacoeconomics - Management of Disease : Oncology and Infection, Respiratory, System Immunology - Clinical Pharmacy Practice : Oncology and Infection, Respiratory, System Immunology

			- Progress Report - Research Seminar - Magister Comprehensive Defense - Scientific Paper
3	Work Skills Competencey Element (MKB)	Number 1.2; 2.3; 2.4;2.5; 2.6;3.2;4.1;5.1;6.1;7.2;8.1;8. 2	- Clinical Pharmacy Practice : Gastroenterology, Obstetrics and Gynecology, Nervous Disease - Research Proposal Seminars - Clinical Pharmacy Practice: Endocrine Heart Blood vessel and Renal - Clinical Pharmacy Practice : Oncology and Infection, Respiratory, System Immunology - Progress Report - Research Seminar - Magister Comprehensive Defense - Scientific Paper
4	Elements Behavioral Competencies Working (MPB)		

Table 2.9 Relationships Elements of Competency and Learning Outcomes in Clinical Biochemistry Concentration

No.	Element of Competency	Sub-Learning Achievement	Eyes Festive/Modules
1	Competency Element Personality Development (MPK)	Number 2; 4; 5	- Philosophy of Science
2	Elements of scientific competence and skills (MKK)	Number 1.1; 1.2; 2.1; 2.2;2.3; 2.4; 2.6;3.1;4.1;4.2;5.2; 5.3; 5.4; 5.5;6.1;7.1;7.3;7.3;8. 2	- Research Methodology - Biostatitics - Introduction to Clinical Pharmacy and Community - Biochemistry - Cell and Molecular Biology - Genetics - Pharmacology - Clinical Toxicology - Clinical Pharmacokinetics - Drugs information, Counselling, and Evidence Based Medicine - Aseptic Techniques - Research Proposal Seminars - Molecular Mechanism of Disease - Technology and Information System Laboratory - In Vitro Diagnostic Product Development - Next Generation Medicine - Clinical Laboratory Practice - Progress Report - Research Seminar - Magister Comprehensive Defense - Scientific Paper

3	Work Skills Competencey Element (MKB)	Number 1; 3; 4;5; 6; 7;	- Research Proposal Seminars - Clinical Laboratory Practice - Progress Report - Research Seminar - Magister Comprehensive Defense - Scientific Paper

CHAPTER 3
CONTENT CURRICULUM

The curriculum content or description of subjects on Magister Program in Clinical Pharmacy are listed in Table 3.1 -

A. Clinical Pharmacy Concentration

Table 3.1 Description Module Philosophy of Science

1	Module name	Philosophy of Science
2	Courses code	P20B.01001
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	1 (one)
5	Precondition	No
6	Competence	Philosophy of science explores the nature of science and the source of knowledge. Students will learn about the introduction of science, history and development of science, the foundation of knowledge, fundamental structures, logic and reasoning, research method paradigm, moral ethics and science, and metaphysics
7	Elements of competency	MPK
8	Type competency	Supporting competence
9	Syllabus	1.Introduction; 2. History and Development of Science Philosophy; 3. Base of Science Philosophy; 4. Base of Science Epistemology; 5. History and Development of Science Philosophy: Aristotle's Theory of Truth; 6. History and Development of Science Philosophy: Contemporary philosophy; 7. Source of Knowledge; 8. Midterm Examination; 9. Science Philosophy Introduction: Essence of Science Philosophy; 10. History of Science Philosophy; 11. Fundamental Structure of Science Philosophy; 12. Logic and Reasoning of Science Philosophy; 13. Research Method Paradigm; 14. Ethics and Moral in Science; 15. Metaphysics; 16. Final Examination
10	Attribute to soft skills	Behavior patterns of scientific, research ethics
11	Learning methods	Lectures and Discussion
12	Learning media	LCD projector
13	Appraisal	Written Examination and Presentation
14	Lecturer	Prof. apt. Dr. Moelyono, M.S. Prof. Dr. dr. Johanes Cornelius Mose Sp.OG.,

15	References	1. Amsal Bakhtiar, Filsafat Ilmu. Jakarta: PT Raja Grafindo Persada, 2011 2. Joseph Vidal-Rosset. 2018. Book Review : The Philosophy of Science – A Companion. Oxford University Press, Pp. 768 3. Lars-Göran Johansson. 2016. Philosophy of Science for Scientists. Springer Undergrad. Texts Philosophy. Springer, Cham 4. Martiningsih Wahyu. 2012. Philosophers from Plato to Ibn Bajjah. Yogyakarta : IRCiSod. 5. Sumarna, Cecep. 2020. Philosophy of Science. Rosda 6. Susanto A. 2011. Philosophy of Science, A Study in Ontological, Epistemological and Axiological Dimensions. Jakarta: Bumi Aksara

Table 3.2 Description Module Research Methodology

1	Module name	Research Methodology
2	Courses code	P20B.01002
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	1 (one)
5	Precondition	No
6	Competence	After attending this course, students will be able to make their research ideas into research with quality results, including dissertation proposals, presentations, proposals for research projects, research assistance, or journal articles
7	Elements of competency	MKK
8	Type competency	Supporting competence
9	Syllabus	1.Research philosophy; develop problems into interesting research and answer the questions "Why and How?"; 2. Research process and flow; 3. Research design; 4. Research variable; 5. Research proposal; 6. Scientific papers; 7. Writing Strategies (Tenses in writing scientific articles); 8. Mid-term examination; 9. Strategy for Writing Scientific Papers; 10. Scientific Writing Application; 11. Research proposal writing; 12. Plagiarism; 13. Research Ethics in humans and animals; 14. Clinical Trial; 15. Informed consent; 16. Final Exam
10	Attribute to soft skills	Research design, Discipline, systematic
11	Learning methods	Lectures and discussion
12	Learning media	LCD projector
13	Appraisal	Written examination and presentation
14	Lecturer	Prof. apt. Anas Subarnas, M.Sc. apt. Rizky Abdulah, Ph.D. apt. Muchtaridi, Ph.D.
15	References	1. Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael 2. Posey.Pharmacotherapy: A Pathophysio-logic Approach. 8th Edition. 2011.New York, NY: McGraw-Hill

		3. Jameson JL, Kasper DL, Longo DL, Fauci AS,, Braunwald E, Hauser SL, eds. *Harrison's Principles of Internal Medicine*. 20th ed. 2018. New York, NY: McGraw-Hill 4. Petter Laake, Haakon Breien Benestad, Bjorn Reino Olsen. 2007. Research Methodology in the Medical and Biological Sciences. 5. A M Novikov; D A Novikov. 2013. Research methodology: from philosophy of science to research design. 6. Sarah Philpot, Lesley Curnick, Liz Soars, John Soars. 2007. New Headway Academic Skills: Student's Book Level 3: Reading, Writing, and Study Skills. 7. Rinaldi, S.F and Mujianto B. 2017.Research Methodology and statistic. Human research education center of ministry health of republic od Indonesia 8. Debbie Epstein, Jane Kenway, Rebecca Boden. 2007. Writing for Publication (The Academic's Support Kit)

Table 3.3 Description Module Biostatistics

1	Module name	Biostatistics
2	Courses code	P20B.01003
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	1 (one)
5	Precondition	None
6	Competence	After attending this course, students will be able to apply statistical method in clinical study
7	Elements of competency	MKK
8	Type competency	Supporting competence
9	Syllabus	1.Biostatistical Analysis; 2. Data Analysis; 3. Descriptive Statistics; 4. Hypothesis; 5.Nonparametric Statistics 1&2; 6. Analysis of Variance (ANOVA); 7. Sampling Techniques; 8. Midterm examination; 9. Introduction to Applied Biostatistics in Medical and Clinical Research; 10.Descriptive Analysis; 11.Differential Analysis Between Groups; 12. Correlation and Regression Analysis (Univariate); 13. Regression Analysis (Multivariate); 14. Survival Analysis; 15. Case Study Analysis Exercise; 16.final examination
10	Attribute to soft skills	Able to analyze data
11	Learning methods	Lectures and Discussion
12	Learning media	LCD
13	Appraisal	Written Examination and Presentation
14	Lecturer	Hadyana, M.Sc., Ph.D. apt. Neily Zakiyah, M.Sc., Ph.D
15	References	1. Statistics in Medicine, 4th edition. Riffenburgh, RH and Gillen, DL. Elsevier. 2020 2. Fundamental of Biostatistics, 8th edition. Rosner, B. Cengage Learning. 2015

Table 3.4 Description Module Introduction to Clinical Pharmacy and Community

1	Module name	Introduction to Clinical Pharmacy and Community
2	Courses code	P20B.01004
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	1 (one)
5	Precondition	No
6	Competence	Students able to understand clinical pharmacy and activities, integrate evidence based-medicine to clinical pharmacy practice
7	Elements of competency	MKK
8	Type competency	Supporting competence
9	Syllabus	1.Introduction of Clinical Pharmacy and Drug-Related Problem Identification; 2. Methodology to Analyze Clinical Pharmacy Cases; 3. Drugs-Induced Diseases; 4. Adverse Drug Reaction; 5. Documentation Model for Clinical Pharmacy-Related Issues; 6. Clinical Pharmacy Services 1; 7-8 Clinical Pharmacy Services 2&3; 9. Drugs during Pregnancy and Breastfeeding; 20. Drugs in Pediatric and Geriatric; 11-12. Clinical Pharmacy in New Generation Medicine; 13-14.Clinical Pharmacy Services; 15. Clinical Pharmacy Services using Digital Platform; 16. final exam
10	Attribute to soft skills	Problem solving in clinical pharmacy problems
11	Learning methods	Lectures, discussion, and presentation
12	Learning media	LCD
13	Appraisal	Written examination and presentation
14	Lecturer	Prof. Dr. apt. Keri Lestari., M.Si. Dr. apt. Siti Saidah, MSi. Apt. Dika Pramita Destiani., M.Farm.
15	References	1. Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael Posey.Pharmacotherapy: A Pathophysiologic Approach. 9th Edition.New York, NY: McGraw-Hill,2015 2. Kasper DL, Fauci AS, Longo DL, Braunwald E, Hauser SL, Jameson JL, eds. *Harrison's Principles of Internal Medicine*. 16th ed. New York, NY: McGraw-Hill, 2015 3. Roger Walker and Cate Whittlesea. 2012. Clinical Pharmacy and Therapeutics. Churchill Livingstone : Elsevier.

Table 3.5 Description Module Management of Disease: Psychiatry, Gastroenterology, Obstetrics, and Gynecology, Nervous Disease

1	Module name	Management of Disease: Psychiatry, Gastroenterology, Obstetrics, and Gynecology, Nervous Disease
2	Courses code	P20B.01005
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	1 (one)
5	Precondition	None

6	Competence	After completing this topic, students will be able to explain and determine what drugs are the most appropriate, be able to monitor and be able to solve problems related to drugs in gastrological, obstetric, neurological and psychiatric diseases
7	Elements of competency	MKK
8	Type competency	Main competence
9	Syllabus	1. Introduction to Disease Management Lecture I; 2. Etiology and pathophysiology of psychiatric disorders (Psychiatry); 3. Schizophrenia; 4. Bipolar, Depression, and Drug Abuse; 5. Guidelines for the treatment of disorders in pregnancy and childbirth; 6. Menstrual abnormalities; 7. KB hormonal, Long-acting contraceptive; 8. Benign and Malignant tumor of uterine cervix, uterus; 9. Etiology and pathophysiology of epilepsy; 10. Epilepsy therapy guidelines (without and with comorbidities); 11. Etiology and pathophysiology of stroke; 12. Stroke guidelines in all conditions (without and with comorbidities); 13. Case studies and exams; 14. Etiology, pathophysiology and guidelines for treating liver disorders (without and with comorbidities); 15. Etiology, pathophysiology and guidelines for treating gastrointestinal disorders (without and with comorbidities); 16. Case studies and exams
10	Attribute to soft skills	Problem solving in drug related problems
11	Learning methods	Lectures, discussion, and presentation
12	Learning media	LCD
13	Appraisal	Written examination and presentation
14	Lecturer	apt. Melisa Intan Barliana, Dr. Med. Sc. Teaching Physician Team
15	References	1. Jameson JL, Kasper DL, Longo DL, Fauci AS,, Braunwald E, Hauser SL, eds. *Harrison's Principles of Internal Medicine*. 20th ed. 2018. New York, NY: McGraw-Hill 2. DiPiro, J. T., Talbert, R. L., Yee, G. C., Matzke, G. R., Wells, B. G., & Posey, L. (2017). Pharmacotherapy A Pathophysiologic Approach, 10e. *Pharmacotherapy: A Pathophysiologic Approach. 10e. New York: McGraw-Hill Education*, 255-8. 3. Kasper, D., Fauci, A., Hauser, S., Longo, D., Jameson, J., & Loscalzo, J. (2015). *Harrison's principles of internal medicine, 19e* (Vol. 1, No. 2). New York, NY, USA:: Mcgraw-hill. 4. World Health Organization, WHO recommendation on calcium supplementation before pregnancy for the prevention of pre-eclampsia and its complications, https://www.who.int/reproductivehealth/publications/maternal_perinatal_health/clinical/en/ 5. American Gastroenterologic Association, Guidelines: Liver Diseases, https://gastro.org/guidelines/liver-diseases/ 6. Medscape, https://emedicine.medscape.com/article/1916852-guidelines,

Table 3.6 Description Module Clinical Pharmacy Practice: Gastroenterology, Obstetrics, and Gynecology, Nervous Disease

