

**MODULE HANDBOOK
APOTHECARY EDUCATION STUDY PROGRAMME**



**UNIVERSITAS AIRLANGGA
FACULTY OF PHARMACY
SURABAYA**

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COURSE DESCRIPTION

Table 1 Data and References

1. Course Name	Data and References
2. Course Code	SIP107
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	1 (one)
5. Prerequisite	-
6. Course Learning Outcome	Students are able to use data and scientific references to make decisions and persuade.
7. Course Description / Syllabus	The aim is to encourage students to interpret and use data well, so student could make strong and coherent arguments, and equip students with ability to evaluate the quality of other people's arguments. Not everyone will become a scientist who designs research, collects data, analyzes it, and draws conclusions. However, data literacy will help students make decisions in their daily lives. Furthermore, students are also trained to search, read, evaluate, and sort claims or information in scientific literature. In this course, students are also given opportunity to organize scientific references with help of an application to manage references.
8. Soft Skill Attributes	Literacy skills, systemic thinking, analytical thinking
9. Learning Methods	Lecture, or Synchronous Distance Learning
10. Learning Media	1. Printed media 2. Electronic media 3. Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	COURSE COORDINATOR: Lecturer appointed by UNAIR Members : Lecturer team appointed by UNAIR

13. Required References	<ol style="list-style-type: none"> 1. Leonelli , S. 2020. <i>Scientific Research and Big Data</i>. The Stanford Encyclopedia of Philosophy. Accessed from https://plato.stanford.edu/entries/science-big-data/ 2. Morrison, R. 2020. Don't just “Google it”: 3 ways students can get the most from searching online. <i>The Conversation</i> . Accessed from https://theconversation.com/dont-just-google-it-3-ways-students-can-get-the-most-from-searching-online-116519 3. Field, A. (2016). <i>An Adventure in Statistics: The Reality Enigma</i>. London: SAGE Publications 4. Pain, E. (2016). How to (seriously) read a scientific paper. <i>Science Magazine</i>. Accessed at https://www.sciencemag.org/careers/2016/03/how-seriously-read-scientific-paper 5. Fosmire , A. (2013). <i>How to read a scientific paper</i> . Purdue University Library. Accessed from https://www.lib.purdue.edu/sites/default/files/libraries/engr/Tutorials/Newest%20Scientific%20Paper.pdf
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Table 2 Pancasila Education

1. Course name	Pancasila Education
2. Course Code	NOP101
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	1 (one)
5. Prerequisite	-
6. Course Learning Outcome	<p>Students are able to build new paradigms in themselves based on Pancasila values through an ability to explain the historical process, position and nature precepts of Pancasila, respond actual problems of the nation and state, and implement Pancasila values in life. At the end of the course, students will be able to:</p> <ol style="list-style-type: none"> 1. Solve (C4) nationality problems related to Pancasila, 2. Designing (C6) national project contributing to the enhancement of society's quality based on Pancasila.
7. Course Description / Syllabus	<ol style="list-style-type: none"> 1. Pancasila in the nation's history study, Pancasila as the country's foundation, 2. Pancasila as a country's ideology, 3. Pancasila as a philosophy system, 4. Pancasila as an ethical system, 5. Values of Pancasila as a foundation of scientific development, 6. Meaning of Precepts of Pancasila, and examples of the implementation in life.
8. Soft Skill Attributes	Self-confidence, communication, critical thinking, problem solving, discipline, collaboration.
9. Learning Methods	<ol style="list-style-type: none"> 1. Lectures, discussions, <i>brainstorming</i> 2. General lectures 3. Lectures, assignments, discussions 4. Tutorial, problem formulation, conceptualization, and designing a <i>project</i> proposal, presentations, and discussions on the integrated module.
10. Learning Media	Electronic media, Learning Management System (LMS), online audio visual/zoom/ <i>youtube</i>
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	COURSE COORDINATOR: Ikhsan Rosyid MA, S.S., M.A.

13. Required References	<p>Members: Lecturers Team</p> <ol style="list-style-type: none"> 1. Latif, Yudi, 2009, <i>Negara Paripurna, Aktualitas dan Historisitas Pancasila</i>, Jakarta: Gramedia 2. Latif, Yudi, 2014, <i>Mata Air Keteladanan, Pancasila dalam Perbuatan</i>, Bandung: Mizan 3. Tim Dikti, 2016, <i>Modul Pendidikan Pancasila untuk Perguruan Tinggi</i>, Jakarta: Kemenristekdikti 4. Tim MKWU, 2020, <i>Modul Terintegrasi MKWU</i>
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Table 3 Civics

1. Course Name	Civics
2. Course Code	NOP104
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	1 (one)
5. Prerequisite	-
6. Course Learning Outcome	At the end of this course, students are expected to be able to analyze national contextual issues, by developing positive attitudes and displaying behaviors that reflect: (i) national spirit and love for the homeland, (ii) civilized democracy, and (iii) legal awareness and diversity.
7. Course Description / Syllabus	This course discusses: Civics as an orientation to build up (and strengthen) the character of the Indonesian Nation, national identity, the State and the Constitution, Relations between the State and Citizens, Indonesian Democracy and Democracy Education in Indonesia, the State of Law and Human Rights, Indonesian Geopolitics (Insight Archipelago) , Indonesian Geostrategy (National Land), National Integration, State Defense, and Anti-Corruption Education which are able to provide an axiological basis for student behavior in family, community, nation and state life.
8. Soft Skill Attributes	Communication, Discipline, and Activeness
9. Learning Methods	<ol style="list-style-type: none"> 1. Lecture 2. Discussion / analysis case, 3. Question and answer, 4. Assignment 5. Presentation 6. Report
10. Learning Media	<ol style="list-style-type: none"> 1. Cybercampus 2. Internet 3. Zoom Meetings; 4. Learning Management System (LMS)
11. Learning Assessments	Midterm and final examination

12. Lecturers	<p>COURSE COORDINATOR: Dr. Drs. H. Moh . Adib , MA.</p> <p>Members: Team of civil dicipline</p> <ol style="list-style-type: none"> 1. Dr. Drs. H. Moh. Adib, MA 2. Dr.. Listiyono Santoso, S.S., M.Hum. 3. Drs. Ajar Triharso, M.A. 4. Ikhsan Rosyid M. S.S., M.Hum. 5. Gayung Kasuma, S.S., M.Hum. 6. dr. Joni Susanto, M.Kes 7. Drs. H. Syaikh Ahmad H, M.Kes. 8. Iwan W. Hidayat, S.Psi. M.Psi. 9. drg. Edhi Jularso, M.Kes 10. drg. Bambang Saptojono, SP.BM 11. Drs. RM. Qudsi Fauzi, M.M. 12. M. Gandul Atik Yuliani, drh., M.Kes. 13. Dr. Siti Mas'udah, S.Sos., M.Si. 14. Prof. Dr. Istiati, drg., SU. 15. Prof. Dr. Anwar Ma'ruf, drh., M.Kes. 16. Dr. Nove Hidajati, drh., M.Kes. 17. Dr. Maslichah Mafruchati, M.Si. 18. Dr. apt. Marijam Purwanta, M.Sc. 19. Dr. Epy M Luqman, drh., M.Si. 20. Kuncoro Puguh Santoso, drh., M.Kes. 21. Dr. Rochmah Kurnijasanti, M.Si., Drh. 22. Dr. Kadek Rachmawati, drh., M.Kes. 23. Drs. Budi Setiawan, M.A. 24. drh. Agus Widodo, M.Vet 25. Mulyadi J A, S.S., M.Hum 26. Widio Rahardjo, S.H., M.Kn. 27. Ervan Kus Indarto 28. M. Reizza Al Ariyah, S.Sos., M.Sosio 29. Dr. Ira Arundina, drg. 30. Iwan Wahyu Widayat, M.Psi. 31. Dr. Tri Wahyu S., drh., M.Si. 32. Dr. apt. Bambang Tri Purwanto, M.S. 33. Arya Wanda Wirayuda, S.Hum., M.A.
13. Required References	<ol style="list-style-type: none"> 1. Adib, Mohammad, Listiyono Santoso, dan Ajar Triharso. 2013. <i>Pendidikan Pancasila dan Kewarganegaraan: Sebuah Pengantar Membangun Karakter Bangsa</i>. Surabaya: Airlangga University Press. 2. Adib, Mohammad. 2016 (Cet. Kedua). <i>Bangunlah Jiwanya, Bangunlah Bangsa: Penguatan Karakter Bangsa dalam Pembelajaran Pendidikan Kewarganegaraan</i>. Surabaya: Saga dan Direktorat Pendidikan Universitas Airlangga. 3. Kemenristek Dikti, Ditjen Pembelajaran dan Mahasiswa. 2016. <i>Pendidikan Kewarganegaraan untuk Perguruan Tinggi</i>. (Cet. I). Dirjen Dikti. 4. Kemendikbud, Dirjen Dikti, 2010, <i>Pendidikan Anti-Korupsi untuk Perguruan Tinggi</i>, Jakarta: Kemendikbud. 5. Undang-Undang Dasar Negara Republik Indonesia 1945 (Hasil Amandemen)

Table 4 Indonesian Language

1. Course Name	Indonesian Language
2. Course Code	BAI101
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	1 (one)
5. Prerequisite	-
6. Course Learning Outcome	After participating in this lesson, students are able to apply good and correct use of Indonesian, both in oral and written communication based on scientific principles and ethics by utilizing the integrated UNAIR MKWU module and written and online media through AULA (eLearning.unair.ac.id).
7. Course Description / Syllabus	This course discusses the following materials: a) the history, function, and position of the Indonesian language, b) various languages, c) writing improved spelling, effective sentences, and paragraph development d) writing scientific essays (systematics of scientific essays, quoting techniques, compiling techniques). bibliography, as well as appearance in scientific essays), e) scientific presentations.
8. Soft Skill Attributes	Critical, polite, and honest.
9. Learning Methods	Lectures, discussions, exercises, assignments, and scientific presentations
10. Learning Media	Textbooks, integrated MKWU UNAIR Module, LCD, whiteboard, and written and online media through the Learning Management System (LMS) (elearning.unair.ac.id).
11. Learning Assessments	<i>Soft skills</i> 10%, assignments, midterm and final examination
12. Lecturers	Course coordinator: Lecture appointed by UNAIR Members: Team of Indonesian Language discipline
13. Required References	<ol style="list-style-type: none"> 1. Maimunah, Siti Annijad. 2007. <i>Buku Pintar Bahasa Indonesia</i>. Jakarta Prestasi Pustaka. 2. Nasucha, H. Yakub Dkk. 2010. <i>Bahasa Indonesia untuk Penulisan Karya Tulis Ilmiah</i>. Surakarta: Media Perkasa. 3. Rohmadi, Mohammad, Eddy Sugiri, dan Aninditya Sri Nugraheni. 2013. <i>Belajar Bahasa Indonesia: Upaya Terampil</i>

	<i>Berbicara dan Menulis Karya Ilmiah (Mata Kuliah Wajib Pengembangan Kepribadian. Surakarta: Cakrawala Media.</i>
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Table 5 Health Communication and Basic Health Services

1. Course Name	Health Communication and Basic Health Services
2. Course Code	KMU103
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	1 (one)
5. Prerequisite	-
6. Course Learning Outcome	<ol style="list-style-type: none"> 1. Able to master the basic principles of the profile of health care providers who have an altruistic and empathetic attitude 2. Able to communicate effectively and use interpersonal skills in providing health services 3. Able to master the basic principles of ethical and legal decision-making steps through the integration of evidence-based health issues. 4. Able to master the basic principles of holistic and comprehensive health services according to the patient's specific needs
7. Course Description / Syllabus	The course is an extraction from courses on socio-cultural science and humanities, critical thinking and evidence-based learning, empathy and social, communication and counseling, interpersonal communication, human behavior and bioethics. This course discusses topics related to the basic concepts of shaping the character of health care providers who are altruistic, have a caring attitude, empathy, apply effective communication, solve evidence-based problems that prioritize ethical, practical and theoretical aspects.
8. Soft Skill Attributes	<ol style="list-style-type: none"> 1. Discipline (punctuality) 2. Discipline (assignment submission) 3. Ethics 4. Activity 5. Cooperation
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	COURSE COORDINATOR: Dr. Lestari Sudaryanti , dr. , M.Kes

13. Required References	<p>Members: Team of Health Scientific Discipline</p> <ol style="list-style-type: none"> 1. Batson, C.D., Ahmad, N., Stocks, E.L., 2004. Bene_ts and liabilities of Empathy induced altruism. In A.G. Miller (Ed.) The social psychology of good and evil. New York: Guilford Press. 2. Word Health Organization. 2010. Framework for action on interprofesional Education & Collaborative Practice. Diakses dari: whqlibdoc.who.int/hq/2010/WHO_HRH_HP_N_10.3_eng.pdf 3. Gurbutt, R. 2006. <i>Nurses'clinical decision making</i>. USA: Radcliffe Publishing. 4. Husted, G. & Husted, J. 2001. <i>Ethical decision making in nursing and healthcare: the symphonological approach, 3rd edition</i>. USA: Springer Publishing Company. 5. Thompson, C. & Dowding, D. 2001. <i>Clinical decision making and judgement in nursing</i>. USA: Churchill Livingstone.
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Table 6 Health Ethics and Law

1. Course Name	Health Ethics and Law
2. Course Code	ETM101
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	1 (one)
5. Prerequisite	-
6. Course Learning Outcome	<ol style="list-style-type: none"> 1. Students are able to describe Human Rights (HAM), as well as Rights and Obligations; Bioethics in Health Research and Services; Ethics, Academic Ethics, Health Ethics and Law; Health Code of Ethics; Code of Ethics for Health Services; Informed Consent in Health Services; Negligence of Health Services (Malpractice); Professionalism and Professional Oath, so that they can be used as a reference for the mindset in health service actions. 2. Get an online learning experience based on information technology.
7. Course Description / Syllabus	This course discusses Human Rights (HAM), as well as Rights and Obligations; Bioethics in Health Research and Services; Ethics, Academic Ethics, Health Ethics and Law; Health Code of Ethics; Code of Ethics for Health Services; Informed Consent in Health Services; Negligence of Health Services (Malpractice); Professionalism and Professional Oath, which must be mastered by undergraduate students of Health Study Program (FK, FKG, FKP, FKM, FF, FKH) Universitas Airlangga semester 1 at the end of the study of Ethics and Health Law.
8. Soft Skill Attributes	<ol style="list-style-type: none"> 1. Critical thinking 2. Ability to convey ideas 3. Communication skills 4. Discipline: never late 5. Civilized: respecting others
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	<ol style="list-style-type: none"> 1. Midterm examination 40% 2. Module Presentation 30% 3. Module Paper 30%

12. Lecturers	<p>COURSE COORDINATOR: Dr. Anis Irmawati , drg ., M.kes .</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Dr. Anis Irmawati, drg., M.Kes. 2. Dr. Agung Sosiawan, drg., M.Kes., M.H. 3. Dr. Hanik Nihayati, S.Kep., Ns., M.Kes. 4. Dr. Lestari Sudariyanti, dr., M.Kes. 5. Dr. Siti Rahayu Nadhiroh, S.KM., M.Kes. 6. Dr. Andri Setiya Wahyudi, S.Kep, Ns., M.Kes.
13. Required References	<ol style="list-style-type: none"> 1. Darmadipura, MS, dkk.. Kajian Bioetik, Edisi Kedua, Airlangga University Press, Surabaya, 2008 2. KKI, Penyelenggaran Praktik Kedokteran Yang Baik di Indonesia, KKI, Jakarta, 2007 3. Guwandi, J. Informed Consent & informed Refusal, 4th Edtion, Fakultas Kedokteran Universitas Indonesia, Jakarta, 2006 4. Undang-Undang Republik Indonesia No. 36 Tahun 2009 5. Nasution BJ. Hukum Kesehatan – Pertanggungjawaban Dokter. Cetakan I. Yogyakarta. Rineka Cipta. 2005.

Table 7 Cellular and Molecular Biology

1. Course name	Cellular and Molecular Biology
2. Course Code	BID110
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	1 (one)
5. Prerequisite	-
6. Course Learning Outcome	<p>After following this course, undergraduate students of the Pharmacy program are able to correlate cellular and molecular characteristics in living systems with the presence of endogenous compounds (biological compounds) and exogenous (drug compounds), extra and intracellular activation mechanisms, cellular metabolism, cell growth, genetic changes and cell death and their control. For this reason, the CPMK systematically is as follows:</p> <ol style="list-style-type: none"> 1. Explaining the scope and benefits of cellular and molecular biology in the pharmaceutical field. 2. Describe the characteristics of cellular and organelles with sensitivity and responsiveness in response to biological and chemical stimulation. 3. Connecting the characteristics of molecular components with physiological and pathological conditions, as well as stimulation of endogenous compounds including drugs. 4. Describing inter and intracellular signal delivery pathways and relate changes in signal delivery pathways to physiological and pathophysiological conditions as well as changes in signal delivery pathways. 5. Explaining the genetic code, gene expression and protein synthesis in physiological and pathophysiological conditions. 6. Explaining the cell cycle, cell development and cell death and relate it to the occurrence of pathological conditions or diseases. 7. Correlating control of cell growth and death with the presence of endogenous molecules or exogenous compounds (active ingredients). 8. Detecting cellular and molecular changes due to endogenous and exogenous stimulation
7. Course Description / Syllabus	The Cellular and Molecular Biology course presents the scope and benefits of cellular and molecular biology in the pharmaceutical field; the relationship between cellular and organelle characteristics including the molecular biochemistry of cell constituents, the structure and function of organelles and biomembranes on the sensitivity and responsiveness of responses

	to biological and chemical stimulation; characteristic of molecular components with physiological and pathological states including receptors, ion channels and other transmembrane proteins; inter and intracellular signaling pathways and linking changes in signaling pathways in physiological and pathophysiological conditions (MAP Kinase signaling pathway, JAK/STAT signaling, TLR Signaling); changes in signaling pathways in physiological and pathophysiological conditions (diabetes mellitus and cancer); genetic code, gene expression and protein synthesis in physiological and pathophysiological conditions (central dogma, genetic expression, mutation and impact of change); linking the control of cell growth and death with the use of drug compounds or active ingredients as well as methods of evaluating cellular and molecular changes due to endogenous and exogenous stimulation
8. Soft Skill Attributes	Honesty, self-confidence, discipline, respect for others and cooperation
9. Learning Methods	Lectures and presentations
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Prof. apt. Junaidi Khotib , S.Si , M.Kes , Ph.D Members :</p> <ol style="list-style-type: none"> 1. Prof. apt. Junaidi Khotib, S.Si, M.Kes, Ph.D 2. Prof. Dr. apt. Djoko Agus Purwanto, MSi 3. apt. Chrismawan Ardianto, S.Farm, M.Sc, 4. Dr. apt. Aniek Setiya Budiatin, MS 5. apt. Dewi Wara Shinta, S.Farm, M.Far Klin
13. Required References	<ol style="list-style-type: none"> 1. Lodish, H., Berk, A., Kaiser, CA., Krieger, M., 2021, Molecular Cell Biology, 9th edition, Massachusetts Institute of Technology 2. Kaerp, G., Iwasa, J., et al, 2020, Karp's Cell and Molecular Biology, Willey 3. Albert, B., Johnson, A., Lewis, J., Raff, M., 2014, Molecular Biology of The Cell, 6th edition, Garland Science 4. Watson, JD., Baker, TA., Bell, SP., Gann, A., Levine, M., Losick, R., 2013, Molecular Biology of the Gene, (7th Edition) 5. Franklin, TJ and Snow, GA, 2013, Biochemistry and Molecular Biology of Antimicrobial Drug Action, 6th edition, USA: Springer