1	Module name	Clinical Pharmacy Practice: Gastroenterology, Obstetrics, and Gynecology, Nervous Disease
2	Courses code	P20B.01006
3	Study loads	3 credits ECTS amount: 6 ECTS Contact hour per semester : 40 Independent study hour per semester : 136 Total workload : 176
4	Semester	1 (One)
5	Precondition	Module Management of Disease: Psychiatry, Gastroenterology, Obstetrics, and Gynecology, Nervous Disease
6	Competence	After completing this topic, students will be able to explain and determine what drugs are the most appropriate, be able to monitor and be able to solve problems related to drugs in gastrological, obstetric, neurological and psychiatric diseases
7	Elements of competency	MKK, MKB
8	Type competency	Main competence
9	Syllabus	Gastroenterology, Obstetrics, and Gynecology, Nervous Disease wart
10	Attribute to soft skills	Problem solving in drug related problems
11	Learning methods	Case study, presentation, discussion
12	Learning media	LCD
13	Appraisal	Presentation
14	Lecturer	Internal supervisor, Teaching pharmacist team and teaching physician team
15	References	1. Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael Posey.Pharmacotherapy: A Pathophysio-logic Approach. 8th Edition. 2011.New York, NY: McGraw-Hill 2. Jameson JL, Kasper DL, Longo DL, Fauci AS,, Braunwald E, Hauser SL, eds. *Harrison's Principles of Internal Medicine*. 20th ed. 2018. New York, NY: McGraw-Hill

Table 3.7 Description Module Clinical Toxicology

1	Module name	Clinical Toxicology
2	Courses code	P20B.02014
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Second Semester
5	Precondition	None
6	Competence	After attending this lecture, students were able to apply toxicology to solve toxic cases that occurred to patients.
7	Elements of competency	MKK
8	Type competency	Supporting competence
9	Syllabus	1. Introduction: basic concepts of toxicology, definition of toxins, how to treat poisoning; 2. Toxic Effects and Mechanism; 3. Symptoms and management of general poisoning; 4. Pesticide toxicology; 5. Narcotics Toxicology and Hypnotic-Sedative Drugs; 6. Toxicology of hazardous medicinal substances; 7. Toxicology of microorganisms and toxicology of

		dangerous animal toxins, 8. Midterm Examination; 9. Introduction to Toxicology; 10. Pharmacokinetic parameters and presentation task; 11. Surgical presentation of alprazolam toxicity; 12. Presentation: pharmacokinetic parameters; 13-15. Presentation: Metoclopramide, trihexyphenidyl, Tramadol, Handling of borax, mercury and corticosteroid toxicities; 16. Final examination
10	Attribute to soft skills	problem solving on toxicology, communication skill
11	Learning methods	Lectures, Discussion and Individual Task
12	Learning media	LCD
13	Appraisal	Written Test and Presentation
14	Lecturer	Prof. Dr. Sri Adi Sumiwi, M.S., Apt. dr. Trully D. R. Sitorus, M.Si.
15	References	1. Goldfrank LR, et al (editors). Toxicologic Emergencies 11th ed. Norwalk: Appleton & Lange; 2019. 2. Olson KR, et al (editors). Poisoning & Drug Overdose 5nd ed. Norwalk: Appleton & Lange; 2007. 3. Stine KE & Brown TM. Principles of Toxicology. 2 nd Edition. Florida: CRC Press; 2006. 4. Donatus IA. Toksikologi. Yogyakarta: Bag. Farmakologi & Farmasi Klinik, Fak. Farmasi, UGM ; 2005. 5. Flanagan RJ,Braithwaite RA, Brown SS, Widdop B, de Wolff FA. Basic Analytical Toxicology, WHO, Geneve, 2008.

Table 3.8 Description Module Clinical Pharmacokinetics

1	Module name	Clinical Pharmacokinetics
2	Courses code	P20B.02015
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Second Semester
5	Precondition	None
6	Competence	After completing this topic, students will be able to complete their competencies so that they can play a greater role in improving therapy outcomes, as well as develop insights and foster dynamic and skilled attitudes in the clinical field. As well as being able to explain about the factors that influence the fate of drugs (especially narrow therapy window drugs) in the body related to clinical and therapeutic effects, as well as the calculation of the dosage regimen (load dose, maintenance dose, and frequency of administration) of drugs in general achieve therapeutic levels in the blood.
7	Elements of competency	MKK
8	Type competency	Supporting competence
9	Syllabus	1.Introduction to Clinical Pharmacokinetics; 2. Clinical Pharmacokinetics applications; 3. Pharmacokinetic application: Digoxin; 4. Dosage regiment; 5. Pharmacokinetic Applications: Theophylline, Theophylline case study; 6. Dose Adjustments in Pediatrics and Geriatrics; 7. Dose adjustment for obesity; 8. Midterm Examination; 9-15. Clinical Pharmacokinetic Applications: Carbamazepine, Phenytoin, Aminoglycosides, Lithium and valproic acid, Tacrolimus and cyclosporine, Phenobarbital, and Lidocaine; 16. Final Examination
10	Attribute to soft skills	communication skills, discipline
11	Learning methods	Student Centered Learning

12	Learning media	LCD
13	Appraisal	Group project, presentation, individual task, practice questions, and case study
14	Lecturer	Dr. apt. Ahmad Muhtadi, MS. apt. Taofik Rusdiana, PhD dr. Rovina Ruslami, SpPD., PhD
15	References	1. Winter M.E. 2004. *Basic Clinical Pharmacoki-netic*, Lippincott William & Wilkins, U.S.A. 2. Bauer L.A. 2006. *Cilinical Pharmacoki-netics Handbook*, The McGraw-Hill Companies, U.S.A 3. Bauer L.A.2008, *Applied Clinical Pharmacokinetic*, The McGraw-Hill Companies, U.S.A

Table 3.9 Description Module Drugs Information, Counselling, and Evidence-Based Medicine

1	Module name	Drugs Information, Counselling, and Evidence-Based Medicine
2	Courses code	P20B.02016
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Second Semester
5	Precondition	
6	Competence	After attending this course, students will be able to initiate the establishment of drug information unit and carry out thole as a drug informer based on EBM
7	Elements of competency	MKK
8	Type competency	Supporting competence
9	Syllabus	1.Health Economics; 2. Leaflet and Poster; 3-4. Health economics and outcome research; 5. Evidence Based Medicine; 6. Budget Impact Analysis; 7. Business Model Canvas; 8. Midterm Examination; 9. Evidence Based Medicine on Disease Management; 10. Evidence based laboratory medicine; 11. Evidence based cell therapy; 12. Drug Information Service and Counselling; 13. Drug Information Service Media; 14. Drug Information Service Leaflet; 15. Drug Information Service Brochure; 16. Final examination
10	Attribute to soft skills	communication skill
11	Learning methods	Lectures, Discussion, and Individual Task
12	Learning media	LCD
13	Appraisal	Written Examination and Presentation
14	Lecturer	Prof. apt. Keri Lestari, M.Si. apt. Auliya Suwantika, Ph.D.
15	References	1. Tietze KJ. Clinical Skills for Pharmacists: A Patient-Focused Approach. Missouri: Mosby; 2012. 2. Straus SE, Glasziou PG, Richardson WC, Haynes RB. Evidence-Based Medicine: How to Practice and Teach It. Toronto: Churchill Linvingstone: 2011. 3. Howlett B, Rogo E, Gabiola T. Evidence Based Practice For Health Professionals. Massachusetts: Jones & Bartlett Learning; 2014.

Table 3.10 Description Module Aseptic Techniques

1	Module name	Aseptic Techniques
2	Courses code	P20B.02017
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Second Semester
5	Precondition	None
6	Competence	After completing this topic, students were able to understand the methods and use of fluid therapy and to understand the techniques for providing sterile and cytotoxic preparations
7	Elements of competency	MKK
8	Type competency	Support Competency
9	Syllabus	1. Introduction to Intravenous therapy; 2. Intravenous Therapy II; 3. Pharmacy Intravenous Admixture Service I; 4. Pharmacy IV Admixture Service 2; 5. TPN mixing method; 6. Chemotherapy Regimen; 7. Basic Regimen Calculations; 8. Mid-term examination; 9. Production Facilities and Instruments; 10. Treatment of cancer drugs (Cancer Pharmacotherapy); 11. Safe Handling IV Admix; 12. The means of chemotherapy instruments; 13-15. Discussion of questions cases 1-3; 16. Final exam
10	Attribute to soft skills	communication skills, discipline
11	Learning methods	Lectures, Discussion and Individual Task
12	Learning media	LCD, Demonstration
13	Appraisal	Written Test and Presentation
14	Lecturer	Irma Melyani Puspitasari, Ph.D., Apt. RS Hasan Sadikin Team
15	References	1. Johnston M, Gricar Jeff. Sterile Products and Aseptic Techniques for the Pharmacy Technician (2nd Edition). New York: Prentice Hall; 2010. 2. Ochoa, Pamella S. Ochoa, Jose A. Vega, Concepts in Sterile Preparation and Aseptic Technique, 2014 3. Murff SJ. Safety and Health Handbook for Cytotoxic Drugs. Maryland: Government Institutes; 2012.

Table 3.11 Description Module Research Proposal Seminars

1	Module name	Research Proposal Seminars
2	Courses code	P20B.02020
3	Study loads	2 credits ECTS amount: 16 ECTS Contact hour per semester : 80 Independent study hour per semester : 400 Total workload : 480
4	Semester	Second Semester
5	Precondition	None
6	Competence	MKK, MKB
7	Elements of competency	Main competence
8	Type competency	Main Competence
9	Syllabus	Research proposal presentation
10	Attribute to soft skills	communication skills, discipline

11	Learning methods	Presentation
12	Learning media	LCD, presentation
13	Appraisal	Presentation
14	Lecturer	Supervisor and team
15	References	1. Unpad Rector Regulation No. 50 of 2016 concerning Guidelines for Masters and Doctoral Education in the Padjadjaran University Environment 2. Academic Guidelines for Master's Program in Clinical Pharmacy

Table 3.12 Description Module Management of Disease-Associated and Practical with Endocrine, Heart, Blood vessel and Renal

1	Module name	Management of Disease-Associated and Practical with Endocrine, Heart, Blood vessel and Renal
2	Courses code	P20B.02018
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Second Semester
5	Competence	After completing this topic, students will be able to explain and determine what drugs are most appropriate, be able to monitor and be able to solve problems related to drugs in endocrine, kidney, heart and blood vessel diseases.
6	Elements of competency	MKK
7	Type competency	Main competence
8	Syllabus	1.Genetic risk panel testing; 2. Laboratory tests and markers for diabetes mellitus and kidney disease (testing panel presentation); 3. Panel presentation of testing for atherosclerosis and coronary heart disease; 4. Panel testing for DM, kidney, atherosclerosis and coronary heart disease; 5. Epidemiology, etiology, pathophysiology and interpretation of diabetes mellitus; 6. Pharmacotherapy and monitoring in diabetes mellitus (Presentation); 7. Pharmacotherapy and monitoring in thyroid disease (Presentation); 8. Endocrine disease case studies and exams; 9. Epidemiology, etiology, pathophysiology and interpretation of urinary tract infections; 10. Pharmacotherapy and monitoring in acute renal failure; 11. Pharmacotherapy and monitoring in chronic renal failure; 12. Calculation of the dosage for kidney disorders; 13. Epidemiology, etiology, pathophysiology and interpretation of heart disease; 14. Manegement of Acute Coronary Syndrome (ACS); 15. Pharmacotherapy and monitoring in heart failure; 16. Presentation of CAD, Cardiomyopathy, and Hypertensive heart disease (HHD)
9	Attribute to soft skills	Prolem solving in drug related problems
10	Learning methods	Lectures, discussion, and presentation
11	Learning media	LCD
12	Appraisal	Written examination and presentation
13	Lecturer	apt. Melisa Intan Barliana, Dr. Med. Sc. Teaching Physician Team
14	References	1. Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael

		Posey.Pharmacotherapy: A Pathophysiologic Approach. 10th Edition.New York, NY: McGraw-Hill. 2016 2. Kasper DL, Fauci AS, Longo DL, Braunwald E, Hauser SL, Jameson JL, eds. *Harrison's Principles of Internal Medicine*. 16th ed. New York, NY: McGraw-Hill. 2015 3. Michael Katz, Michael D. Katz, Kathryn R. Matthias, Marie A. Chisholm-Burns. 2016. Pharmacotherapy Principles and Practice Study Guide [6 ed.]. McGraw-Hill

Table 3.13 Description Module Clinical Pharmacy Practice Endocrine Heart Blood vessel and Renal

1	Module name	Clinical Pharmacy Practice Endocrine Heart Blood vessel and Renal
2	Courses code	P20B.02019
3	Study loads	3 credits ECTS amount: 6 ECTS Contact hour per semester : 40 Independent study hour per semester : 136 Total workload : 176
4	Semester	Second Semester
7	Elements of competency	MKK, MKB
8	Type competency	Main competence
10	Attribute to soft skills	Problem solving in drug related problems
11	Learning methods	Lectures, discussion, and presentation
12	Learning media	LCD
13	Appraisal	Written examination and presentation
14	Lecturer	apt. Melisa Intan Barliana, Dr. Med. Sc. Teaching Physician and PharmacyTeam
15	References	1. Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael Posey.Pharmacotherapy: A Pathophysio-logic Approach. 8th Edition. 2011.New York, NY: McGraw-Hill 2. Jameson JL, Kasper DL, Longo DL, Fauci AS,, Braunwald E, Hauser SL, eds. *Harrison's Principles of Internal Medicine*. 20th ed. 2018. New York, NY: McGraw-Hill

Table 3.14 Description Module Pharmacoepidemiology and Pharmacoeconomics

1	Module name	Pharmacoepidemiology and Pharmacoeconomics
2	Courses code	P20B.03026
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Third Semester
5	Competence	After attending this course, students will be able to explain pharmacoepidemiological and pharmacoeconomical concepts in clinical pharmacy practices
6	Elements of competency	MKK
7	Type competency	Support competence
8	Syllabus	1.Pharmacoepidemiology Introduction; 2. Pharmacoepidemiology as a Support to Drug Use Policy; 3. Observational Study I: Descriptive and Cross Sectional; 4. Observational Study I: Case Control and Cohort; 5.

		Experimental Study: Quasi-experimental and Randomized Control Trial; 6. Qualitative Study; 7. Systematic Review and Meta-analysis use in Pharmacoepidemiology; 8. Midterm Examination; 9. Pharmacoeconomy in Clinical Pharmacy Services; 10. Cost of Illness Analysis; 11. Cost-minimization Analysis; 12. Cost-effectiveness Analysis; 13. Cost-utility Analysis; 14. Cost-benefit Analysis; 15. Budget Impact Analysis; 16. Final Examination
10	Attribute to soft skills	communication skills
11	Learning methods	Lectures and Discussion
12	Learning media	LCD
13	Appraisal	Written Examination and Presentation
14	Lecturer	apt. Auliya A. Suwantika, Ph.D. apt. Rano Kurnia Sinuraya, MKM., apt. Neily Zakiyah, Ph.D.
15	References	1. Strom BL and Kimmel SE. Textbook of Pharmacoepidemiology. John Wiley and Sons, Ltd. 2013 2. Drummond MF, et al. Methods for the Economic Evaluation of Health Care Programmes. Oxford University Press. 2015

Table 3.15 Description Module Management of Disease: Oncology and Infection, Respiratory, System Immunology

1	Module name	Management of Disease: Oncology and Infection, Respiratory, System Immunology
2	Courses code	P20B.03027
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Third Semester
5	Competence	After completing this topic, students are able to determine the right choice of drugs, monitor and solve problems related to drugs in respiratory diseases, immunology, oncology, and infections.
7	Elements of competency	MKK
8	Type competency	Main competence
9	Syllabus	1.Introduction to Disease Management III; 2. Etiology and Pathophysiology of Respiratory Diseases (Asthma, Bronchitis, and COPD); 3. Asthma, bronchitis and COPD therapy guidelines (without and with comorbidities); 4. Asthma, bronchitis and COPD therapy case studies (without and with comorbidities) and exams; 5. Guideline for therapy for Sensitive Tuberculosis (without and with comorbidities); 6. Guideline for TB Multi Drug Resistance therapy (without and with comorbidities); 7. Case studies of sensitive TB and MDR-TB and exams; 8. Etiology and pathophysiology of immunological disorders (allergic reactions and autoimmune diseases); 9. Guidelines for the treatment of immunological disorders (allergic reactions and autoimmune diseases); 10. Case studies of allergic reactions and autoimmune diseases, exams; 11. Etiology and pathophysiology of cancer (cancers of the blood, breast, cervix, lung and colorectal); 12. Cancer therapy guidelines (with comorbidities); 13. Cancer case studies and exams; 14. Etiology and Pathophysiology of Infection (such as urinary, sepsis, HIV-AIDS, central nervous system, and fungi)

		and the guidelines for the treatment of these infections; 15. Use of prophylactic antibiotics, empiric, resistance and rational use; 16. nfection case studies and exams
10	Attribute to soft skills	communication skills
11	Learning methods	Lectures, Discussion and Presentation
12	Learning media	LCD
13	Appraisal	Written Test and Presentation
14	Lecturer	Dr. Eli Halimah, M.Si., Apt. Doctor Team
15	References	1. Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael Posey.Pharmacotherapy: A Pathophysiologic Approach. 9th Edition.New York, NY: McGraw-Hill, 2015 2. Kasper DL, Fauci AS, Longo DL, Braunwald E, Hauser SL, Jameson JL, eds. *Harrison's Principles of Internal Medicine*. 19th ed. New York, NY: McGraw-Hill, 2015 3. Roger Walker and Cate Whittlesea. 2012. Clinical Pharmacy and Therapeutics. Churchill Livingstone : Elsevier.

Table 3.16 Description Module Clinical Pharmacy Practice : Oncology and Infection, Respiratory, System Immunology

1	Module name	Clinical Pharmacy Practice : Oncology and Infection, Respiratory, System Immunology
2	Courses code	P20B.03028
3	Study loads	3 credits ECTS amount: 6 ECTS Contact hour per semester : 40 Independent study hour per semester : 136 Total workload : 176
4	Semester	Third Semester
5	Competence	After completing this topic, students are able to determine the right choice of drugs, monitor and solve problems related to drugs in respiratory diseases, immunology, oncology, and infections.
7	Elements of competency	MKK
8	Type competency	Main competence
9	Syllabus	1.Introduction to Disease Management III; 2. Etiology and Pathophysiology of Respiratory Diseases (Asthma, Bronchitis, and COPD); 3. Asthma, bronchitis and COPD therapy guidelines (without and with comorbidities); 4. Asthma, bronchitis and COPD therapy case studies (without and with comorbidities) and exams; 5. Guideline for therapy for Sensitive Tuberculosis (without and with comorbidities); 6. Guideline for TB Multi Drug Resistance therapy (without and with comorbidities); 7. Case studies of sensitive TB and MDR-TB and exams; 8. Etiology and pathophysiology of immunological disorders (allergic reactions and autoimmune diseases); 9. Guidelines for the treatment of immunological disorders (allergic reactions and autoimmune diseases); 10. Case studies of allergic reactions and autoimmune diseases, exams; 11. Etiology and pathophysiology of cancer (cancers of the blood, breast, cervix, lung and colorectal); 12. Cancer therapy guidelines (with comorbidities); 13. Cancer case studies and exams; 14. Etiology and Pathophysiology of Infection (such as urinary, sepsis, HIV-AIDS, central nervous system, and fungi) and the guidelines for the treatment of these infections; 15. Use

		of prophylactic antibiotics, empiric, resistance and rational use; 16. nfection case studies and exams
10	Attribute to soft skills	communication skills and problem solving
11	Learning methods	Lectures, Discussion and Presentation
12	Learning media	LCD and case study
13	Appraisal	Written Test and Presentation
14	Lecturer	Dr. Eli Halimah, M.Si., Apt. Doctor Team
15	References	1. Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael Posey.Pharmacotherapy: A Pathophysio-logic Approach. 8th Edition. 2011.New York, NY: McGraw-Hill 2. Jameson JL, Kasper DL, Longo DL, Fauci AS,, Braunwald E, Hauser SL, eds. *Harrison's Principles of Internal Medicine*. 20th ed. 2018. New York, NY: McGraw-Hill

Table 3.17 Description Module Progress Report

1	Module name	Progress Report
2	Courses code	P20B.04033
3	Study loads	2 credits ECTS amount: 11 ECTS Contact hour per semester : 53 Independent study hour per semester : 289 Total workload : 342
4	Semester	Fourth Semester
5	Precondition	a. Registered as active students b. Student has conducted a research proposal seminar and passed c. Enrolled in the Progress Report course (
6	Competence	Progress Report Seminar is held to assess the Masters students thesis research progress, students are expected to be able to: ● Present the ability to interpret and analyze data ● Deliver information orally in an organized, persuasive, and logical manner using documentation and supporting visual aids ● Take, analyze, and interpret scientific literature to provide information to be shared orally or in writing ● Creating documents that are technical, analytical, relevant in content and well managed ● Show contributions both in individual or group project ● Conduct independent literature studies using databases and pharmacology-related publications to solve problems related to the field of pharmacology ● Analyze, interpret, criticize scientific literature related to study design, interpretation data and suitability of conclusions
7	Elements of competency	MKB, MKK
8	Type competency	main competence
9	Syllabus	Implementation of this module: a. Conducted in each department according to the concentration / specialization taken by students b. Students independently present the progress of thesis research carried out, in front of lecturers in the Department

		(at least the Head of the Department and 1 other Lecturer in the Department). c. The detailed presentation mechanism and schedule were regulated by the Head of the Department
10	Attribute to soft skills	self confidence, discipline, communication
11	Learning methods	an open seminar that can be attended by students and lecturers. Technical implementation: The students present their research progress followed by a question and answer session
12	Learning media	the LCD viewer, laptop, white board and "online" (Google Meet)
13	Appraisal	The components assessed in the progress seminar include: Methodology comprehension Knowledge comprehension Reasoning comprehension Ability to communicate ideas Research progress percentage Final Score: students are considered pass if the seminar average score is at least B
14	Lecturer	Thesis adviser team, Head of the Department and other Lecturer in the Department
15	References	1. Unpad Rector Regulation No. 50 of 2016 concerning Guidelines for Masters and Doctoral Education in the Padjadjaran University Environment 2. Academic Guidelines for Master's Program in Clinical Pharmacy

Table 3.18 Description Module Research Seminar

1	Module name	Research Seminar
2	Courses code	P20B.04034
3	Study loads	3 credits ECTS amount: 14 ECTS Contact hour per semester : 80 Independent study hour per semester : 354 Total workload : 434
4	Semester	Fourth Semester
5	Precondition	Passed research proposal
6	Competence	Seminar of research result is held to assess the Masters students thesis research result, students are expected to be able to: ● Present the ability to interpret and analyze data ● Deliver information orally in an organized, persuasive, and logical manner using documentation and supporting visual aids ● Take, analyze, and interpret scientific literature to provide information to be shared orally or in writing ● Creating documents that are technical, analytical, relevant in content and well managed ● Show contributions in individual project

<table>
<tr><td></td><td></td><td>● Conduct independent literature studies using databases and pharmacology-related publications to solve problems related to the field of pharmacology
● Analyze, interpret, criticize scientific literature related to study design, interpretation data and suitability of conclusions</td></tr>
<tr><td>7</td><td>Elements of competency</td><td>MKB, MKK</td></tr>
<tr><td>8</td><td>Type competency</td><td>main competence</td></tr>
<tr><td>9</td><td>Syllabus</td><td>The Student should have research result manuscripts that have been wrapped in yellow soft cover</td></tr>
<tr><td>10</td><td>Attribute to soft skills</td><td>communication skill</td></tr>
<tr><td>11</td><td>Learning methods</td><td>an open seminar that can be attended by students and lecturers.

Technical implementation:
The students present their research proposal for 15 minutes followed by a question and answer session by discussants, each discussant is given 10 minutes to ask questions</td></tr>
<tr><td>12</td><td>Learning media</td><td>the LCD viewer, laptop, white board and "online" (Google Meet)</td></tr>
<tr><td>13</td><td>Appraisal</td><td>discussants evaluate the accountability of students for questions that are critical and clarify towards the topics with percentage scoring:
● Significance of background research and/or research focus and Objectives, 15% (fifteen percent);
● Relevance and updating of literature review, 25% (twenty five percent);
● Accuracy of the objectives and research proportion/hypothesis, 10% (ten percent);
● Suitability of research methods, 10% (ten percent);
● Scientific writing ability, 20% (twenty percent);
● Communication ability in oral exam, 20% (twenty percent);
● Total 100% (one hundred percent) can be added with assessment 10% (ten percent).
The score of discussants is added up with other discussants score with ratio 60% of adviser team, 40% of examiner team as final score, without converting into grade in advanced.

Final Score:
● Students are declared “PASS” if they get an average score of ≥ 68
● Students are declared “NOT PASS” if they get an average score of < 68
Converting FS into Grade and Score using the following guidelines:
<table>
<tr><th>Final Score (FS)</th><th>Grade</th><th>Score</th></tr>
<tr><td>80 ≤ FS ≤ 100</td><td>A</td><td>4</td></tr>
<tr><td>68 ≤ FS < 80</td><td>B</td><td>3</td></tr>
<tr><td>56 ≤ FS < 68</td><td>C</td><td>2</td></tr>
<tr><td>45 ≤ FS < 56</td><td>D</td><td>1</td></tr>
<tr><td>FS < 45</td><td>E</td><td>0</td></tr>
</table>
</td></tr>
<tr><td>14</td><td>Lecturer</td><td>Thesis adviser team and examiner team</td></tr>
</table>

15	References	1. Unpad Rector Regulation No. 50 of 2016 concerning Guidelines for Masters and Doctoral Education in the Padjadjaran University Environment 2. Academic Guidelines for Master's Program in Clinical Pharmacy

Table 3.19 Description Module Magister Comprehensive Defense

1	Module name	Magister Comprehensive Defense
2	Courses code	P20B.04003
3	Study loads	3 credits ECTS amount: 14 ECTS Contact hour per semester : 80 Independent study hour per semester : 340 Total workload : 420
4	Semester	Fourth Semester
5	Precondition	Thesis Defence Form (LS 1, LS 2) : 1 Copy LS4 Form/ UNT Revision Form : 1 Page Proof of Academic Fee Payment Photocopy : 1 Page Thesis Draft (Yellow Soft Cover) : 7 Copies Thesis Statement Form : 1 Page KPA (Academic Achievement Card) Signed by The Program Study Head : 1 Page Library Book Free Form of Faculty of Pharmacy, Unpad Postgraduate, and Unpad Cisral : 1 page
6	Competence	The students are expected to be able to : ● Present the ability to interpret and analyze data ● Deliver information orally in an organized, persuasive, and logical manner using documentation and supporting visual aids ● Define and apply the mechanism of certain drug on molecular and cellular levels ● solving problem related to drugs
7	Elements of competency	MKB, MKK
8	Type competency	main competence
9	Syllabus	Comprehensive Examination is the final examination for Masters Program in Clinical Pharmacy in the form of a comprehensive oral exam, regarding the theories and principles related to the research. Implementation of this module: a. Conducted once per semester b. At the appointed time, student is tested orally in closed session in front of 3 (three) examiners and a team of supervisors c. The mechanism and schedule of the examination in more detail are regulated by the Head of The Pharmacy Masters Study Program d. Examination is held for 90 minutes e. Each examiner asked for 15 minutes f. Each supervisor asked for a maximum of 15 minutes g. At least 60% of the total number of examiners and supervisors attended the examination
10	Attribute to soft skills	communication skill

<table>
<tr><td>11</td><td>Learning methods</td><td>The students present their research results in brief followed by a question and answer session</td></tr>
<tr><td>12</td><td>Learning media</td><td>the LCD viewer, laptop, white board and "online" (Google Meet)</td></tr>
<tr><td>13</td><td>Appraisal</td><td>The components assessed in the examination are the academic abilities in the field / concentration related to research by master students.