Table 8 Basic Pharmaceutical Chemistry

1. Course Name	Basic Pharmaceutical Chemistry
2. Course Code	KID111
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	1 (one)
5. Prerequisite	-
6. Course Learning Outcome	At the end of the course, students can explain the basic theories of Chemistry specifically related to its application in the pharmaceutical field so that it can be used to support further courses / practicums.
7. Course Description / Syllabus	This course presents the basics of chemistry, namely the study of stoichiometry, atoms and elements, chemical bonds, molecules and compounds, substance systems, ionic equilibrium in solution, acid-base theory, acid-base titrations, hydrolysis events, electrochemistry and the application of these studies in the field pharmacy, as well as examples of problems in the Indonesian Pharmacopoeia reference book.
8. Soft Skill Attributes	Honesty, self-confidence, discipline, respect for others and cooperation
9. Learning Methods	Lecture, discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Soft skill, assignments, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Juni Ekowati, MSi. Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. H. Amirudin Prawita. 2. Prof. Dr. apt. Bambang Tri P.,MS. 3. Dr. apt. Asri Darmawati, MS. 4. Dr. apt. Juni Ekowati,MSi. 5. Dr. apt. Riesta Primaharinastiti, S.Si, MS., 6. apt. Kholis Amalia Nofianti, SFarm., MSc.
13. Required References	<ol style="list-style-type: none"> 1. Kementerian Kesehatan Republik Indonesia. Farmakope Indonesia edisi VI. Jakarta: Kementerian Kesehatan RI

	<ol style="list-style-type: none"> 2. McMurry, J., <i>et al.</i> 2010. Fundamentals of General, Organic and Biological Chemistry, 6th ed. Boston:Pearson Education, Inc. 3. Jack Cazes (editor), 2005. Ewing's Analytical Instrumentation Handbook, third edition, New York, Marcel Dekker Inc. 4. Skoog D.A, West D.M., Holler F.J., Crouch S.R., 2014. Fundamentals of Analytical Chemistry, ninth edition, Mary Finch Publisher. 5. Jespersen N.D., Brady J.E., Hyslop A., 2012. Chemistry, the molecular nature of matter, 6th ed, New York, John Wiley and Sons, Inc
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Table 9 Basic Pharmaceutical Chemistry (practicum)

1. Course Name	Basic Pharmaceutical Chemistry (practicum)
2. Course Code	KID112
3. Course Load	1 credit [meeting (26.7 hours), independent learning/assignment (13.3 hours) per semester]
4. Semester	1 (one)
5. Prerequisite	-
Course Learning Outcome	Students are able to apply basic chemistry in practice to support practicum activities in the following semesters accurately and thoroughly.
7. Course Description / Syllabus	This practicum presents (1) general explanation related to laboratory Occupational Safety and Health (K3), introduction and use of laboratory glassware; (2) practical activities with weighing techniques, determining physical constants (refractive index, melting point, and specific gravity), crystal reactions and color reactions, polarity and solubility properties, making standard/buffer solutions and measuring pH.
8. Soft Skill Attributes	Think critically, work in groups well, be honest, and take responsibility.
9. Learning Methods	Lecture, discussion, practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Pre-test/post-test, reports, seminars and discussions, Final Examination
12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. apt. Juni Ekowati, M.Si.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. Bambang Tri Purwanto, M.S. 2. Dr. A. Toto Poernomo, M.Si. 3. Dr. Juni Ekowati, M.Si. 4. Dr. Suzana, M.Si. 5. Melanny Ika Sulistyowati, S.Farm. M.Sc. 6. Kholis Amalia Novianti, S.Farm. M.Sc. 7. Diajeng Putri Paramita, S.Farm., M.Si.

13. Required References	<ol style="list-style-type: none"> 1. Cazes J. 2005. Ewing's Analytical Instrumentation Handbook 3rd Edition. New York: Marcel Dekker Inc. 2. McMurry JE, Ballantine DS, Hoeger CA, Peterson VE, & Castellion ME. 2010. Fundamentals of General, Organic, and Biological Chemistry 6th Edition. Boston: Pearson Publisher. 3. Jespersen ND, Brady JE, Hyslop A. 2012. Chemistry, the molecular nature of mater 6th edition. New York: John-Wiley and Sons Inc. 4. Skoog DA, West DM, Holler FJ, and Crouch SR. 2014. Fundamentals of Analytical Chemistry 9th Edition. Boston: Cencage Learning. 5. Kementerian Kesehatan Republik Indonesia. 2014. Farmakope Indonesia edisi V. Jakarta: Kementerian Kesehatan Republik Indonesia.
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Table 10 Logic and Critical Thinking

1. Course Name	Logic and Critical Thinking
2. Course Code	PHP103
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	2 (two)
5. Prerequisite	-
6. Course Learning Outcome	Able to carry out a critical review of the developments and problems of modern science
7. Course Description / Syllabus	Logic and Critical Thinking is a course that examines the main philosophical questions about the nature of science, the workings of science, methods of obtaining science, and the implications of the development of modern science. This course also seeks to examine the position of science in the universe of philosophy and the role of philosophy in the debate over the basic rules of modern science. This course is directed at three main themes; first, to explore the differences between science and common sense, including the characteristics and methods of its acquisition which are the subject of study in the philosophy of science, second, to examine the major transitions in the tradition of philosophy of science, namely falsification (Karl Raimund Popper) and paradigm change/scientific revolution (Thomas Kuhn) and, third, to examine classical debates in the philosophy of science, including the question of whether reality can be fully explained by science? How does historical contextuality influence the development of science? What has the success (and failure) of science been like in transforming human civilization? Finally, students are invited to appreciate the practical implications that the philosophy of science brings to a variety of modern research methodologies
8. Soft Skill Attributes	Critical thinking, teamwork, honesty and responsibility.
9. Learning Methods	Lectures, Synchronous Distance Learning
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm examination, Group assignments
12. Lecturers	COURSE COORDINATOR: Lecturer appointed by UNAIR Members : Lecturer team appointed by UNAIR

13.Required References	<ol style="list-style-type: none"> 1. Bird, A. (2018). <i>Thomas Kuhn</i>. The Stanford Encyclopedia of Philosophy. Diakses dari https://plato.stanford.edu/entries/thomas-kuhn 2. Burns, P.B., Rohrich, R.J. & Chung, K.C. (2011). The levels of evidence and their role in Evidence-Based Medicine. <i>Plastic Reconstruction Surgery</i>, 128(1), 305-310. doi: 10.1097/PRS.0b013e318219c171 3. Chakravartty, A. (2017). <i>Scientific Realism</i>. The Stanford Encyclopedia of Philosophy. Diakses dari https://plato.stanford.edu/entries/scientific-realism 4. Fidler, F. (2018). <i>Reproducibility of scientific result</i>. The Stanford Encyclopedia of Philosophy. Diakses dari https://plato.stanford.edu/entries/scientific-reproducibility/ 5. Gaarder, J. (2014). <i>Dunia Sophie: Sebuah Novel Filsafat</i>. (Terj. Astuti, R.) Bandung: Penerbit Mizan. 6. Glanzberg, M. (2018). <i>Truth</i>. The Stanford Encyclopedia of Philosophy. Diakses dari https://plato.stanford.edu/entries/truth 7. Hitchcock, D. (2018). <i>Critical Thinking</i>. The Stanford Encyclopedia of Philosophy. Diakses dari https://plato.stanford.edu/entries/critical-thinking/ 8. Iaccarino, M. (2001). Science and Ethics. <i>EMBO Reports</i>, 15, 2(9), 747-750. doi: 10.1093/embo-reports/kve191
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Table 11 Introduction to Scientific Collaboration

1. Course Name	Introduction to Scientific Collaboration
2. Course Code	MNM107
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	2 (two)
5. Prerequisite	-
6. Course Learning Outcome	<ol style="list-style-type: none"> 1. Able to apply interdisciplinary collaboration and collaboration, fostering cooperation based on competence in solving problems in social life in the form of health, social and humanities problems. 2. Able to communicate effectively and use interpersonal skills in social life 3. Able to use ethical and legal decision making steps. 4. Able to evaluate the impact of providing services to the community from the results of collaboration and interprofessional cooperation.
7. Course Description / Syllabus	This course discusses the basics of implementing collaboration and teamwork and topics related to courses include the basic concepts of Interprofessional Collaboration, leadership and managerial and decision-making concepts in problems that occur in society in the form of health, social, humanities, decision-making steps, application of decision making in several service settings in the community by collaborating interprofessionally based on ethics, practice, theory, and organization.
8. Soft Skill Attributes	Critical thinking, teamwork, honesty and responsibility.
9. Learning Methods	Watching collaborative motivational films, Video conference, Self Discovery Learning (SDL), Lecture, Small group discuss (SGD), Roleplay Demonstration.
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	<p>MC test assessment criteria, answer the evaluation directly</p> <ol style="list-style-type: none"> 1. Students actively ask questions. 2. Students are able to give opinions.
12. Lecturers	<p>COURSE COORDINATOR: Dr. Hanik Endang Nihayati, S.Kep.Ns.M.Kep</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Dr. Hanik Endang Nihayati, Skep, Ns, MKep 2. Dr. Prihartini Widiyanti, drg, M.Kes 3. Dr. Gadis Meinar Sari, dr., M.Kes

	<ol style="list-style-type: none"> 4. Dr. Afif Nurul Hidayati, dr., Sp.KK 5. Inge Dhamanti, SKM., M.Kes., M.PH., Ph.D 6. Dr. Rr. Juni Triastuti, S.Pi.,M.Si 7. Dr. Andri Setiya Wahyudi, Skep, Ns, MKep 8. Nuzul Quraniati, SKep, Ns, MNg, PHD 9. Dr. Ninuk Dian Kurniawati, S.Kep., Ns.,MANP 10. Diansanto Prayogo, SKM, MKes 11. Rr. Retno Widyowati, S.Si., M.Sc., PhD 12. Eka Mishbahatul Mar'ah Has, S.Kep. Ns,M.Kep 13. Dr. Pudji Lestari, dr., M.Kes 14. Dr. Astutik, SH.,MH 15. Dr. Kismiyati, Ir.,M.Si 16. Dr. Retno Andriati,MA 17. Akhmad Jayadi, SE, M.Ec. Dev 18. Meircurius Dwi Condo S, drg, MKes 19. Muthmainnah, SKM, M.Kes 20. Dr. Laksmi Sulmartiwi,S.Pi.,MP 21. Elida Ulfiana, SKep, Ns, MKep 22. Ardiana Mutamsari Witaningrum, drh. MVet 23. Ervan Kus Indarto, SLP, M.IP 24. Ilham Nur Alvian, MPsi, Psikolog 25. Linggar Rama Dian Putra, S.Ant, M.A 26. Fadli Ama, ST, MT 27. Shofa Aulia Aldhama, ST, MT 28. Prisma Megantoro. ST, Meng
13.Required References	<ol style="list-style-type: none"> 1. Hammick, M, Freeth, D, Koppel, I, Reeves, S & Barr, H, 2007. A Best evidence systematic review of interproffesional education: BEME Guide no 9 Med Teach, 29(8): 735 – 51. Doi 10.1080/01421590701682576 2. Word Health Organization. 2010 Framework for action on interprofesional Education & Collaborative Practice. Diakses dari: whqlibdoc.who.int/hq/2010/WHO_HRH_HP_N_10.3_eng.pdf 3. Bosh, B, dan Mansell, H, 2015. Interprofessional collaboration in health care Lesson to be leared from competitive sport. Can Pharm J (Ott), vol 148, no 4 pp 176-179