<u>Passing Criteria</u>
a. The examination participants are declared to have passed if the average score is at least B.
b. For those who do not pass, they must repeat at least 1 (one) month after the announcement
Final Score:
● Students are declared “PASS” if they get an average score of ≥ 68
● Students are declared “NOT PASS” if they get an average score of < 68

Converting FS into Grade and Score using the following guidelines:
<table>
<tr><th>Final Score (FS)</th><th>Grade</th><th>Score</th></tr>
<tr><td>80 ≤ FS ≤ 100</td><td>A</td><td>4</td></tr>
<tr><td>68 ≤ FS < 80</td><td>B</td><td>3</td></tr>
<tr><td>56 ≤ FS < 68</td><td>C</td><td>2</td></tr>
<tr><td>45 ≤ FS < 56</td><td>D</td><td>1</td></tr>
<tr><td>FS < 45</td><td>E</td><td>0</td></tr>
</table></td></tr>
<tr><td>14</td><td>Lecturer</td><td>Thesis adviser team and examiner team.
a. Examiners must hold a Doctorate (Dr.) with a minimum academic position as Lector and/or Professor
b. The number of examiners is 3 (three) people</td></tr>
<tr><td>15</td><td>References</td><td>1. Unpad Rector Regulation No. 50 of 2016 concerning Guidelines for Masters and Doctoral Education in the Padjadjaran University Environment
2. Academic Guidelines for Master’s Program in Clinical Pharmacy</td></tr>
</table>

Table 3.20 Description Module Scientific Paper

1	Module name	Scientific Paper
2	Courses code	P20B.04035
3	Study loads	1 credits ECTS amount: 14 ECTS Contact hour per semester : 45 Independent study hour per semester : 369 Total workload : 414
4	Semester	Fourth Semester
5	Precondition	a. Registered as active students b. Has thesis adviser team. c. Scientific article is part of the thesis
6	Competence	The students are expected to be able to :

		○ Find a knowledge of basic concepts in pharmaceutical science in one's area of expertise ○ Integrating science, knowledge, technology and advanced concepts in pharmaceutical sciences ○ Design, conduct and maintain original research in one's area of expertise through international publication and research dissemination through seminars ○ Successfully perform analysis, synthesis and antithesis by applying analytical and critical thinking in reviewing scientific literature and evaluating research findings
7	Elements of competency	MKB, MKK
8	Type competency	main competence
9	Syllabus	Scientific articles that are accepted to be published in a national journal accredited by at least Sinta 3 or an international journal through the approval of the thesis adviser who will act as co-authors, by listing UNPAD as the student's first affiliation.
10	Attribute to soft skills	writing ability
11	Learning methods	Writing and publication
12	Appraisal	Final score is depend by the journal criteria, at least in review
13	Lecturer	Thesis adviser team and The Program Study Head
14	References	1. Unpad Rector Regulation No. 50 of 2016 concerning Guidelines for Masters and Doctoral Education in the Padjadjaran University Environment 2. Academic Guidelines for Master's Program in Clinical Pharmacy

2. Clinical Biochemistry Concentration

Table 3.21 Description Module Philosophy of Science

1	Module name	Philosophy of Science
2	Courses code	P20B.01001
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	First Semester
5	Precondition	None
6	Competence	Philosophy of science explores the nature of science and the source of knowledge. Students will learn about the introduction of science, history and development of science, the foundation of knowledge, fundamental structures, logic and reasoning, research method paradigm, moral ethics and science, and metaphysics
7	Elements of competency	MPK
8	Type competency	Supporting competence
9	Syllabus	1.Introduction; 2. History and Development of Science Philosophy; 3. Base of Science Philosophy; 4. Base of Science Epistemology; 5. History and Development of Science Philosophy: Aristotle's Theory of Truth; 6. History and

		Development of Science Philosophy: Contemporary philosophy; 7. Source of Knowledge; 8. Midterm Examination; 9. Science Philosophy Introduction: Essence of Science Philosophy; 10. History of Science Philosophy; 11. Fundamental Structure of Science Philosophy; 12. Logic and Reasoning of Science Philosophy; 13. Research Method Paradigm; 14. Ethics and Moral in Science; 15. Metaphysics; 16. Final Examination
10	Attribute to soft skills	Behavior patterns of scientific, research ethics
11	Learning methods	Lectures and Discussion
12	Learning media	LCD projector
13	Appraisal	Written Examination and Presentation
14	Lecturer	Prof. apt. Dr. Moelyono, M.S. Prof. Dr. dr. Johanes Cornelius Mose Sp.OG.,
15	References	1. Joseph Vidal-Rosset. 2018. Book Review : The Philosophy of Science – A Companion. Oxford University Press, Pp. 768 2. Lars-Göran Johansson. 2016. Philosophy of Science for Scientists. Springer Undergrad. Texts Philosophy. Springer, Cham 3. Martiningsih Wahyu. 2012. Philosophers from Plato to Ibn Bajjah. Yogyakarta : IRCiSod. 4. Sumarna, Cecep. 2020. Philosophy of Science. Rosda 5. Susanto A. 2011. Philosophy of Science, A Study in Ontological, Epistemological and Axiological Dimensions. Jakarta: Bumi Aksara

Table 3.22 Description Module Research Methodology

1	Module name	Research Methodology
2	Courses code	P20B.01002
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	First Semester
5	Precondition	
6	Competence	After attending this course, students will be able to make their research ideas into research with quality results, including dissertation proposals, presentations, proposals for research projects, research assistance, or journal articles
7	Elements of competency	MKK
8	Type competency	Supporting competence
9	Syllabus	1.Research philosophy; develop problems into interesting research and answer the questions "Why and How?"; 2. Research process and flow; 3. Research design; 4. Research variable; 5. Research proposal; 6. Scientific papers; 7. Writing Strategies (Tenses in writing scientific articles); 8. Mid-term examination; 9. Strategy for Writing Scientific Papers; 10. Scientific Writing Application; 11. Research proposal writing; 12. Plagiarism; 13. Research Ethics in humans and animals; 14. Clinical Trial; 15. Informed consent; 16. Final Exam
10	Attribute to soft skills	Research design, Discipline, systematic
11	Learning methods	Lectures and discussion

12	Learning media	LCD projector
13	Appraisal	Written examination and presentation
14	Lecturer	Prof. apt. Anas Subarnas, M.Sc. apt. Rizky Abdulah, Ph.D. apt. Muchtaridi, Ph.D.
15	References	1. Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael Posey.Pharmacotherapy: A Pathophysio-logic Approach. 8th Edition. 2011.New York, NY: McGraw-Hill 2. Jameson JL, Kasper DL, Longo DL, Fauci AS,, Braunwald E, Hauser SL, eds. *Harrison's Principles of Internal Medicine*. 20th ed. 2018. New York, NY: McGraw-Hill 3. Petter Laake, Haakon Breien Benestad, Bjorn Reino Olsen. 2007. Research Methodology in the Medical and Biological Sciences. 4. A M Novikov; D A Novikov. 2013. Research methodology: from philosophy of science to research design. 5. Sarah Philpot, Lesley Curnick, Liz Soars, John Soars. 2007. New Headway Academic Skills: Student's Book Level 3: Reading, Writing, and Study Skills. 6. Rinaldi, S.F and Mujianto B. 2017.Research Methodology and statistic. Human research education center of ministry health of republic od Indonesia 7. Debbie Epstein, Jane Kenway, Rebecca Boden. 2007. Writing for Publication (The Academic's Support Kit).

Table 3.23 Description Module Biostatistics

1	Module name	Biostatistics
2	Courses code	P20B.01003
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	First Semester
5	Precondition	None
6	Competence	After attending this course, students will be able to apply statistical method in clinical study
7	Elements of competency	MKK
8	Type competency	Supporting competence
9	Syllabus	1.Biostatistical Analysis; 2.Data Analysis; 3.Descriptive Statistics; 4.Hypothesis; 5.Nonparametric Statistics 1&2; 6.Analysis of Variance (ANOVA); 7.Sampling Techniques; 8.Midterm examination; 9.Introduction to Applied Biostatistics in Medical and Clinical Research; 10.Descriptive Analysis; 11.Differential Analysis Between Groups; 12.Correlation and Regression Analysis (Univariate); 13.Regression Analysis (Multivariate); 14.Survival Analysis; 15.Case Study Analysis Exercise. 16. final examination
10	Attribute to soft skills	Lectures and Discussion
11	Learning methods	LCD
12	Learning media	Written Examination and Presentation
13	Appraisal	Hadyana, M.Sc., Ph.D. apt. Neily Zakiyah, M.Sc., Ph.D

14	Lecturer	Hadyana, M.Sc., Ph.D. apt. Neily Zakiyah, M.Sc., Ph.D
15	References	1. Statistics in Medicine, 4th edition. Riffenburgh, RH. Elsevier. 2012. 2. Fundamental of Biostatistics, 8th edition. Rosner, B. Cengage Learning. 2015

Table 3.24 Description Module Introduction to Clinical Pharmacy and Community

1	Module name	Introduction to Clinical Pharmacy and Community
2	Courses code	P20B.01004
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	First Semester
5	Precondition	No
6	Competence	Students able to understand clinical pharmacy and activities, integrate evidence based-medicine to clinical pharmacy practice
7	Elements of competency	MKK
8	Type competency	Supporting competence
9	Syllabus	1.Introduction of Clinical Pharmacy and Drug-Related Problem Identification; 2. Methodology to Analyze Clinical Pharmacy Cases; 3. Drugs-Induced Diseases; 4. Adverse Drug Reaction; 5. Documentation Model for Clinical Pharmacy-Related Issues; 6. Clinical Pharmacy Services 1; 7-8. Clinical Pharmacy Services 2&3; 9 Midterm Examination; 10.. Drugs during Pregnancy and Breastfeeding; 11. Drugs in Pediatric and Geriatric; 12. Clinical Pharmacy in New Generation Medicine; 13. Clinical Pharmacy Services; 114-15 Clinical Pharmacy Services using Digital Platform. 16. Final exam
10	Attribute to soft skills	Problem solving in clinical pharmacy problems
11	Learning methods	Lectures, discussion, and presentation
12	Learning media	LCD
13	Appraisal	Written examination and presentation
14	Lecturer	Prof. Dr. apt. Keri Lestari., M.Si. Dr. apt. Siti Saidah, MSi. Apt. Dika Pramita Destiani., M.Farm.
15	References	1. Joseph T. DiPiro, Robert L. Talbert, Gary C. Yee, Gary R. Matzke, Barbara G. Wells, L. Michael Posey.Pharmacotherapy: A Pathophysiologic Approach. 9th Edition.New York, NY: McGraw-Hill,2015 2. Kasper DL, Fauci AS, Longo DL, Braunwald E, Hauser SL, Jameson JL, eds. *Harrison's Principles of Internal Medicine*. 16th ed. New York, NY: McGraw-Hill, 2015 3. Roger Walker and Cate Whittlesea. 2012. Clinical Pharmacy and Therapeutics. Churchill Livingstone : Elsevier.

Table 3.25 Description Module Biochemistry

1	Module name	Biochemistry
2	Courses code	P20B.01010
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91

4	Semester	First Semester
5	Precondition	None
6	Competence	Clinical Biochemistry learning objectives are for students to determine the type of macromolecular metabolic disorders based on clinical biochemical parameters
7	Elements of competency	MKK
8	Type competency	main competence
9	Syllabus	1. Structure and Function of Protein; 2. Protein Metabolism; 3. Enzyme; 4. Antibody; 5. Protein Metabolism Disorders; 6. Clinical biochemical parameters of protein metabolism disorders; 7. Midterm examination; 8. Structure and Function of Carbohydrate; 9. Metabolism of Carbohydrate; 10. Carbohydrate Metabolism disorders; 11. Clinical biochemical parameters of carbohydrate metabolism disorders; 12. Structure and Function of Lipid; 13. Lipid Metabolism; 14. Lipid Metabolism disorders; 15. Clinical biochemical parameters of lipid metabolism disorders; 16. Final examination
10	Attribute to soft skills	presentation skills, discipline
11	Learning methods	Lectures and Discussion; Presentation and Discussion
12	Learning media	LCD
13	Appraisal	Written Test
14	Lecturer	Dr. Eli Halimah, MS. Apt. Melisa I. Barliana, Dr.Mrd.Sc., Apt. Nyi Mekar M.Si., Apt Dr. Trilis Yulianti, Apt.
15	References	1. Nelson, D. L., Cox, M. M., & Lehninger, A. L. (2012). Principles of biochemistry. 2. Rodwell, V. W., Bender, D. A., Botham, K. M., Kennelly, P. J., & Weil, P. A. (2018). *Harper's illustrated biochemistry*. New York (NY): McGraw-Hill Education. 3. Voet, D., Voet, J. G., & Pratt, C. W. (2013). *Fundamentals of biochemistry: life at the molecular level* (No. 577.1 VOE). 4. Uzman, A., Johnson, J., Eichberg, J., Widger, W., Voet, D., Voet, J. G., & Pratt, C. W. (2012). *Fundamentals of Biochemistry: Life at the Molecular Level*. John Wiley & Sons, Incorporated. 5. Nelson, D. L., & Cox, M. M. (2017). *Absolute, Ultimate Guide to Principles of Biochemistry Study Guide and Solutions Manual*. Macmillan Higher Education

Table 3.26 Description Module Cell and Molecular Biology

1	Module name	Cell and Molecular Biology
2	Courses code	P20B.01011
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	First Semester
5	Precondition	None
6	Competence	After completing this topic, students will be able to interpret the molecular mechanisms of cell physiology, be able to solve scientific problems, manage research and development that are beneficial to society and science.
7	Elements of competency	MKK
8	Type competency	main competence

9	Syllabus	1.Introduction, *How cells read the genome: from DNA to protein;* 2. DNA Replication, Repairment, and Method for analysis; 3. Genetic Switch and Method for analysis; 4. Cell membrane and transports; 5. Intracellular membrane traffic and Method for analysis; 6. Mechanism of cell communication; 7. Cell signalling, Cell signaling : G protein-coupled receptor (GPCR); 8. Midterm Examination; 9-12. Cell signaling : Receptor Tyrosine Kinase, Receptor guanylyl cyclase, gated ion chanel and adhesion receptor, and Nuclear receptor; 13. Cell Cycle and Cell Death and Method for analysis; 14. Cancer Cell signaling and Method for analysis; 15. Pathogen and Infections and Method for analysis; 16. Final Examination
10	Attribute to soft skills	communication skills, discipline
11	Learning methods	*Lecture and presentation*
12	Learning media	LCD
13	Appraisal	Written Test and Presentation
14	Lecturer	Dr. Med. Sc. Melisa Intan Barliana, S.Si., Apt
15	Reference	1. Alberts, B., Johnson, A., Lewis, J., Morgan, D., Raff, M., Roberts, K., ... & Hunt, T. (2017). *Molecular biology of the cell*. WW Norton & Company. 2. Mercadante, A. A., Dimri, M., & Mohiuddin, S. S. (2019). Biochemistry, replication and transcription. PMID: 30986011, Bookshelf ID: NBK540152 3. Katritch, V., Cherezov, V., & Stevens, R. C. (2013). Structure-function of the G protein–coupled receptor superfamily. *Annual review of pharmacology and toxicology*, *53*, 531-556. 4. Wagener, C., Stocking, C., & Müller, O. (2016). *Cancer Signaling: from molecular biology to targeted therapy*. John Wiley & Sons.

Table 3.27 Description Module Genetics

1	Module name	Genetics
2	Courses code	P20B.01012
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	First Semester
5	Precondition	None
6	Competence	After completing this topic, students will be able to master genetic theory and relate it to genetic diseases and genetic applications in the fields of biotechnology, therapeutic protein manufacturing and protein engineering
7	Elements of competency	MKK
8	Type competency	main competence
9	Syllabus	1.Macromolecules: DNA, RNA, Chromosomes and Proteins; 2. Genetic information flow: DNA □ RNA □ Protein; 3. Regulation of gene expression transcription in prokaryotes; 4. Regulation of gene expression transcription in eukaryotes; 5. Mutations and DNA Repair; 6. Plasmid; 7. Transfer of genetic material: conjugation and transformation; 8. Midterm Examination; 9. Transfer of genetic material: transposon and transposition; 10. Viral and viral oncogene genetic material; 11. Cytogenetics; 12. Genetically related diseases; 13. Molecular genetics and biotechnology; 14. Therapeutic agent; 15. Protein Engineering; 16. Final examination

10	Attribute to soft skills	communication skills, discipline
11	Learning methods	Lecture and Discussion
12	Learning media	LCD
13	Appraisal	Presentation, Mid-term examination, final examination
14	Lecturer	Dr. apt.Tina Rostinawati, M.Si. Dr. apt. Tiana Milanda, M.Si.
15	References	1. Nelson, D.L. and Cox, M.M. 2015. Lehninger Principles of Biochemistry, 7th ed. WH Freeman. New York. 2. Alberts B et al. Molecular Biology of The Cell, 6th ed. 2008. Garland Science, New York. **3.** Snyder, L. and W. Champness. 2013. 4th edition. Molecular Genetics of Bacteria. 265-294 **4.** Flint, S.J., L.W., Enquist, V.R. Racaniello and A.M. Skalka. 2008. Principles of Virology. 63-123, 654-694 **5.** Elrod, S and W., Stansfield. 2010. Genetic. 5th edition. 270-290

Table 3.28 Description Module Pharmacology

1	Module name	Pharmacology
2	Courses code	P20B.01013
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	First Semester
5	Precondition	None
6	Competence	After completing this topic, students will be able to interpret the mechanism of action of drugs, be able to solve scientific problems, manage research and development that are beneficial to society and science
7	Elements of competency	MKK
8	Type competency	main competence
9	Syllabus	1.Introduction; 2. Medicinal Stereochemistry; 3. Drug Receptors; 4. Drug-Receptor Interactions; 5. *Cholinergic, Adrenergic*; 6. *GABAergic Receptors*; 7. *PPI Mechanism*; 8. *Take Home Test*; 9. *Cell Signaling*, 10. Cancer; 11-15. Group presentations: Ion Channels, Receptors, Enzymes and Carrier proteins in cancer; 16. Final Examination
10	Attribute to soft skills	communication skills, discipline
11	Learning methods	*Lecture and interactive learning*
12	Learning media	LCD
13	Appraisal	Written Test and Presentation
14	Lecturer	Prof. Dr. Anas Subarnas, M.Sc., Apt. Prof. Dr. Jutti Levita, M.Si., Apt.
15	References	1. General and Molecular Pharmacology: Principles of Drug Action. Clementi F (Editor), Fumagalli G (Editor). Wiley, 2015. 2. Molecular Pharmacology: From DNA to Drug Discovery. Dickenson J, Freeman F, Mills CL, Thode C, Sivasubramaniam S. Wiley-Blackwell, 2013. 3. Molecular and Cellular Signaling. 1st ed. Beckerman M. New York. Springer Science Inc., 2005.

Table 3.29 Description Module Clinical Toxicology

1	Module name	Clinical Toxicology
2	Courses code	P20B.02014

3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Second Semester
5	Precondition	None
6	Competence	After attending this lecture, students were able to apply toxicology to solve toxic cases that occurred to patients
7	Elements of competency	MKK
8	Type competency	Support
9	Syllabus	2. Introduction: basic concepts of toxicology; 2. General Toxicology and Poisoning Management; 3-4. Clinical Toxicology; 5. Pesticide toxicology; 6. Drug toxicity under conditions of selective pathology and various genetic anomalies; 7. Drug toxicity in biotransformation disorders; 8. Midterm examination; 9. Pathopharmacology of urinary tract and renal failure conditions; 10. Alcohol, glycol, and aldehyde toxicity; 11. Drug toxicity in geriatrics and pediatrics; 12. Drug toxicity in pregnancy and breastfeeding; 13. Heavy Metal Toxicity; 14. Toxicology of Malnutrition; 15. Sanitation & Industrial Hygiene and Industrial Toxicology; 16. Final Examination
10	Attribute to soft skills	Communication skills, discipline
11	Learning methods	Lecture, Presentation and discussion
12	Learning media	LCD
13	Appraisal	Written examination and presentation
14	Lecturer	Prof. apt. Dr. Sri Adi Sumiwi, M.S. dr. Trully D. R. Sitorus, M.Si.
15	References	1. Goldfrank LR, et al (editors). Toxicologic Emergencies 11th ed. Norwalk: Appleton & Lange; 2019. 2. Olson KR, et al (editors). Poisoning & Drug Overdose 5nd ed. Norwalk: Appleton & Lange; 2007. 3. Stine KE & Brown TM. Principles of Toxicology. 2 nd Edition. Florida: CRC Press; 2006. 4. Donatus IA. Toksikologi. Yogyakarta: Bag. Farmakologi & Farmasi Klinik, Fak. Farmasi, UGM ; 2005. 5. Flanagan RJ,Braithwaite RA, Brown SS, Widdop B, de Wolff FA. Basic Analytical Toxicology, WHO, Geneve, 2008.

Table 3.30 Description Module Clinical Pharmacokinetics

1	Module name	Clinical Pharmacokinetics
2	Courses code	P20B.02015
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Second Semester
5	Precondition	None
6	Competence	After completing this topic, students will be able to complete their competencies so that they can play a greater role in improving therapy outcomes, as well as develop insights and foster dynamic and skilled attitudes in the clinical field. As well as being able to explain about the factors that influence the fate of drugs (especially narrow therapy window drugs) in the body related to clinical and therapeutic effects, as well as the

		calculation of the dosage regimen (load dose, maintenance dose, and frequency of administration) of drugs in general achieve therapeutic levels in the blood.
7	Elements of competency	MKK
8	Type competency	Support
9	Syllabus	1.Introduction to Clinical Pharmacokinetics; 2. Clinical Pharmacokinetics applications; 3. Pharmacokinetic application: Digoxin; 4. Dosage regiment; 5. Pharmacokinetic Applications: Theophylline, Theophylline case study; 6. Dose Adjustments in Pediatrics and Geriatrics; 7. Dose adjustment for obesity; 8. Midterm Examination; 9-15. Clinical Pharmacokinetic Applications: Carbamazepine, Phenytoin, Aminoglycosides, Lithium and valproic acid, Tacrolimus and cyclosporine, Phenobarbital, and Lidocaine; 16. Final Examination
10	Attribute to soft skills	Communication skills, discipline
11	Learning methods	Student Centered Learning
12	Learning media	LCD
13	Appraisal	Group project, presentation, individual task, practice questions, and case study
14	Lecturer	Dr. apt. Ahmad Muhtadi, MS. apt. Taofik Rusdiana, PhD dr. Rovina Ruslami, SpPD., PhD
15	References	1. Winter M.E. 2004. *Basic Clinical Pharmacoki-netic*, Lippincott William & Wilkins, U.S.A. 2. Bauer L.A. 2006. *Cilinical Pharmacoki-netics Handbook*, The McGraw-Hill Companies, U.S.A 3. Bauer L.A.2008, *Applied Clinical Pharmacoki-netic*, The McGraw-Hill Companies, U.S.A

Table. 3.31 Description Module Drugs Information, Counselling, and Evidence-Based Medicine

1	Module name	Drugs Information, Counselling, and Evidence-Based Medicine
2	Courses code	P20B.02016
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Second Semester
5	Precondition	None
6	Competence	After completing this topic, students will be able to initiate the formation of a drug information unit and carry out the role of drug informer based on EBM
7	Elements of competency	MKK
8	Type competency	Support
9	Syllabus	1.Drug information service (DIS) as an integral part of pharmaceutical care; 2. Drug information unit design counseling basics; 3. Categories & sources of drug information; 4. Critical assessment of information sources (Presentation): Evidence Based Medicine (EBM); 5. Provision of Drug Information and Counseling; 6-7. DIS/EBM practice; 8. Midterm Examination; 9. Drug information unit design counseling basics; 10. Effective communication; 11. Effective communication and personal branding; 12. Patient interview technique; 13. DIS Review; 14-15. Case I and II (IPE with Faculty of Medicine); 16. Final Examination
10	Attribute to soft skills	Communications skills, discipline
11	Learning methods	Lectures, discussion, and individual task

12	Learning media	LCD
13	Appraisal	Written examination and presentation
14	Lecturer	Prof. Dr. apt. Keri Lestari., M.Si. Dra. apt. Siti Saidah, M.Si. apt. Dika Pramita Destiani, M.Farm. Lecturer from Faculty of Nursing Lecturer from Faculty of Medicine
15	References	1. Tietze KJ. Clinical Skills for Pharmacists: A Patient-Focused Approach. Missouri: Mosby; 2012. 2. Straus SE, Glasziou PG, Richardson WC, Haynes RB. Evidence-Based Medicine: How to Practice and Teach It. Toronto: Churchill Linvingstone: 2011. 3. Howlett B, Rogo E, Gabiola T. Evidence Based Practice For Health Professionals. Massachusetts: Jones & Bartlett Learning; 2014.