Table 12 Communication and Personal Development

1. Course Name	Communication and Personal Development
2. Course Code	MNM106
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	2 (two)
5. Prerequisite	-
6. Course Learning Outcome	<ol style="list-style-type: none"> 1. Able to understand and develop themselves and increase their learning capacity; 2. Able to lead and work in a team; 3. Able to improve the quality of the available resources for organizational development, networking and be responsible for work in accordance with professional ethics; 4. Able to internalize values, norms, academic ethics, spirit of independence, struggle, and entrepreneurship according to the basic principles of the academic community UNAIR HEBAT and Excellent with Morality
7. Course Description / Syllabus	This course provides insight and opportunities for students to be able to explore their potential in order to be able to develop and increase their capacity through synergies with coaching activities in the Student Activity Unit and other student organization activities.
8. Soft Skill Attributes	Critical thinking, teamwork, honesty and responsibility.
9. Learning Methods	Lecture, question and answer, FGD, simulation / role play, problem-based learning
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Demonstrating an attitude of curiosity, discipline, thoroughness and critical thinking in learning
12. Lecturers	<p>COURSE COORDINATOR: Praise Karyanto, SS, M. Hum</p> <p>Members : Course Team of Communication and Personal Development Courses</p>
13.Required References	

Table 13 Fundamental Pharmacy

1. Course Name	Fundamental Pharmacy
2. Course Code	FAM401
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	2 (two)
5. Prerequisite	-
6. Course Learning Outcome	At the end of the lesson, students can explain and provide examples related to theories, concepts and applications in pharmaceutical practice regarding philosophy in pharmacy, pharmaceutical developments, scope of pharmaceutical work, professional relationships between pharmacists in the health system, the concept of drugs as a means of therapy, introduction to prescription science, calculus in pharmacy and pharmaceutical care.
7. Course Description / Syllabus	This course presents theories, concepts and examples of the application of fundamental aspects of pharmacy regarding philosophy in pharmacy, pharmaceutical developments, scope of pharmaceutical work, the professional relationship of pharmacists in the health system, the concept of drugs as a means of therapy, prescription science, calculus in pharmacy and pharmaceutical care.
8. Soft Skill Attributes	Participation, effective communication and critical thinking
9. Learning Methods	Lecture
10. Learning Media	<i>Zoom Platform, AULA E-Learning</i>
11. Learning Assessments	Assignments and presentations 30%; midterm 30% and final examination 40%
12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. apt. Umi Athiyah, MS</p> <p>Members:</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Umi Athiyah, MS 2. apt. Andi Hermansyah, MSc., PhD 3. apt. Hanni Prihhastuti Puspitasari, MPhil., PhD 4. Dr. apt. Wahyu Utami, MS 5. Prof. Dr. apt. Juni Ekowati, MSi 6. Dr. apt. Dewi Isadiartuti, MSi

13.Required References	<ol style="list-style-type: none"> 1. Remington, J. P. (2021). Remington: The science and practice of pharmacy (23rd edition). Lippincott Williams & Wilkins. 2. Cipolle, R. J., Strand, L. M., & Morley, P. C. (2012). Pharmaceutical care practice: the patient-centered approach to medication management. McGraw Hill Professional. 3. Harding, G., & Taylor, K. M. (Eds.). (2017). Pharmacy practice. CRC Press. 4. Whalley, B. J. (2008). Foundation in pharmacy practice. 5. Babar, Zaheer-ud-Din. (2019). Encyclopedia of Pharmacy Practice and Clinical Pharmacy. Elsevier 6. Athijah, U., Pristianty, L., & Puspitasari, H. P. (2011). Buku Ajar Preskripsi: Obat dan Resep Jilid 1. Airlangga University Press. 7. Joenoes, N. Z. (2006). ARS PRESCRIBENDI 3: Resep yang rasional. Airlangga University Press
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Table 14 Biomedical Science

1. Course Name	Biomedical Science
2. Course Code	FAT102
3. Course Load	5 credits [meeting (66.7 hours), independent learning/assignment (133.3 hours) per semester]
4. Semester	2 (two)
5. Prerequisite	-
6. Course Learning Outcome	<p>After completing this course, students of the Bachelor (S1) Pharmacy program are able to connect basic medical knowledge, both biochemistry, anatomy-histology, physiology-pathophysiology, microbiology-parasitology and immunology in the development of quality drugs and pharmaceutical services. For this reason, the CPMK systematically is as follows:</p> <ol style="list-style-type: none"> 1. Explaining the biochemistry of carbohydrates, proteins and fats in biological systems 2. Describing the structure and bioactivity of enzymes, metabolism and cellular energy as well as biochemistry of drug action capture points 3. Explaining the anatomy and histology of cell structure, intercellular material, connective tissue, blood, epithelial tissue and muscle tissue, peripheral and central nervous system, circulatory system, skin and adnexa, gastrointestinal system and endocrine system 4. Explaining physiological biophysics, body fluids, peripheral nerves, muscles, food digestion, cardiovascular, respiration, kidney, blood, endocrine, and nervous systems. 5. Explaining morphology, microbial classification, host-parasite relationship, microbial genetics, infection control, bacteriology, virology, mycology, 6. Explaining parasitology which includes helminthology, protozoology and bacteriology, 7. Explaining immunology, innate immunity, specific immunity, antigen-immunogen complement, antibodies, antibodies' antigen interactions, immunity to infection and hypersensitivity.
7. Course Description / Syllabus	<p>The Biomedical Science course presents learning modules consisting of biochemistry modules (1-2), anatomy-histology modules (3-4), physiology-pathophysiology modules, (5-7 and 9) microbiology-parasitology modules (10-13) and immunology module (14-15). This course examines the biochemistry of carbohydrates, proteins and fats in biological systems; structure and bioactivity of enzymes, metabolism and cellular energy as well as biochemistry of drug action capture points; anatomy and histology of cell structure, intercellular material, connective</p>

	<p>tissue, blood, epithelial tissue and muscle tissue, peripheral nervous tissue and central nervous system, circulatory system, skin and adnexa, gastrointestinal system and endocrine system; physiological biophysics, body fluids, peripheral nerves, muscles, food digestion, cardiovascular, respiration, kidney, blood, endocrine, and nervous systems; morphology, microbial classification, host-parasite relationship, microbial genetics, infection control, bacteriology, virology, mycology; parasitology which includes helminthology, protozoology and bacteriology; and immunology, innate immunity, specific immunity, complement antigen-immunogen, antibodies, antigen-antibody interactions, immunity to infection and hypersensitivity.</p>
8. Soft Skill Attributes	Perseverance and discipline, analytical and synthesis ability, self learning ability and growing long life learning, self-confidence, cooperation.
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Prof. apt. Junaidi Khotib , S.Si , M.Kes , Ph.D Members :</p> <ol style="list-style-type: none"> 1. Teaching Staff of Biochemistry Faculty of Medicine 2. Teaching Staff of Histology Anatomy Faculty of Medicine 3. Teaching Staff of Physiology-Pathophysiology Faculty of Medicine 4. Teaching Staff of Microbiology-Parasitology Faculty of Medicine 5. Teachng Staff of Immunology Faculty of Medicine
13. Required References	<ol style="list-style-type: none"> 1. Nelson DL, Cox MC, Lehninger. 2021. Principles of Biochemistry. Eighth Edition. Macmillan Learning. 2. Abali EE, Cline SD, Franklin DS, Viselli SM. 2021. Lippincott Illustrated Reviews: Biochemistry (Lippincott Illustrated Reviews Series) Eighth Edition, Wolter Kluwer. 3. Hall JE, Hall ME. 2020. Guyton and Hall Textbook of Medical Physiology (Guyton Physiology), 14th Edition, Elsvier. 4. Mobin N. 2018. Basics of Human Anatomy for Students of Medical & Allied Health Sciences: General Anatomy and General Histology - Vol.1 1st Edition. 5. Talaro KP and Chess B. 2017. Foundations in Microbiology 10th Edition, Mc Grawwhill.

Table 15 Physical Chemistry

1. Course Name	Physical Chemistry
2. Course Code	KIF 201
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	2 (two)
5. Prerequisite	-
6. Course Learning Outcome	At the end of the lecture students are able to explain about: the benefits of Physical Chemistry in Pharmacy, thermodynamics, surface equilibrium, phase equilibrium, surface phenomena and kinetics.
7. Course Description / Syllabus	Introduction to physical chemistry and Learning Contracts, First Law of Thermodynamics, Thermochemistry, Second Law of Thermodynamics, Thermodynamics of Gibbs Energy and Equilibrium, Surface equilibrium (adsorption), Phase Equilibrium and One-component systems, Two-component systems (solid-solid), Two-component (liquid) systems -liquid 1), Two-component system (liquid-liquid II), Two-component system (liquid-liquid III), Three-component system, Reaction Kinetics I and Reaction Kinetics II
8. Soft Skill Attributes	Discipline. Honesty and responsibility
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	<ul style="list-style-type: none"> - Uploading material summary, discipline, honesty and responsibility (10%) - Activities during discussion, discipline, honesty and responsibility (15%) - Answering quiz questions (15%) - Answering Midterm test questions (30%) - Answering Final test questions (30%)
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Nuzul Wahyuning Diyah , M. Si</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Bambang Tri Purwanto, M.S. 2. Dr. apt. Tri Widiandani, S.Si, SpFRS 3. apt. Diajeng Putri Paramita, S.Farm.,Msi
13. Required References	<ol style="list-style-type: none"> 1. Atkins, P & de Paula J 2006, <i>Physical Chemistry for the Life Science</i>, W. H. Freeman Publishers, Oxford.

	<ol style="list-style-type: none"> 2. Chang R., 2007, <i>Chemistry, 10th Edition</i>, McGraw-Hill Book Company, New York. 3. Connors, KA & Mecozzi, S 2010, <i>Thermodynamics of Pharmaceutic-al Systems An Introduction to Theory and Applications, 2nd Edition</i>, John Wiley & Sons, Inc., Hoboken. 4. Maron, SH & Lando, JB 1974, <i>Fundamnnental of Physical Chemistry, 1st Edition</i>, McMillan Publishing Co., New York. 5. Sinko, PJ, Singh Y 2011, <i>Martin's Physical Pharmacy and Pharmaceuticals Sciences, 6th Edition</i>, Lippincott Williams & Wilkins, Philadelphia.
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Table 16 Physical Chemistry Practicum

1. Course Name	Physical Chemistry Practicum
2. Course Code	KIF 206
3. Course Load	1 credit [meeting (26.7 hours), independent learning/assignment (13.3 hours) per semester]
4. Semester	2 (two)
5. Prerequisite	-
6. Course Learning Outcome	After following this lesson with a load of 1 credit, students gain experience in conducting experiments on physical chemistry in the pharmaceutical field, including: the law of division, adsorption and reaction speed.
7. Course Description / Syllabus	Law of division, adsorption and reaction rate
8. Soft Skill Attributes	Discipline. Honesty and responsibility
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	<ul style="list-style-type: none"> - Discussion (10%) - Answering post-test (10%) - Doing practical assignments (20%) - Uploading a practicum report (20%) - Answering UAS (40%)
12. Lecturers	<p>COURSE COORDINATOR: Dr. Tri Widiandani , S.Si , Sp.FRS</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Bambang Tri Purwanto, M.S. 2. Dr. apt. Nuzul Wahyuning Diyah, M.Si 3. apt. Diajeng Putri Paramita, S.Farm.,Msi
13. Required References	<ol style="list-style-type: none"> 1. Atkins, P & de Paula J 2006, <i>Physical Chemistry for the Life Science</i>, W. H. Freeman Publishers, Oxford. 2. Florence, AT & Attwood, D 2006, <i>Physicochemical Principles of Pharmacy</i>, 4th Edition, Pharmaceutical Press, London 3. Levine, IN 2009, <i>Physical Chemistry</i>, 6th Edition, McGraw-Hill Book Company New York. 4. Maron, SH & Lando, JB 1974, <i>Fundamntental of Physical Chemistry</i>, 1st Edition, McMillan Publishing Co., New York.

	5. Sinko, PJ, Singh Y 2011, <i>Martin's Physical Pharmacy and Pharmaceuticals Sciences</i> , 6 th Edition, Lippincott Williams & Wilkins, Philadelphia.
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Table 17 Pharmaceutical Botany

1. Course Name	Pharmaceutical Botany
2. Course Code	FAB101
3. Course Load	1 credit [meeting (13.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	2 (two)
5. Prerequisite	-
6. Course Learning Outcome	At the end of the Pharmacy Botany lesson, students are able to identify medicinal plants based on macroscopic and microscopic characteristics that are in accordance with <i>Materia Medika</i>
7. Course Description / Syllabus	In the Pharmacy Botany course, students study plant cells and tissues, microscopically and microscopically of roots, stems, leaves, flowers, fruits, and seeds, as well as taxonomy of cryptograms, gymnosperms & angiosperms, monocots, dicots for monoclamidae, dialypetalae and sympetalae.
8. Soft Skill Attributes	Presence, Discipline , Accuracy
9. Learning Methods	Lectures, discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm (50%) and final (50%) examination
12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. apt. Bambang Prayogo EW, MS</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Sukardiman, MS 2. Dr. apt. Aty Widyawaruyanti, MS 3. Dr. apt. Wiwied Ekasari, MSi 4. apt. Rr. Retno Widyowati, SSi., MPharm., PhD 5. apt. Tutik Sri Wahyuni, SSi., MSi., PhD 6. apt. Neny Purwitasari, SFarm., MSc.
13. Required References	<ol style="list-style-type: none"> 1. Lawrence, 1951. Taxonomy of Vascular Plants. The Mc. Millan Company, New York. 2. Samuel B. Jones, 1987. <i>Plant Systematics</i>. McGraw-Hill Book Company. 3. Backer, C.A, 1963- 1968. Flora of Java, vol.: I,II,III. Wolters-Noordhoff N.V. Groningen-The Netherlands. 4. Van Steenis, C.G.G.J, 1978. Flora untuk Sekolah di Indonesia. PT. Pradnya Paramita, Jakarta Pusat.

	5. Priti Shukla dan Shital P. Misra, 1982. An Introduction to Taxonomy of Angiosperms. Vikas Publishing House PVT.LTD, New Delhi.
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Table 18 Pharmaceutical Botany Practicum

1. Course Name	Pharmaceutical Botany Practicum
2. Course Code	FAB102
3. Course Load	1 credit [meeting (26.7 hours), independent learning/assignment (13.3 hours) per semester]
4. Semester	2 (two)
5. Prerequisite	-
6. Course Learning Outcome	At the end of the Pharmacy Botany lesson students are able to identify medicinal plants based on macroscopic and microscopic characteristics that are in accordance with Materia Medica
7. Course Description / Syllabus	In the Pharmacy Botany course, students study plant cells and tissues, microscopically and microscopically of roots, stems, leaves, flowers, fruits, and seeds, as well as taxonomy of cryptogams, gymnosperms & angiosperms, monocots, dicots for monoclamidae, dialypetalae and sympetalae.
8. Soft Skill Attributes	Presence, Discipline, and Accuracy
9. Learning Methods	Lectures, Discussions
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Assignments (20%), Midterm scores (40%) and Final Examination (40%)
12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. apt. Bambang Prajogo EW, MS.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Bambang Prajogo EW., MS. 2. Prof. Dr. apt. Sukardiman, MS. 3. Dr. apt. Aty Widyawaruyanti, MS. 4. apt. Dra. Rakhmawati, MSi. 5. apt. Drs. Herra Studiawan, MS. 6. Dr. apt. Wiwied Ekasari, MS. 7. Dr. apt. Idha Kusumawati, MS. 8. apt. Tutik Sri Wahyuni, SSi, MSi, PhD. 9. apt. Suciati., SSi., M.Phill, PhD. 10. apt. Neny Purwitasari, S.Farm, MSc. 11. apt. Rice Disi Oktarina, S.Farm., M.Farm. 12. Rosita Handayani, SSi., MSi

13. Required References	<ol style="list-style-type: none"> 1. Lawrence, 1951. Taxonomy of Vascular Plants. The Mc. Millan Company, New York. 2. Samuel B. Jones, 1987. <i>Plant Systematics</i>. McGraw-Hill Book Company. 3. Backer, C.A, 1963- 1968. Flora of Java, vol.: I,II,III. Wolters-Noordhoff N.V. Groningen-The Netherlands. 4. Van Steenis, C.G.G.J, 1978. Flora untuk Sekolah di Indonesia. PT. Pradnya Paramita, Jakarta Pusat. 5. Priti Shukla dan Shital P. Misra, 1982. An Introduction to Taxonomy of Angiosperms. Vikas Publishing House PVT.LTD, New Delhi.
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Table 19 Pharmaceutical Organic Chemistry I

1. Course Name	Pharmaceutical Organic Chemistry I
2. Course Code	KIO105
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	2 (two)
5. Prerequisite	The participating students have taken Basic Pharmaceutical Chemistry courses
6. Course Learning Outcome	<ol style="list-style-type: none">1. Students are able to apply the principles and theories of Organic Chemistry in procuring drugs and making drug preparations with an understanding and application of basic knowledge about drugs related to chemical-physical properties, pharmacology, formulations and technology.2. Students are able to apply the principles and theories of Organic Chemistry in identifying, checking the purity, and determining the levels of drugs and drug ingredients in pharmaceutical preparations with appropriate analytical approaches.3. Students are able to apply the principles and theories of Organic Chemistry in explaining the basic and applied principles in the development of drugs and medicinal materials in the natural and synthetic groups.4. Students are able to apply the principles and theories of Organic Chemistry in explaining the basic principles and techniques of making medicinal ingredients, as well as the relationship between structural changes and biological activity.5. Students are able to apply the principles and theories of Organic Chemistry in explaining the concept of quality control of medicinal ingredients and medicinal preparations, traditional medicines, cosmetics, food and beverages in accordance with scientific rules and established standards.6. Students are able to apply the principles and theories of Organic Chemistry in providing information and communicating about drugs and other pharmaceutical supplies to patients, the public and fellow health professionals in an objective, scientific, and responsible manner.
7. Course Description / Syllabus	This course studies the principles and theories of Organic Chemistry which are the basis for studying pharmaceutical subjects in the following semesters. This course consists of understanding Organic Chemistry, structure and bonds of organic compounds, and acids and bases; alkanes, and their application in the pharmaceutical field; alkenes and alkynes, and their application in the pharmaceutical field; aromatic compounds, and their application in the pharmaceutical field; stereochemistry of tetrahedral centers, and their application in the pharmaceutical

	field; organohalides, and their application in the pharmaceutical field; alcohols, phenols, ethers, and their sulfur analogues, and their application in the pharmaceutical field.
8. Soft Skill Attributes	<ol style="list-style-type: none"> 1. Thinking critically, comprehensively and scientifically-academically valid. 2. Active learning to access the latest primary information, discussing to make scientific-academic decisions.
9. Learning Methods	Independent & group study according to assignments; group discussion; case studies related to the topic.
10. Learning Media	Electronic media, Learning Management System (LMS).
11. Learning Assessments	<ol style="list-style-type: none"> 1) The accuracy of the answer to the task; 2) The accuracy of the arguments during the discussion; 3) The accuracy of the case study analysis; 4) Ability to cooperate, communicate, motivate & empathize.
12. Lecturers	<p>COURSE COORDINATOR: apt. Drs. Hadi Poerwono , MSc., PhD.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Achmad Syahrani, MS. 2. apt. Drs. Hadi Poerwono, MSc., PhD. 3. apt. Drs. Marcellino Rudyanto, MSi., PhD. 4. Dr. apt. Juni Ekowati, MSi. 5. Dr. apt. Suzana, MSi. 6. apt. Melanny Ika Sulistyowaty, SFarm., MSc., PhD. 7. apt. Kholis Amalia Novianti, SFarm., MSc
13.Required References	<ol style="list-style-type: none"> 1. McMurry J. 2011. Fundamentals of Organic Chemistry, 7th ed. Belmont: Brooks/Cole, Cengage Learning. 2. McMurry J. 2016. Organic Chemistry, 9th ed. Boston: Cengage Learning. 3. Fryhle CB , Snyder SA, Solomons TWG. 2016. Organic Chemistry, 10th ed. New York: Wiley. 4. Wade, LG, Simek, JW. 2016. Organic Chemistry, 9th ed. Pearson.