Table 3.31 Description Module Aseptic Techniques

1	Module name	Aseptic Techniques
2	Courses code	P20B.02017
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Second Semester
5	Precondition	None
6	Competence	After completing this topic, students were able to understand the methods and use of fluid therapy and to understand the techniques for providing sterile and cytotoxic preparations
7	Elements of competency	MKK
8	Type competency	Support
9	Syllabus	1. Introduction to Intravenous therapy; 2. Intravenous Therapy II; 3. Pharmacy Intravenous Admixture Service I; 4. Pharmacy IV Admixture Service 2; 5. TPN mixing method; 6. Chemotherapy Regimen; 7. Basic Regimen Calculations; 8. Mid-term examination; 9. Production Facilities and Instruments; 10. Treatment of cancer drugs (Cancer Pharmacotherapy); 11. Safe Handling IV Admix; 12. The means of chemotherapy instruments; 13-15. Discussion of questions cases 1-3; 16. Final exam
10	Attribute to soft skills	Communication skills, discipline
11	Learning methods	Lectures, Discussion and Individual Task
12	Learning media	LCD, Demonstration
13	Appraisal	Written Test and Presentation
14	Lecturer	Irma Melyani Puspitasari, Ph.D., Apt. RS Hasan Sadikin Team
15	References	1. Techniques for the Pharmacy Technician (2nd Edition). New York: Prentice Hall; 2010. 2. Ochoa, Pamella S. Ochoa, Jose A. Vega, Concepts in Sterile Preparation and Aseptic Technique, 2014 3. Murff SJ. Safety and Health Handbook for Cytotoxic Drugs. Maryland: Government Institutes; 2012

Table 3.32 Description Module Research Proposal Seminars

1	Module name	Research Proposal Seminars
2	Courses code	P20B.02020
3	Study loads	2 credits ECTS amount: 4 ECTS Contact hour per semester : 27

		Independent study hour per semester : 403 Total workload : 429
4	Semester	Second Semester
5	Precondition	Pass research methodology course
6	Competence	Research Proposal Seminar (RPS) is Master students thesis, in research proposal students are expected to be able to: ● Present the ability to interpret and analyze data ● Deliver information orally in an organized, persuasive, and logical manner using documentation and supporting visual aids ● Take, analyze, and interpret scientific literature to provide information to be shared orally or in writing ● Creating documents that are technical, analytical, relevant in content and well managed ● Show contributions both in individual project ● Conduct independent literature studies using databases and pharmacology-related publications to solve problems related to the field of pharmacology ● Analyze, interpret, criticize scientific literature related to study design, interpretation data and suitability of conclusions
7	Elements of competency	MKB, MKK
8	Type competency	main competence
9	Syllabus	The students should have research proposal manuscripts that has been wrapped in blue soft cover.
10	Attribute to soft skills	discipline, communication skill, awareness
11	Learning methods	an open seminar that can be attended by students and lecturers. Technical implementation: The students present their research proposal for 15 minutes followed by a question and answer session by discussants, each discussant is given 10 minutes to ask questions
12	Learning media	the LCD viewer, laptop, white board and "online" (Google Meet)
13	Appraisal	discussants evaluate the accountability of students for questions that are critical and clarify towards the topics with percentage scoring: ● Significance of background research and/or research focus and Objectives, 15% (fifteen percent); ● Relevance and updating of literature review, 25% (twenty five percent); ● Accuracy of the objectives and research proportion/hypothesis, 10% (ten percent); ● Suitability of research methods, 10% (ten percent); ● Scientific writing ability, 20% (twenty percent); ● Communication ability in oral exam, 20% (twenty percent); ● Total 100% (one hundred percent) can be added with assessment 10% (ten percent). Final Score: ● Students are declared “PASS” if they get an average score of ≥ 68 ● Students are declared “NOT PASS” if they get an average score of < 68

		Converting FS into Grade and Score using the following guidelines: **Final Score (FS) / Grade / Score** 80 ≤ FS ≤ 100 / A / 4 68 ≤ FS < 80 / B / 3 56 ≤ FS < 68 / C / 2 45 ≤ FS < 56 / D / 1 FS < 45 / E / 0
14	Lecturer	Thesis adviser team and examiner team
15	References	1. Unpad Rector Regulation No. 50 of 2016 concerning Guidelines for Masters and Doctoral Education in the Padjadjaran University Environment 2. Academic Guidelines for Master's Program in Clinical Pharmacy 2020

Table 3.33 Description Module Molecular Mechanism of Disease

1	Module name	Molecular Mechanism of Disease
2	Courses code	P20B.02023
3	Study loads	3 credits ECTS amount: 5 ECTS Contact hour per semester : 40 Independent study hour per semester : 96 Total workload : 136
4	Semester	Second Semester
5	Precondition	None
6	Competence	In this course, students will learn about the molecular mechanisms underlying various diseases. Students are expected to gain knowledge related with specific disease mechanisms, basic biology and biochemistry, and also improve student's ability to understand scientific literature, formulating thoughtful questions and write with scientific accuracy
7	Elements of competency	MKK
8	Type competency	Main competence
9	Syllabus	1.Health And Disease Concept; 2. Cell Function And Growth; 3. Infection, Inflammation, And Immunity; 4. Nervous System Disorder; 5. Renal System Disorder; 6. Fluids And Electrical System Disorder; 7. Gastrointestinal System Disorder; 8. Midterm Examination; 9. Endocrine System Disorder; 10. Genitourinary And Reproductive System Disorder; 11. Visual Function Disorder; 12. Auditorial And Vestibular System Disorder; 13. Hemostatic Disorder; 14. Blood Pressure Regulation Disorder; 15. Heart Function Disorder; 16. Final Examination
10	Attribute to soft skills	Communication skills, discipline
11	Learning methods	Lectures and Dicussion
12	Learning media	LCD
13	Appraisal	Written test
14	Lecturer	Dr. apt. Sri Adi Sumiwi, MS.

		Dr. apt. Anna Meliani Dr. apt. Indriati.
15	References	1. Murray RK, Granner DK, Rodwell VW. Harper's Biochemistry, 30th ed. America: Appleton & Lange, 2015; 2. Lieberman, Michael A. Bord Review Series: Biochemistry, Molecullar Biology, and Genetic. Baltimor: Lippincot's William and Wilkin. 2014; 3. Sever,R, Glass C.K. Signaling by Nuclear Receptors. California: Cold Spring Harb Perspect Biology. 2013

Table 3.34 Description Module Technology and Information System Laboratory

1	Module name	Technology and Information System Laboratory
2	Courses code	P20B.02024
3	Study loads	3 credits ECTS amount: 5 ECTS Contact hour per semester : 40 Independent study hour per semester : 96 Total workload : 136
4	Semester	Second Semester
5	Precondition	None
6	Competence	After attending this course, students will be able to apply various methods of chemical and biochemical analysis and clinical laboratory data management.
7	Elements of competency	MKK
8	Type competency	main competence
9	Syllabus	1.History of clinical lab and Basic principle of ELISA; 2. Utilization monoclonal and polyclonal antibody in Laboratory Diagnostic; 3. Current Technology of auto analyzer immunoassay in Laboratory Medicine; 4. xMAP technology in Laboratory Medicine in situ hybdrization for cancer detection; 5. Current update in hematology analyzer; 6. Basic of coagulation analyzer systems and Flowcytometry for immunology; 7. Trend Technology in urinalysis, Lateral flow technology in Laboratory Medicine; 8. Midterm Examination; 9. Trend technology tracking system in laboratory medicine; 10. Trend Expert System in Laboratory Medicine; 11. Update technology and regulation POCT in laboratory medicine; 12. PCR, Real time PCR in research and diagnostic, utilization real time PCR for genetic variation; 13. Utilization of LC MS, GC MS and Trace element Analysis in Clinical Laboratory; 14. Traceability and standardization in laboratory medicine and reference interval in laboratory medicine; 15. Trend Automation in Laboratory medicine, Automation in Microbiology and Big data in lab medicine; 16. Final Examination
10	Attribute to soft skills	communication skills, discipline
11	Learning methods	Active learning : Lectures, Discussion, Q&A
12	Learning media	LCD
13	Appraisal	Oral examination
14	Lecturer	Dr. apt. Aliya Nur Hasanah, M.Si. Dr. apt. Ida Musfiroh, M.Si. Dr. Mizwar Fattah Dr. Wiwik
15	References	1. Dincer, C., et al. 2017. Multiplexed Point-of-Care Testing – xPOCT. Trends in Biotechnology, August 2017, Vol. 35, No. 8.http://dx.doi.org/10.1016/j.tibtech.2017.03.013 2. Jung, w., et al. 2015. Point-of-care testing (POCT) diagnostic systems using microfluidic lab-on-a-chip

		technologies. Microelectronic Engineering 132 (2015) 46–57. http://dx.doi.org/10.1016/j.mee.2014.09.024 3. Burckhardt I. Laboratory Automation in Clinical Microbiology. Bioengineering. 2018;5(4):102. 4. Moreno-Camacho J, Calva-Espinosa D, Leal-Leyva Y, Elizalde-Olivas D, Campos-Romero A, Alcántar-Fernández J. Transformation From a Conventional Clinical Microbiology Laboratory to Full Automation. Laboratory Medicine. 2017;49(1):e1-e8. 5. Nikalje A P, Ramesh G. Liquid Chromatography-Mass Spectrometry and Its Applications: A Brief Review. Arc Org Inorg Chem Sci 1(1)- 2018. AOICS.MS.ID.000103.

Table 3.36 Description Module In Vitro Diagnostic Product Development

1	Module name	In Vitro Diagnostic Product Development
2	Courses code	P20B.02025
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Second Semester
5	Precondition	None
6	Competence	This course is designed to be a knowledge-oriented course and will draw heavily upon real world trends in IVD business. This course will seek to understand basic principles of IVD business, its technology in particular, business players, trends and future possible development. The students should expect the conclusion of this course to have gained an increase level of knowledge and theoretically competency of IVD development.
7	Elements of competency	MKK
8	Type competency	main competence
9	Syllabus	1.Introduction to IVD Bussines; 2. Key Player and System offered to market; 3. Basic Methodology of IVD; 4. Immunochemistry/Immunoassay; 5. Clinical Chemistry; 6. Hematology; 7. Microbiology. 8. Midterm examination; 9. Point of care testing; 10. Molecular Diagnostics; 11. Urinalysis; 12. Regulatory Affairs Aspect to IVD; 13. Guest Lecture (to be confirmed); 14. Hematology, Immunoassay, & POCT; 15. Microbiology dan Molecular diagnostic; 16. Final Examination
10	Attribute to soft skills	communication skills
11	Learning methods	Presentation and discussion
12	Learning media	LCD
13	Appraisal	Project Presentation 25% Project Document 25% Class Participation 15% Final Exam 35%
14	Lecturer	Prof. Muchtaridi Ph.D. Dr. Cristina Sandjaja Lucia Herminawati M.Kes
15	References	1. Chao-Min Cheng, Chen-Meng Kuan, Chien-Fu Chen . 2016. In-Vitro Diagnostic Devices: Introduction to Current Point-of-Care Diagnostic Devices [1 ed.]. Springer International Publishing

		2. David H Persing.2011. Molecular microbiology : diagnostic principles and practice.ASM Press 3. Ian M. Anderson, Ian C. Reid. 2004. Fundamentals of Clinical Psychopharmacology, [2 ed.]. Taylor & Francis 4. P. Carson, P. Carson; N. Dent.2007. Good Clinical, Laboratory and Manufacturing Practices:: Techniques for the QA Professional [1 ed.]. Royal Society of Chemistry 5. Steven H. Woolf, Steven Jonas, Evonne Kaplan-Liss. 2007. Health Promotion and Disease Prevention in Clinical Practice [2nd Edition]. Lippincott Williams & Wilkins 6. Various handbooks on Clinical Chemistry (Kaplan, Anderson, Tietz, etc) 7. Recent publication of relevant subjects in various journals (Clinical Chemistry, IVD Technologies) 8. In Vitro Diagnostic Medical Devices Directive - 98/79/EC

Table 3.37 Description Module *Next Generation Medicine*

1	Module name	Next Generation Medicine
2	Courses code	P20B.03031
3	Study loads	2 credits ECTS amount: 3 ECTS Contact hour per semester : 27 Independent study hour per semester : 64 Total workload : 91
4	Semester	Third Semester
5	Precondition	None
6	Competence	After completing this topic, students will be able to interpret and solve scientific problems related to "Next Generation Medicine", develop and manage research that is beneficial to society and science
7	Elements of competency	MKK
8	Type competency	main competence
9	Syllabus	1-3. Introduction: Next Generation Medicine: Precision (Personalized) Medicine, Gene Therapy & Genome Editing, Regenerative Medicine Stem Cells & Tissue Engineering, Digital Medicine; 4-8. Background: Genomics, Epigenetics, Transcriptomics, Proteomics, Metabolomics, System Biology; 9. Midterm Examination; 10-12. P Medicine: Predictive, Preventive, Personalized, Participatory; 13-15. Precision Medicine (PM) in Oncology, Cardiovascular Disease, and Diabetes; 16. Final Examination
10	Attribute to soft skills	communication skills
11	Learning methods	*Lecture and presentation*
12	Learning media	LCD
13	Appraisal	Written Test and Presentation
14	Lecturer	Teaching Team
15	References	1. Walter Bortz MD. 2011. Next Medicine: The Science and Civics of Health. Oxford University Press, USA 2. Charles J. Sailey M.D., M.S. (auth.), D. Hunter Best, Jeffrey J. Swensen (eds.). 2012. Molecular Genetics and Personalized Medicine. Humana Press 3. Sean P. David, Geoffrey S. Ginsburg and Huntington F. Willard (Eds.).2017. Genomic and Precision Medicine. Primary Care [3rd Edition]. Academic Press

		4. Tao Huang. 2020. Methods in Molecular Biology 2204:Precision Medicine [1st ed.]. Springer US;Humana

Table 3.38 Description Module Clinical Laboratory Practice

1	Module name	Clinical Laboratory Practice
2	Courses code	P20B.03032
3	Study loads	2 credits ECTS amount: 6 ECTS Contact hour per semester : 91 Independent study hour per semester : 88 Total workload : 178
4	Semester	Third Semester
5	Precondition	No
6	Competence	Through the practice of clinical biochemistry practice, students are expected to be able to: 1. GCLP principles to support disease diagnosis, healing of diseases and health recovery 2. Organizational Process that ensures that laboratory testing can be planned, carried out, monitored, recorded and reported, so in the end patient safety and data reliability will be secured The specific purpose of this activity is: 1. Students are able to identify potential problems that affect the quality and validity of the data produced from a laboratory testing. 2. Students are able to analyze the causes of problems and solve the existing problems systematically and scientifically.
7	Elements of competency	MKK, MKB
8	Type competency	Main competence
9	Syllabus	1. Research laboratories, 2. PRN laboratory, 3. Prostem laboratories, 4. Proline laboratories, 5. Toxicology Industrial Laboratory.
10	Attribute to soft skills	Communication skills
11	Learning methods	Practice
12	Learning media	Laboratory
13	Appraisal	Log book and final report
14	Lecturer	apt. Melisa Intan Barliana, Dr. Med. Sc. Prodia Team
15	References	1. Prodia clinical laboratory guidelines 2. Amitava Dasgupta and Amer Wahed (Auth.). 2014. Clinical Chemistry, Immunology and Laboratory Quality Control. A Comprehensive Review for Board Preparation, Certification and Clinical Practice. Elsevier 3. Ministry of heath Republic Indonesia. 2013. Decree No 43:Good Laboraroty Practice 4. The National Agency for Drug and Food Control of Indonesia. 2016. guidelines for good clinical trials in Indonesia