Table 20 Pharmacy Practice I

1. Course Name	Pharmacy Practice I
2. Course Code	FAM204
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	-
6. Course Learning Outcome	After taking this Practical Pharmacy 1 course, it is hoped that the third semester students of the Faculty of Pharmacy Universitas Airlangga will be able to explain pharmaceutical care and the basic concepts of professional communication, effective communication in pharmaceutical practice, drug therapy problems and therapy documentation, communication in patient therapy management, effective communication with patients who have specific communication needs, interprofessional communication in pharmaceutical practice, professional communication in the digital era, various sources of drug information as well as tracing and evaluating drug information sources, medication errors and patient safety, patient compliance in drug use, explaining, suggesting strategies management and documenting side effects and pharmacovigilance reporting, explaining and suggesting drug interaction management strategies
7. Course Description / Syllabus	This course material will be delivered face-to-face in the form of lectures, case discussions, forum discussions (AULA), student presentations, simulations and practice. Learning materials include, the basis of professional communication, therapeutic communication, interprofessional communication, and public communication, tracing and evaluation of drug information sources, medication errors and patient safety, drug side effects and pharmacovigilance, drug interactions.
8. Soft Skill Attributes	Honesty, Discipline, Cooperation
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	COURSE COORDINATOR: Dr. apt. Yunita Nita, SSi , MPharm Members :

13. Required References	<ol style="list-style-type: none"> 1. Prof. Dr. apt. Umi Athiyah, MS 2. Dr. apt. Wahyu Utami, MS 3. Dr. apt. Abdul Rahem, MKes 4. Dr. apt. Yunita Nita, SSi, MPharm 5. apt. Arie Sulistyarini, SSi, MPharm 6. Dr. apt. Yuni Priyandani, SSi, SpFRS 7. apt. Elida Zairina, SSi, MPH, PhD 8. apt. Hanni Prihhastuti P, SSi, MPhil, PhD 9. apt. Andi Hermansyah, SFarm, MSc, PhD 10. apt. Gesnita Nugraheni, SFarm, MSc 11. apt. Ana Yuda, SSi, MFarm 12. apt. Anila Impian S, SSi. Mfarm <ol style="list-style-type: none"> 1. G Parthasarathi (Ed). 2012. <i>A Textbook of Clinical Pharmacy Practice</i>. 2nd edition, Universities Press (India) Private Limited 2. Berger, B.A. D.C. 2007. <i>Communication Skills for Pharmacists: Building Relationships, Improving Patient Care</i>, 2nd Edition, American Pharmaceutical Association, Washington, 3. Public Relations for Pharmacists 2000 Pugliese, T.L. <i>American Pharmaceutical Association</i> Washington, D.C 4. Stockley, I.V. 1999. <i>Drug Interactions</i>. Fifth Edition, Pharmaceutical Press, Nottingham, UK 5. Hussar DA, 2005, <i>Patient Compliance</i>, In: Remington: <i>The Science and Practice of Pharmacy</i>, 21st Edition, Chapter 98, p.1782-1792
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Table 21 Pharmacy Practice I Practicum

1. Course Name	Pharmacy Practice I Practicum
2. Course Code	FAM205
3. Course Load	1 credit [meeting (26.7 hours), independent learning/assignment (13.3 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	-
6. Course Learning Outcome	After completing Practical Pharmacy 1 practicum, it is expected that the third semester students of the Faculty of Pharmacy, Universitas Airlangga will be able to communicate effectively in managing therapy with patients/clients, effective communication with patients/clients who have specific communication needs, and interprofessional communication.
7. Course Description / Syllabus	Practicum is carried out online in the form of case studies and simulations (role playing). Cases are in the form of scenarios either in video or written form. Learning materials include interpersonal communication, communication in therapy management, communication with patients who have specific communication needs, and interprofessional communication.
8. Soft Skill Attributes	Honesty, Discipline, Confident, Assertive, Empathy, Cooperation
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Yunita Nita, SSi , MPharm .</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Umi Athiyah, M.S. 2. Dr. apt. Wahyu Utami, M.S. 3. Dr. apt. Liza Pristianty, M.Si., M.M. 4. Dr. apt. Abdul Rahem, M.Kes. 5. Dr. apt. Yunita Nita, S.Si, M.Pharm. 6. apt. Arie Sulistyarini, S.Si, M.Pharm. 7. Dr. apt. Yuni Priyandani, S.Si, Sp.FRS. 8. apt. Elida Zairina, S.Si., M.P.H., Ph.D. 9. apt. Hanni Prihhastuti P, S.Si., M.Phil., Ph.D. 10. apt. Andi Hermansyah, S.Farm, M.Sc, Ph.D.

13. Required References	<p>11. apt. Gusti Noorizka V.A., S.Si., MSc., Apt.</p> <p>12. apt. Gesnita Nugraheni, S.Farm, M.Sc.</p> <p>13. apt. Ana Yuda, S.Si, M.Farm.</p> <p>14. apt. Mufarrihah, S.Si., M.Sc.</p> <p>15. apt. Anila Impian S., S.Si., M.Farm.</p> <p>1. Berger, BADC 2007. <i>Communication Skills for Pharmacists: Building Relationships, Improving Patient Care</i> 2nd Edition, American Pharmaceutical Association, Washington.</p> <p>2. Blenkinshopp A., and Paxton P. 2002. <i>Symptoms in The Pharmacy, A Guide to The Management of Common Illness</i> Blackwell Science Ltd. London</p> <p>3. Pugliese, TL American Pharmaceutical Association. 2000. <i>Public Relations for Pharmacists</i> . Washington, DC</p>
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Table 22 Pharmacology and toxicology

1. Course Name	Pharmacology and toxicology
2. Course Code	FAT216
3. Course Load	2 credit [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	-
6. Course Learning Outcome	<p>After taking this course, students in the Bachelor of Pharmacy (S1) program are able to explain the meaning, scope and benefits of studying pharmacology and toxicology, understand various drug targets, detailed drug mechanisms, main effects and side effects of drugs in various therapeutic classes. Systematically, the CPMK is as follows:</p> <ol style="list-style-type: none"> 1. Explain the scope and benefits of pharmacology and toxicology, 2. Understand and explain nervous system drugs (central and peripheral), 3. Understand and explain musculoskeletal system drugs 4. Understand and explain cardiovascular system drugs, 5. Understand and explain endocrine system drugs, 6. Understand and explain digestive system medicines, 7. Understand and explain respiratory system drugs, 8. Understand and explain drugs related to infectious diseases 9. Understand and explain immunology and oncology drugs. 10. Understand and explain toxicology testing 11. Understand and explain Toxicology in special organs and populations
7. Course Description / Syllabus	This course contains an introduction to pharmacology and general toxicology; pharmacology of medicines for the respiratory system, endocrine system, cardiovascular system, digestive system, nervous system, musculoskeletal system, related to infectious and immunological diseases, and oncology; and toxicology testing in special organs and populations.
8. Soft Skill Attributes	Discipline
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm and final exam
12. Lecturers	COURSE COORDINATOR:

	<p>apt. Mahardian Rahmadi , S.Si. , M.Sc., Ph.D</p> <p>Members:</p> <ol style="list-style-type: none"> 1. apt. Mahardian Rahmadi. MSc., PhD. 2. apt. Chrismawan Ardianto, MSc., Ph.D. 3. Prof. Dr. apt. Junaidi Khotib, M.Kes., Ph.D 4. Dr. apt. Aniek Setiya Budiadin, M.Si. 5. apt. Dewi Wara Shinta, S.Farm., M.Farm.Klin. 6. apt. Pharmashinta Putri H., S.Farm., M.Farm.Klin. 7. Dr. apt. Samirah, S.Si., Sp.FRS 8. Dra. apt. Toetik Aryani, M.Si.
13. Required References	<ol style="list-style-type: none"> 1. Brunton, LL., 2017, <i>Goodman and Gilman's The Pharmacological Basis of Therapeutics</i>, 13th Edition, McGraw-Hill Education, New York 2. Medhi , B. & Prakash, A., 2010, <i>Practical Manual of Experimental and Clinical Pharmacology</i> , Jaypee Brothers Medical Publishers (P) Ltd, India. 3. Salmon, Michael (D. Michael), 2014, <i>Practical Pharmacology for the Pharmaceutical Science</i> , John Wiley & Sons, Ltd, India.

Table 23 Pharmacology and toxicology Practicum

1. Course Name	Pharmacology and toxicology Practicum
2. Course Code	FAT217
3. Course Load	1 credit [meeting (26.7 hours), independent learning/assignment (13.3 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	-
6. Course Learning Outcome	After following this lesson, students are expected to be able to understand and explain how drugs work in the body (at the system, organ, cell, and molecular levels) as well as side effects and toxicity that can be caused in experimental animals and humans.
7. Course Description / Syllabus	Introduction of experimental animals for pre-clinical trials, introduction of different routes of administration and onset of drug action through the selected drug propofol, test activity of selected drugs, namely: opioids, anti diabetics, analgesics, anti ulcers.
8. Soft Skill Attributes	Discipline and Cooperation
9. Learning Methods	Lecture, discussion, practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: apt. Mahardian Rahmadi , S.Si. , M.Sc., Ph.D</p> <p>Members :</p> <ol style="list-style-type: none"> 1. apt. Mahardian Rahmadi. MSc., PhD. 2. apt. Chrismawan Ardianto, MSc., Ph.D. 3. Dr. apt. Aniek Setiya Budiatin, M.Si. 4. Dra. apt. Toetik Aryani, M.Si.
13. Required References	<ol style="list-style-type: none"> 1. Brunton, LL., 2017, <i>Goodman and Gilman's The Pharmacological Basis of Therapeutics</i>, 13th Edition, McGraw-Hill Education, New York 2. Medhi , B. & Prakash, A., 2010, <i>Practical Manual of Experimental and Clinical Pharmacology</i> , Jaypee Brothers Medical Publishers (P) Ltd, India.