Table 3.39 Description Module Progress Report

1	Module name	Progress Report
2	Courses code	P20B.04033
3	Study loads	2 credits ECTS amount: 11 ECTS

		Contact hour per semester : 53 Independent study hour per semester : 289 Total workload : 342
4	Semester	Fourth Semester
5	Precondition	a. Registered as active students b. Student has conducted a research proposal seminar and passed c. Enrolled in the Progress Report course (1 or 2)
6	Competence	Progress Report Seminar is held to assess the Masters students thesis research progress, students are expected to be able to: ● Present the ability to interpret and analyze data ● Deliver information orally in an organized, persuasive, and logical manner using documentation and supporting visual aids ● Take, analyze, and interpret scientific literature to provide information to be shared orally or in writing ● Creating documents that are technical, analytical, relevant in content and well managed ● Show contributions both in individual or group project ● Conduct independent literature studies using databases and pharmacology-related publications to solve problems related to the field of pharmacology ● Analyze, interpret, criticize scientific literature related to study design, interpretation data and suitability of conclusions
7	Elements of competency	MKB, MKK
8	Type competency	main competence
9	Syllabus	Implementation of this module: a. Conducted in each department according to the concentration / specialization taken by students b. Students independently present the progress of thesis research carried out, in front of lecturers in the Department (at least the Head of the Department and 1 other Lecturer in the Department). c. The detailed presentation mechanism and schedule were regulated by the Head of the Department
10	Attribute to soft skills	self confidence, discipline, communication
11	Learning methods	an open seminar that can be attended by students and lecturers. Technical implementation: The students present their research progress followed by a question and answer session
12	Learning media	the LCD viewer, laptop, white board and "online" (Google Meet)
13	Appraisal	The components assessed in the progress seminar include: Methodology comprehension Knowledge comprehension Reasoning comprehension Ability to communicate ideas Research progress percentage Final Score: students are considered pass if the seminar average score is at least B

14	Lecturer	Thesis adviser team, Head of the Department and other Lecturer in the Department
15	References	1. Unpad Rector Regulation No. 50 of 2016 concerning Guidelines for Masters and Doctoral Education in the Padjadjaran University Environment 2. Academic Guidelines for Master's Program in Clinical Pharmacy 2020

Table 3.40 Description Module Research Seminar

1	Module name	Research Seminar
2	Courses code	P20B.04034
3	Study loads	3 credits ECTS amount: 14 ECTS Contact hour per semester : 80 Independent study hour per semester : 354 Total workload : 434
4	Semester	Fourth Semester
5	Precondition	passed research proposal
6	Competence	Seminar of research result is held to assess the Masters students thesis research result, students are expected to be able to: ● Present the ability to interpret and analyze data ● Deliver information orally in an organized, persuasive, and logical manner using documentation and supporting visual aids ● Take, analyze, and interpret scientific literature to provide information to be shared orally or in writing ● Creating documents that are technical, analytical, relevant in content and well managed ● Show contributions in individual project ● Conduct independent literature studies using databases and pharmacology-related publications to solve problems related to the field of pharmacology ● Analyze, interpret, criticize scientific literature related to study design, interpretation data and suitability of conclusions
7	Elements of competency	MKB, MKK
8	Type competency	main competence
9	Syllabus	The Student should have research result manuscripts that have been wrapped in yellow soft cover
10	Attribute to soft skills	communication skill
11	Learning methods	an open seminar that can be attended by students and lecturers. Technical implementation: The students present their research proposal for 15 minutes followed by a question and answer session by discussants, each discussant is given 10 minutes to ask questions
12	Learning media	the LCD viewer, laptop, white board and "online" (Google Meet)
13	Appraisal	discussants evaluate the accountability of students for questions that are critical and clarify towards the topics with percentage scoring:

<table>
<tr><td></td><td></td><td>

Significance of background research and/or research focus and Objectives, 15% (fifteen percent);
Relevance and updating of literature review, 25% (twenty five percent);
Accuracy of the objectives and research proportion/hypothesis, 10% (ten percent);
Suitability of research methods, 10% (ten percent);
Scientific writing ability, 20% (twenty percent);
Communication ability in oral exam, 20% (twenty percent);
Total 100% (one hundred percent) can be added with assessment 10% (ten percent).

The score of discussants is added up with other discussants score with ratio 60% of adviser team, 40% of examiner team as final score, without converting into grade in advanced.

Final Score:

Students are declared “PASS” if they get an average score of ≥ 68
Students are declared “NOT PASS” if they get an average score of < 68

Converting FS into Grade and Score using the following guidelines:
<table>
<tr><th>Final Score (FS)</th><th>Grade</th><th>Score</th></tr>
<tr><td>80 ≤ FS ≤ 100</td><td>A</td><td>4</td></tr>
<tr><td>68 ≤ FS < 80</td><td>B</td><td>3</td></tr>
<tr><td>56 ≤ FS < 68</td><td>C</td><td>2</td></tr>
<tr><td>45 ≤ FS < 56</td><td>D</td><td>1</td></tr>
<tr><td>FS < 45</td><td>E</td><td>0</td></tr>
</table>
</td></tr>
<tr><td>14</td><td>Lecturer</td><td>Thesis adviser team and examiner team</td></tr>
<tr><td>15</td><td>References</td><td>

Unpad Rector Regulation No. 50 of 2016 concerning Guidelines for Masters and Doctoral Education in the Padjadjaran University Environment
Academic Guidelines for Master’s Program in Clinical Pharmacy 2020

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Table 3.41 Description Module Magister Comprehensive Defense

1	Module name	Magister Comprehensive Defense
2	Courses code	P20B.04003
3	Study loads	3 credits ECTS amount: 14 ECTS Contact hour per semester : 80 Independent study hour per semester : 340 Total workload : 420
4	Semester	Fourth Semester
5	Precondition	Thesis Defence Form (LS 1, LS 2) : 1 Copy LS4 Form/ UNT Revision Form : 1 Page Proof of Academic Fee Payment Photocopy : 1 Page Thesis Draft (Yellow Soft Cover) : 7 Copies Thesis Statement Form : 1 Page KPA (Academic Achievement Card) Signed by The Program Study Head : 1 Page Library Book Free Form of Faculty of Pharmacy, Unpad Postgraduate, and Unpad Cisral : 1 page
6	Competence	The students are expected to be able to :

<table>
<tr><td></td><td></td><td>● Present the ability to interpret and analyze data
● Deliver information orally in an organized, persuasive, and logical manner using documentation and supporting visual aids
● Define and apply the mechanism of certain drug on molecular and cellular levels
● solving problem related to drugs</td></tr>
<tr><td>7</td><td>Elements of competency</td><td>MKB, MKK</td></tr>
<tr><td>8</td><td>Type competency</td><td>main competence</td></tr>
<tr><td>9</td><td>Syllabus</td><td>Comprehensive Examination is the final examination for Masters Program in clinical biochemistry in the form of a comprehensive oral exam, regarding the theories and principles related to the research.

Implementation of this module:
a. Conducted once per semester
b. At the appointed time, student is tested orally in closed session in front of 3 (three) examiners and a team of supervisors
c. The mechanism and schedule of the examination in more detail are regulated by the Head of The Pharmacy Masters Study Program
d. Examination is held for 90 minutes
e. Each examiner asked for 15 minutes
f. Each supervisor asked for a maximum of 15 minutes
g. At least 60% of the total number of examiners and supervisors attended the examination</td></tr>
<tr><td>10</td><td>Attribute to soft skills</td><td>communication skill</td></tr>
<tr><td>11</td><td>Learning methods</td><td>The students present their research results in brief followed by a question and answer session</td></tr>
<tr><td>12</td><td>Learning media</td><td>the LCD viewer, laptop, white board and "online" (Google Meet)</td></tr>
<tr><td>13</td><td>Appraisal</td><td>The components assessed in the examination are the academic abilities in the field / concentration related to research by master students.

<u>Passing Criteria</u>
a. The examination participants are declared to have passed if the average score is at least B.
b. For those who do not pass, they must repeat at least 1 (one) month after the announcement
Final Score:
● Students are declared “PASS” if they get an average score of ≥ 68
● Students are declared “NOT PASS” if they get an average score of < 68

Converting FS into Grade and Score using the following guidelines:
<table>
<tr><th>Final Score (FS)</th><th>Grade</th><th>Score</th></tr>
<tr><td>80 ≤ FS ≤ 100</td><td>A</td><td>4</td></tr>
<tr><td>68 ≤ FS < 80</td><td>B</td><td>3</td></tr>
</table>
</td></tr>
</table>

		56 ≤ FS < 68	C	2
		45 ≤ FS < 56	D	1
		FS < 45	E	0
14	Lecturer	Thesis adviser team and examiner team. a. Examiners must hold a Doctorate (Dr.) with a minimum academic position as Lector and/or Professor b. The number of examiners is 3 (three) people		
15	References	1. Unpad Rector Regulation No. 50 of 2016 concerning Guidelines for Masters and Doctoral Education in the Padjadjaran University Environment 2. Academic Guidelines for Master's Program in Clinical Pharmacy 2020		

Table 3.42 Description Module Scientific Paper

1	Module name	Scientific Paper
2	Courses code	P20B.04035
3	Study loads	1 credits ECTS amount: 12 ECTS Contact hour per semester : 0 Independent study hour per semester : 369 Total workload : 369
4	Semester	Fourth Semester
5	Precondition	A. Registered as active students B. Has thesis adviser team. C. Scientific article is part of the thesis
6	Competence	The students are expected to be able to : ○ Find a knowledge of basic concepts in pharmaceutical science in one's area of expertise ○ Integrating science, knowledge, technology and advanced concepts in pharmaceutical sciences ○ Design, conduct and maintain original research in one's area of expertise through international publication and research dissemination through seminars ○ Successfully perform analysis, synthesis and antithesis by applying analytical and critical thinking in reviewing scientific literature and evaluating research findings
7	Elements of competency	MKB, MKK
8	Type competency	main competence
9	Syllabus	Scientific articles that are accepted to be published in a national journal accredited by at least Sinta 3 or an international journal through the approval of the thesis adviser who will act as co-authors, by listing UNPAD as the student's first affiliation.
10	Attribute to soft skills	writing ability
11	Learning methods	Writing and publication
12	Appraisal	Final score is depend by the journal criteria, at least in review
13	Lecturer	Thesis adviser team and The Program Study Head
14	References	1. Unpad Rector Regulation No. 50 of 2016 concerning Guidelines for Masters and Doctoral Education in the Padjadjaran University Environment

		2. Academic Guidelines for Master's Program in Clinical Pharmacy 2020

CHAPTER 4

LEARNING STRATEGIES

4.1 Learning Methods

Education in the field of clinical pharmacy oriented to achieve learning outcome which studentd have ability to solve problems regarding drug related problems, pharmaceutical care, and clinical pharmacy that arise in the field when managing patients. Drug usage evaluation skills require knowledge in the field of empathetic relationship between pharmacist, and patient, effective communication, drug monitoring, and counselling. Therefore, we conducted several learning method to achive learning outcome of each module, such as lecturing/tutorial, scientific presentation, discussion, Stase in

1. Lecturing/Tutorial

   The lecturing is an orally lighting on the learning material in class group of learners to achieve specific learning objectives in a relatively large amount. This method is widely used in all semester and which is package of compulsory and elective course.

2. Scientific presentations

   Scientific presentations is a learning process which actively involving students in exposing cases of patients with particular analysis, the scientific theme, or study journal in a scientific forum before the supervisor or senior person in charge. The presentation can be in the form of discussion / case reports, reading assignments, presentations guidance of therapy and drug related problem.

3. Discussions

   Discussions is learning methods involve students in active discussions on every area that addresses all cases, guidance of therapy, drug related problem, drug monitoring, health promotion, and patients counselling. Students undergo rotation in each division area according to the schedule set by the rotation of courses.

4. Stase in other education centers

   Students will undergo internship at health facility and rotational internship at an educational hospitals to improve the ability to develop pharmaceutical care plan and to manage therapeutical plan effectively to patients in order to increase patient's quality of life.

5. Research

   Students are required to do research to develop logical, critical, systematic, and creative thinking

in clinical pharmacy field

6. Scientific paper
   Students are required to write at least one end of the scientific work in the form of review article or original article. The final work have to be published in national journal (at least indexed in Sinta 3) or reputated international journal.

4.2 Learning Media

Learning media are used in master program in clinical pharmacy has an important role in learning activities to increase learning outcome (Table 4.1).

No.	Media Group	Examples in Learning
1.	Audio visual	LCD
2.	Physical objects	Patients, medicine, medical records

CHAPTER 5
EVALUATION SYSTEM OF LEARNING

5.1 Evaluation and Monitoring System

Evaluation and monitoring system of Master program in Clinical Pharmacy consist of Mid-Semester Exam (UTS), End Semester Exam (UAS), and Computer Based Test (CBT). CBT exams are conducted 3 times, namely before starting the first year of study (CBT 1, basic knowledge mapping), before clinical practice in each semester (Thematic CBT 2, 3, and 4), and before the Thesis Exam (CBT 5). Points to consider regarding the CBT exam:

- Students are declared successful in implementing CBT if the CBT score is above 56.
- Students who get CBT scores below 56 must perform CBT remedial for a maximum of 2 times.
- If after 2 repetitions still get a score below 56, then the student must receive special treatment (tutoring from the supervisor for CBT 1; tutoring from the related lecturer for CBT 2, 3, and 4; and given a maximum time of 1 month to repeat the CBT for CBT 5 and can conduct a trial).

5.2 Exam Requirements

Students are allowed to take the exam if they have met the requirements below:

1. Registered as a student in the semester concerned.
2. Meet all administrative requirements set by the Faculty of Pharmacy.
3. Participating in at least 80% of lecture activities in real terms held in the semester concerned and/or participating in all activities (100%) of laboratory practicum, field work, clinical work, seminars, or similar activities.
4. To take a comprehensive trial, students must meet the following requirements:
   a. Pass all courses in the study program taken (meet the required cumulative study load).
   b. Has compiled and written a thesis and passed a research result seminar
   c. Has completed the administrative requirements set by the University and the Faculty of Pharmacy.
   d. Pass the CBT pre-Thesis Exam.

5.3 Thesis Writing

At the end of the Pharmacy Masters Study Program, students are required to make a thesis in the form of research which is divided into 2 credits (0-2) of research proposal 2 credits (0-2) of research and thesis paper examination (including thesis preparation), and 3 credits (0-3) of thesis examination.

1. Thesis is the final scientific work made by Master's Study Program student, made based on the research results using applicable scientific methods and principles.
2. A thesis is a student's original scientific work which is indicated by a stamped statement regarding its authenticity.

3. It is hoped that the proof of the authenticity of the thesis will be done using anti-plagiarism software.
4. The thesis has the same position as other courses, but has a different form in the learning process, as well as the method of assessment.
5. The weight of the thesis is set at 9 (nine) credits which are divided into research proposal seminars, progress reports 1, research results seminars, progress reports 2 and comprehensive trial.
6. Thesis writing as a final project at the Postgraduate level in Unpad is carried out based on these guidelines.
7. Thesis writing structure and style, such as outline, citation writing, notes (footnote or running note), bibliography, following thesis writing guidelines applicable at the Faculty of Pharmacy of Unpad.

5.4 Research Proposal Seminar (SUP)

Students can take the Research Proposal Seminar course, if:

1. Have a Student Identity Card (KTM) that is valid for the semester concerned.
2. Have a KRS that includes a Research Proposal Seminar as one of the courses.
3. Register to SBP by including research interests.

SUP is a student research plan for the preparation of a thesis, namely:

1. SUP can be implemented in the first semester on the condition that student has passed the research methodology course and it will be carried out no later than the end of semester III (three), if not or it has not been implemented then the student concerned is considered to have resigned.
2. The SUP Discussion Team consists of at least 2 (two) members of Advisor Team, 3 (three) members of Examination Team, and is led by 1 (one) SUP Leader.
3. Students take SUP at predetermined times, and the research proposal manuscripts (UP) must have been bound by transparent mica (white), and submitted to the SUP leader, Advisory Team and Examination Team at least 1 (one) week before SUP implementation.
4. SUP is carried out in a panel and attended by at least 3 (three) discussants, consisting of 1 (one) or 2 (two) Advisory Team and 1 (one) or 2 (two) Examination Team members plus 1 (one) SUP Leader.
5. Leader of SUP is the Head of the Masters Study Program or the Head of Supervisor, which is determined based on the Faculty Dean's Decree on behalf of the Rector
6. The leader of the SUP does not automatically act as a discussant, except in accordance with the student's field of science being tested or as the Head of the Advisory Team;
7. SUP is conducted openly and can be attended by students and lecturers.
8. Students who do not pass SUP, are given the opportunity to repeat SUP 1 (one) time, which is held no later than 3 (three) months after the first SUP. Study termination sanctions will be given, if the student is declared to have not passed SUP for the second time.
9. In SUP, discussants evaluate the contents of the research proposal, ask questions and evaluate the answers given by students, and provide suggestions for improvement of the research proposal.
10. Assessment on SUP is given in the form of a raw score in the range of 0-100.

In SUP, discussants evaluate the accountability of students for questions that are critical and clarify towards the research proposal material/substance with a weight of assessment :

a. Significance of Research Background and/or Research Focus, and Problem Formulation, weight 15% (fifteen percent);
b. Relevance and up-to-date of the Literature Review, weight 25% (twenty five percent);
c. The accuracy of the formulation of Thinking Framework and Research Proposition /Hypothesis, weight 10% (ten percent);
d. Suitability of Research Methods, weight 10% (ten percent);
e. Scientific writing skills, weight 20% (twenty percent);
f. Communication skills in oral examinations, weight 20% (twenty percent).
g. The weight of the 100% (one hundred percent) assessment above can be added to the weight of the assessment of 10% (ten percent)

At the end of the SUP, the discussant/reviewer gives the following assessment:

a. students are declared to have passed if they get an average score of ≥ 68;
b. students are deemed not to pass if they get an average value <68.

Final score (NA)	**HM**	(AM)
80 ≤ NA ≤ 100	A	4
68 ≤ NA < 80	B	3
56 ≤ NA < 68	C	2
45 ≤ NA < 56	D	1
NA < 45	E	0

Convert final score into HM and AM using the following guidelines:

5.5 Research Results Seminar (SHP)

Students can take the Research Results Seminar course if they have completed all the provisions in the Research Proposal Seminar course and progress reports.

If the research cannot be completed in one semester, then:

1. Students are still allowed to complete it in the following semester, by re-entering the Research Results Seminar course on KRS (research topic and supervisor remains the same).
2. At the end of the semester concerned, the subject is given the letter K, so it is not used for calculating GPA and final GPA.

If the thesis cannot be completed in two consecutive semesters, then:

1. The Research Result Seminar course is given the letter E, except in certain cases which can be accounted for academically.
2. Students are required to take the research again with a different title (supervisor can change or the same).

Examinations are carried out on research result material in a Research Results Seminar. The requirements for conducting research seminars are:

1. Submit a letter of recommendation from the supervisor
2. Submit proof of revisions to the research proposal draft in accordance with the suggestions from examiners and supervisors signed by the study program
3. Submit a scientific publication evidence sheet
4. Submit a thesis statement with a stamp of Rp. 6000
5. Submit academic achievement card that has been signed by the Head of Study Program
6. Library-free statement letter for Post Unpad library, Cisral Unpad and Faculty of Pharmacy
7. Laboratory free letter (for those who conduct research in the laboratory)
8. The latest TOEFL test result certificate that is still valid
9. Completing administrative requirements set by the faculty and university.
10. The research result seminar shall be held at least three months after the research proposal seminar.

In SHP, discussants evaluate the accountability of students for questions that are critical and clarify towards the research result material/substance with a weight of assessment :

a. Significance of Research Background and/or Research Focus, and Problem Formulation, weight 15% (fifteen percent);
b. Relevance and up-to-date of the Literature Review, weight 25% (twenty five percent);
c. The accuracy of the formulation of Thinking Framework and Research Proposition /Hypothesis, weight 10% (ten percent);
d. Suitability of Research Methods, weight 10% (ten percent);
e. Scientific writing skills, weight 20% (twenty percent);
f. Communication skills in oral examinations, weight 20% (twenty percent).
g. The weight of the 100% (one hundred percent) assessment above can be added to the weight of the assessment of 10% (ten percent)

Convert final score into HM and AM using the following guidelines:

Final Score (NA)	HM	AM
80 ≤ NA ≤ 100	A	4
68 ≤ NA < 80	B	3
56 ≤ NA < 68	C	2
45 ≤ NA < 56	D	1
NA < 45	E	0

At the end of the SHP, the discussant / reviewer gives the following assessment:

a. students are declared to have passed if they get an average score of ≥ 68;
b. students are deemed not to pass if they get an average value <68.

3.6.4 Research and Writing Scientific Articles

1. Research is carried out after students pass SUP and have made improvements to the research proposal and approved by the Advisory Team.
2. During the lecture period and after SUP, students write scientific papers according to the theme of SUP research as one of the requirements for graduation. The scientific works can be in the form of:
   a. Scientific articles in the form of writings that are part of the thesis, as the first author who must include the names of the supervisors who will act as co-authors, by including Unpad institutions, in reputable international journals or international journals with ISSN in accordance with applicable regulations in Unpad environment;
   b. Scientific articles in the form of writing that are part of the thesis, as the first author who must include the names of the supervisors who will act as co-authors, by including the Unpad institution, in accredited national journals at least Sinta 3 accredited in accordance with applicable regulations in the environment Unpad;
3. With the guidance and direction of the Advisory Team (Chairperson and Members), students write 1 (one) scientific article with a topic that is in accordance with thesis research (according to the research theme that has been tested in SUP) to be published in reputable international journals and/or an accredited national journal
4. Students who can submit their research results to international journals at least Q4 Scopus, obtain LoA (Letter of Acceptance), and submit proof of review no longer need to conduct research results seminars but still have to conduct a comprehensive trial.
5. Students submit scientific articles to reputable international scientific journals and/or accredited national journals with the approval of the supervisors who will act as co-authors, including the Unpad institution.
6. Especially for students whose 1 (one) scientific article is accepted or published in a reputable international journal of at least Q3 Scopus, as evidenced by a letter of acceptance from the reputable international journal publisher (written during their Masters Program and according to the research theme that has been tested in the SUP), in accordance with the applicable provisions in Unpad, the student concerned is given an assessment with the grade A for the research result seminar course while still being required to write a thesis that is adjusted to the scientific article.

Linkage of Thesis with Scientific Articles

a. Students write a thesis manuscript in accordance with UP and based on research results published as scientific articles;
b. One of the research sub-topics, produces 1 (one) scientific article with a certain “sub-topic / issue” that is in accordance with the research theme/topic during SUP;

1. Thesis research topic (X), consisting of (can be divided into) several sub-topics X1, and Xn;
2. Research sub-topics X1, producing scientific articles in reputable international journals/ accredited national journals/ ISSN national journals/seminar proceedings with “topics/issues” X1;

3. Xn research sub-topics, producing scientific articles in reputable international journals/ accredited national journals/ISSN national journals / seminar proceedings with Xn "topics/issues";
4. The synthesis of the three researches can produce one scientific article in a reputable international journal/accredited national journal;
5. Written scientific articles (X1, Xn), their ideas are derivatives of the main ideas contained in X.

3.6.5 Thesis

1. General

a. Master Program students can take the examination in the form of a comprehensive trial according to their respective concentrations if they meet the following requirements:
   1) Has passed all courses with a final GPA of at least 3.00;
   2) Has implemented SUP and is declared passed; and the thesis paper has been tested in a research results seminar (SHP)
   3) The thesis paper has been approved by the Advisory Team;
   4) Submit a Letter of evidence of published scientific articles (written while attending Masters Program)
b. Before the comprehensive trial, students must first pass the Research Results Seminar;
c. Before the trial, the Advisory Team evaluates the material/substance of the manuscript submitted through the Research Results Seminar (SHP) which is managed by the Study Program;
d. Thesis examination material is a comprehensive trial according to the student's research topic and the concentration of each student
e. The Head of the trial is the Head of the Masters Study Program or the Head of Advisor Team;
f. The trial discussion team consists of at least 2 (two) members of Advisory Teams and 3 (three) examiners;
g. Students attend the trial at the appointed time, and the thesis manuscript must be bound in yellow soft cover, and submitted to the Head of the trial, the Advisory Team and the Examining Team at least 1 (one) week before the implementation of the Thesis Examination (UT);
h. The Head of the trial is not automatically act as a discussant, except in accordance with the student's field of science being tested or as the Head of Advisor Team.

2. Thesis Examination (UT)

a. UT is carried out in a panel and attended by at least 3 (three) discussants, consisting of 1 (one) or 2 (two) members of Advisory Team and 1 (one) or 2 (two) members of Examination Team and added 1 (one) UT Leaders;
b. The Examination Team at the stipulated SHP time must be the same as the SUP Examination Team;
c. In UT, discussants evaluate the content of the thesis manuscript with a weight of assessment:
   1) Significance of Research Background and/or Research Focus, and Problem Formulation, weight 10% (ten percent);
   2) Relevance and up-to-date of Literature Review, weight 20% (twenty percent);

3) Accuracy of the formulation of Thinking Framework and Research Proposition/Hypothesis, weight 10% (ten percent);
4) Suitability of Research Methods, weight 10% (ten percent);
5) Sharpness of analysis and wholeness of thought, weight 20% (twenty percent);
6) Stability and quality of the conclusions, as well as the suggestions submitted, weight 10% (ten percent);
7) Scientific writing skills, weight 10% (ten percent);
8) Communication skills in the oral exam, weight 10% (ten percent).

The weight of the 100% (one hundred percent) assessment above can be added to the weight of the assessment of 10% (ten percent) assessment below, if students can show a contribution to the growth of science, technology, and developments.

d. Assessment on UT is given in the form of a raw score in the range of 0-100
e. At the end of the UT, the discussant gives the following assessment:
   1. students are declared to have passed if they get an average score of ≥ 68;
   2. students are deemed not to pass if they get an average value <68.
f. The score of the discussant is added up by the percentage of the Advisory Team of 60% (sixty percent) and the Examination Team 40% (forty percent) as NA, without first being converted into HM;
g. Conversion of final score into HM and AM using the following guidelines:

Final Score (NA)	HM	AM
80 ≤ NA ≤ 100	A	4
68 ≤ NA < 80	B	3
56 ≤ NA < 68	C	2
45 ≤ NA < 56	D	1
NA < 45	E	0

h. Students who do not pass UT, are given the opportunity to take 1 (one) SHP exam in the agreed time period, taking into account the study time limit;