	3. Salmon, Michael (D. Michael), 2014, <i>Practical Pharmacology for the Pharmaceutical Science</i> , John Wiley & Sons, Ltd, India.
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Table 24 Biopharmaceutics

1. Course Name	Biopharmaceutics
2. Course Code	FAF301
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	Physical Pharmacy
6. Course Learning Outcome	After following this lesson with a load of 2 credits, at the end of the course, students are able to apply the concepts of physics, chemistry of drugs and drug preparations; route of use and mechanism of drug release, drug absorption and biopharmaceutical concepts on the design of drug preparations
7. Course Description / Syllabus	Introduction (scientific concepts and benefits), drug release from dosage forms, drug release and route of use, bioavailability and bioequivalence, biopharmaceutical analysis, exposure and sampling methods of biological samples, application of biopharmaceuticals in the design of pharmaceutical preparations
8. Soft Skill Attributes	Participation, effective communication and critical thinking
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: apt. Drs. Didik Hasmono, MS</p> <p>Members :</p> <ol style="list-style-type: none"> 1. apt. Drs. Didik Hasmono, MS 2. Dr. apt. Budi Suprpti, M.Si 3. Prof. apt. Suharjono, MS 4. Prof. apt. Sujarwo 5. Prof. apt. Junaidi Khotib, M.Kes., PhD 6. Dr. apt. Yulistiani, MSi 7. Dr. apt. Aniek Setiya Budiatin, MSi 8. apt. Dra. Toetik Aryani, MSi 9. Mahardian Rahmadi, SSi, MSc, PhD 10. Chrismawan Ardianto, MSc, PhD 11. apt. Samirah, SSi, SpFRS

13.Required References	<ol style="list-style-type: none"> 1. Shargel L, Wu-Pong S, Yu ABC, 2016, <i>Applied Biopharmaceutics and Pharmacokinetics</i>, 7th edition, Mc Graw-Hill, New York 2. Ritscel WA, kearns GL., 2008, <i>Handbook of Basic Pharmacokinetics</i>, 6th edition, American Pharmacist Association, Washington 3. Gobaldi, M., 2009, <i>Biopharmaceutics and Clinical Pharmacokinetic</i>, 4th edition, Lea Febinger, Phipadelphia 4. Aldeef A, 2012, <i>Absorpstion and drug development: solubility, permeability and charge state</i>, A John Wiley and Sons, New Jersey
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Table 25 Physical Pharmacy

1. Course Name	Physical Pharmacy
2. Course Code	FAF201
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	Physical Chemistry
6. Course Learning Outcome	Students are able to apply the basic theory of physical pharmacy in the development of formulations and drug delivery to underlie the design of formulations in individual dosage and production scale pharmaceutical preparations.
7. Course Description / Syllabus	Physical pharmacy as an applied basic theory in the pharmaceutical field in order to understand physical phenomena and pharmaceutical preparation systems, including: characteristics of various drug dosage forms, solid systems, solubility and distribution phenomena, dissolution, micromyretics, surface tension phenomena, rheology, suspension and emulsion dispersion, and drug stability.
8. Soft Skill Attributes	Honesty, Discipline, Responsibility
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Soft skills, Assignments, Discussions, Quizzes, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Dewi Isadiartuti, M.Si.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Dwi Setyawan, M.Si. 2. Prof. Dr. apt. Esti Hendradi, M.Si. 3. Prof. Dr. apt. Retno Sari, M.Si. 4. Dr. apt. Noorma Rosita, M.Si. 5. Dr.rer.nat. apt. Maria Lucia Ardhani D.L., M.Pharm.Sci. 6. apt. Hanni Prihastuti Puspitasari, S.Si., M.Phil., Ph.D.
13. Required References	<ol style="list-style-type: none"> 1. Sinko PJ (2017). <i>Martin's physical pharmacy and pharmaceutical sciences</i>. 2. Florence AT, Attwood D (2016). <i>Physicochemical principles of pharmacy</i>. 3. Marriott JF et al. (2010). <i>Pharmaceutical compounding and dispensing</i>, 2nd edition.

	<ol style="list-style-type: none"> 4. Blaine T Smith (2016). <i>Physical Pharmacy – Remington Education</i> 5. Kementerian Kesehatan RI (2020). <i>Farmakope Indonesia edisi VI</i>.
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Table 26 Physical Pharmacy Practicum

1. Course Name	Physical Pharmacy Practicum
2. Course Code	FAF214
3. Course Load	2 credits [meeting (53.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	Physical Chemistry
6. Course Learning Outcome	Students are able to apply the basic theory of physical pharmacy in the development of formulations and drug delivery to underlie the design of formulations in individual dosage and production scale pharmaceutical preparations.
7. Course Description / Syllabus	Determine and evaluate dosage systems including: solubility phenomena, dissolution tests, chemical stability tests, micromyretics, rheological properties of liquids and emulsions, emulsification phenomena
8. Soft Skill Attributes	Honesty, Discipline, Responsibility
9. Learning Methods	Practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Soft skills, reports, assignments, discussions, quizzes, exams
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Dewi Isadiartuti, M.Si.</p> <p>Memberss :.</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Dwi Setyawan, M.Si. 2. Prof. Dr. apt. Retno Sari, M.Si. 3. Dr. apt. M. Agus Syamsur Rijal, M.Si. 4. apt. Helmy Yusuf, S.Si., M.Sc., Ph.D. 5. Dr.rer.nat. apt. Maria Lucia Ardhani DL, M.Pharm.Sci. 6. apt. Dini Retnowati, S.Farm., M.Si. 7. Dr. apt. Noorma Rosita, M.Si. 8. apt. Hanni Prihhastuti Puspitasari, S.Si., M.Phil., Ph.D.
13. Required References	<ol style="list-style-type: none"> 1. Kementerian Kesehatan RI (2020). Farmakope Indonesia edisi VI 2. Sinko PJ (2017). <i>Martin's physical pharmacy and pharmaceutical sciences</i>. 3. Florence AT, Attwood D (2016). <i>Physicochemical principles of pharmacy</i>.

	<ol style="list-style-type: none"> 4. Blaine T Smith (2016). <i>Physical Pharmacy – Remington Education</i> 5. Marriott JF et al. (2010). Pharmaceutical compounding and dispensing, 2nd edition.
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Table 27 Analytical Chemistry

1. Course Name	Analytical Chemistry
2. Course Code	KIA216
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	Pharmaceutical chemistry
6. Course Learning Outcome	At the end of the study, students can understand how to qualitatively and quantitatively analyze drug compounds, using conventional methods so that they can be used to support advanced courses/practicums
7. Course Description / Syllabus	This course discusses general provisions and systematics of analysis, conventional qualitative analysis methods for inorganic and organic compounds (preliminary reactions, classification, separation, determination and identification) and conventional quantitative analysis methods (acid-base titration, redox, argentometry, complexometry and gravimetric)
8. Soft Skill Attributes	Presence, Discipline, and thoroughness
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignment, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. Sudjarwo, Apt., M.S.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Dr. Riesta Primaharinastiti, S.Si, M.Si., Apt 2. Dr. Achmad Toto Poernomo, M.Si., Apt. 3. Prof. Dr. Djoko Agus Purwanto, M.Si. Apt 4. Dr. Isnaeni, M.S. Apt 5. Diajeng Putri Paramita, S.Farm., Apt., M.Si. 6. Melanny Ika Sulistyowaty, S.Farm., M.Sc., Ph.D., Apt. 7. Kholis Amalia Nofianti, S.Farm., Msc., Apt
13. Required References	<ol style="list-style-type: none"> 1. Alexevey. V., 1996. Quantitative Analysis, 2nd ed., MIR Publisher, Pages 64-133 2. Alexevey. V., 1997. Quantitative Analysis, 2nd ed., MIR Publisher 3. Anonim, 2014, Farmakope Indonesia, Edisi V, Depkes RI

	<ol style="list-style-type: none"> 4. Naonim, 2016, United State of Pharmacopoeia 39, US Pharm, Convention Inc., Twinbrook Parkway, Rockville 5. Autherhoff Kovar, 1997, drug identification, ITB, Bandung 6. Christian GD. 1999. Analytical Chemistry, John Wiley & Sons, New York 7. Feigl Fritz, Spot test in organic Analysis, 1990, Elsevier Publisher Comp, Yapan 8. Day R.A. and Underwood A.L., 1999, Quantitative Analysis, Prentice-Hall International Inc 9. Higuchi T., Brochman H., 1999, Pharmaceutical Analysis, Interscience, New York 10. Jeffery G.H et all, 1999, Vogel's textbook of quantitative Inorganic analysis, Macmillan company 11. Shriner R.L., et al., 1999, The systematic Identification of organic compound, 6th , John Willey, NY 12. Svehla G and Vogel A.I., 1999. Marco and Semi sicro Qualitative Inorganic Analysis, 5th Ed, Longman 13. Skoog, 2007. Fundamental of Analytical Chemistry, 7th Ed., Sanders 14. Susan Bufadari, 2007, The Merck Index, Merck & Co
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Table 28 Analytical chemistry Practicum

1. Course Name	Analytical chemistry (practicum)
2. Course Code	KIA217
3. Course Load	2 credits [meeting (53.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	Pharmaceutical chemistry practicum
6. Course Learning Outcome	At the end of the study, students can understand how to qualitatively and quantitatively analyze drug compounds, using conventional methods
7. Course Description / Syllabus	This course discusses general provisions and systematics of analysis, conventional qualitative analysis methods for inorganic and organic compounds (preliminary reactions, classification, separation, determination and identification) and conventional quantitative analysis methods (acid-base titration, redox, argentometry, complexometry and gravimetric)
8. Soft Skill Attributes	Presence, discipline, and thoroughness
9. Learning Methods	Practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Practicum report, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. Sudjarwo, Apt., M.S.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Dr. Riesta Primaharinastiti, S.Si, M.Si., Apt 2. Dr. Achmad Toto Poernomo, M.Si., Apt. 3. Prof. Dr. Djoko Agus Purwanto, M.Si. Apt 4. Dr. Isnaeni, M.S. Apt 5. Diajeng Putri Paramita, S.Farm., Apt., M.Si. 6. Melanny Ika Sulistyowaty, S.Farm., M.Sc., Ph.D., Apt. 7. Kholis Amalia Nofianti, S.Farm., Msc., Apt
13. Required References	<ol style="list-style-type: none"> 1. Alexevey. V., 1996. Quantitative Analysis, 2nd ed., MIR Publisher, Pages 64-133 2. Alexevey. V., 1997. Quantitative Analysis, 2nd ed., MIR Publisher 3. Anonim, 2014, Farmakope Indonesia, Edisi V, Depkes RI

	<ol style="list-style-type: none"> 4. Naonim, 2016, United State of Pharmacopoeia 39, US Pharm, Convention Inc., Twinbrook Parkway, Rockville 5. Autherhoff Kovar, 1997, drug identification, ITB, Bandung 6. Christian GD. 1999. Analytical Chemistry, John Wiley & Sons, New York 7. Feigl Fritz, Spot test in organic Analysis, 1990, Elsevier Publisher Comp, Yapan 8. Day R.A. and Underwood A.L., 1999, Quantitative Analysis, Prentice-Hall International Inc 9. Higuchi T., Brochman H., 1999, Pharmaceutical Analysis, Interscience, New York 10. Jeffery G.H et all, 1999, Vogel's textbook of quantitative Inorganic analysis, Macmillan company 11. Shriner R.L., et al., 1999, The systematic Identification of organic compound, 6th , John Willey, NY 12. Svehla G and Vogel A.I., 1999. Marco and Semi sicro Qualitative Inorganic Analysis, 5th Ed, Longman 13. Skoog, 2007. Fundamental of Analytical Chemistry, 7th Ed., Sanders 14. Susan Bufadari, 2007, The Merck Index, Merck & Co
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Table 29 Pharmacognosy

1. Course Name	Pharmacognosy
2. Course Code	FAB211
3. Course Load	1 credit [meeting (13.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	Pharmaceutical Botany
6. Course Learning Outcome	At the end of Pharmacognosy learning, students are able to make and characterize medicinal raw materials, traditional medicines and cosmetics derived from natural sources.
7. Course Description / Syllabus	In the pharmacognosy course, students study various raw materials (simplicia, carbohydrates, proteins, lipids, essential oils, exudates, minerals, animals, marine biota, microbiology, and vaccines), characterization, methods of obtaining and quality control of raw materials (harvest, post-harvest, quality control and adulteration).
8. Soft Skill Attributes	Presence, Discipline, and thoroughness
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm Test (50%) and Final Test (50%) scores
12. Lecturers	<p>COURSE COORDINATOR: apt. Rr. Retno Widyowati , SSi ., Mpharm ., PhD</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Sukardiman, MS 2. Dr. apt. Aty Widyawaruyanti, MS 3. Dr. apt. Wiwied Ekasari, MSi 4. apt. Tutik Sri Wahyuni, SSi., MSi., PhD 5. apt. Suciati, SSi., MPhil., PhD 6. apt. Rice Disi Oktarina, SFarm., MFarmapt. Hanni Prihhastuti Puspitasari, S.Si., M.Phil., Ph.D.
13. Required References	<ol style="list-style-type: none"> 1. Bartels, Dorothea, Dörmann, Peter. 2021. <i>Plant Lipids: Methods and Protocols</i>. Springer, The University of Wisconsin – Madison 2. K. Husnu Can Baser and Gerhard Buchbauer. 2021. <i>Handbook of Essential Oils: Science, Technology and Applications</i>. 3rd edition, CRC Press. Boca Raton Florida

	<ol style="list-style-type: none"> 3. Kemenkes RI. 2017. Farmakope Herbal Indonesia. Indonesia 4. Susan Curtis, Pat Thomas and Fran Johnson. 2016. <i>Essential Oils</i>. Dorling Kindersley. USA. 5. Trease and Evans. 2009. <i>Pharmacognosy</i>. 16th edition, Elsevier, London
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Table 30 Pharmacognosy Practicum

1. Course Name	Pharmacognosy (practicum)
2. Course Code	FAB212
3. Course Load	1 credit [meeting (26.7 hours), independent learning/assignment (13.3 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	Pharmaceutical Botany
6. Course Learning Outcome	After completing Pharmacognosy, students are able to make and characterize medicinal raw materials, traditional medicines and cosmetics derived from natural sources.
7. Course Description / Syllabus	In the Pharmacognosy practicum, students make herbal simplicia, analyze characteristics (macroscopic, microscopic), and determine quality control (essential oil content, drying loss, <i>kappang kamir</i> number & ALT, acid soluble ash & ash content, water content) and make carbohydrates (starch), lipids and essential oils in groups.
8. Soft Skill Attributes	Presence, discipline, and thoroughness
9. Learning Methods	Practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Assignments (20%), Midterm Test score (40%) and Final Test score (40%)
12. Lecturers	<p>COURSE COORDINATOR: apt. Rr. Retno Widyowati , SSi ., Mpharm ., PhD</p> <p>Members:</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Bambang Prayogo, MS 2. Prof. Dr. apt. Sukardiman, MS 3. Dr. apt. Aty Widyawaruyanti, MS 4. Dr. apt. Wiwied Ekasari, MSi 5. apt. Tutik Sri Wahyuni, SSi., MSi., PhD 6. apt. Suciati, SSi., MPhil., PhD 7. apt. Rice Disi Oktarina, SFarm., MFarm
13. Required References	<ol style="list-style-type: none"> 1. Bartels, Dorothea, Dörmann, Peter. 2021. <i>Plant Lipids: Methods and Protocols</i>. Springer, The University of Wisconsin – Madison 2. K. Husnu Can Baser and Gerhard Buchbauer. 2021. <i>Handbook of Essential Oils: Science, Technology and Applications</i>. 3rd edition, CRC Press. Boca Raton Florida

	<ol style="list-style-type: none"> 3. Kemenkes RI. 2017. Farmakope Herbal Indonesia. Indonesia 4. Susan Curtis, Pat Thomas and Fran Johnson. 2016. <i>Essential Oils</i>. Dorling Kindersley. USA. 5. Trease and Evans. 2009. <i>Pharmacognosy</i>. 16th edition, Elsevier, London
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Table 31 Pharmaceutical Organic Chemistry II

1. Course Name	Pharmaceutical Organic Chemistry II
2. Course Code	KIO207
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	3 (three)
5. Prerequisite	Pharmaceutical Organic Chemistry I
6. Course Learning Outcome	<ol style="list-style-type: none"> 1. Students are able to apply the principles and theories of Organic Chemistry in procuring drugs and making drug preparations with an understanding and application of basic knowledge about drugs related to chemical-physical properties, pharmacology, formulations and technology. 2. Students are able to apply the principles and theories of Organic Chemistry in identifying, checking the purity, and determining the levels of drugs and drug ingredients in pharmaceutical preparations with appropriate analytical approaches. 3. Students are able to apply the principles and theories of Organic Chemistry in explaining the basic and applied principles in the development of drugs and medicinal materials in the group of natural and synthetic materials. 4. Students are able to apply the principles and theories of Organic Chemistry in explaining the basic principles and techniques of making medicinal materials, as well as the relationship between structural changes and biological activity. 5. Students are able to apply the principles and theories of Organic Chemistry in explaining the concept of quality control of medicinal ingredients and medicinal preparations, traditional medicines, cosmetics, food and beverages in accordance with scientific rules and established standards. 6. Students are able to apply the principles and theories of Organic Chemistry in providing information and communicating about drugs and other pharmaceutical supplies to patients, the public and fellow health professionals in an objective, scientific, and responsible manner.
7. Course Description / Syllabus	As a continuation of Organic Chemistry I, in this course, the principles and theories of organic chemistry are studied which form the basis for studying pharmacy courses in the following semesters. The subject matter in this course consists of aldehydes and ketones, as well as their application in the pharmaceutical field; carboxylic acids and their derivatives, and their application in the pharmaceutical field; amines, and their

	<p>application in the pharmaceutical field; carbohydrates, and their application in the pharmaceutical field; amino acids, peptides, and proteins, as well as their application in the pharmaceutical field; lipids and nucleic acids, and their application in the pharmaceutical field.</p>
8. Soft Skill Attributes	The accuracy of the answer to the task, the accuracy of the arguments during the discussion, the accuracy of the case study analysis, the ability to cooperate, communicate, motivate and empathize.
9. Learning Methods	Lecture
10. Learning Media	ChemDraw, Electronic media, Learning Management System (LMS)
11. Learning Assessments	<p>Accuracy of answers, arguments and analysis: A = logical, systematic, 100% complete. B = logical, systematic, 80% complete. C = logical, systematic, 60% complete. D = logical, not systematic. E = illogical. soft skills complement the criteria.</p>
12. Lecturers	<p>COURSE COORDINATOR: apt. Drs. Hadi Poerwono , MSc., PhD. Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Achmad Syahrani, MS. 2. apt. Drs. Hadi Poerwono, MSc., PhD. 3. apt. Drs. Marcellino Rudyanto, MSi., PhD. 4. Dr. apt. Juni Ekowati, MSi. 5. apt. Dra. Suzana, MSi. 6. apt. Melanny Ika Sulistyowaty, SFam, MSc., PhD. 7. apt. Kholis Amalia Novianti, SFarm., MSc.
13. Required References	<ol style="list-style-type: none"> 1. McMurry J. 2011. <i>Fundamentals of Organic Chemistry</i>, 7th ed. Belmont: Brooks/Cole, Cengage Learning. 2. McMurry J. 2016. <i>Organic Chemistry</i>, 9th ed. Boston: Cengage Learning. 3. Fryhle CB , Snyder SA, Solomons TWG. 2016. <i>Organic Chemistry</i>, 10th ed. New York: Wiley. 4. Wade, LG, Simek, JW. 2016. <i>Organic Chemistry</i>, 9th ed. Pearson.

Table 32 Pharmacotherapy I Lecture and Tutorial

1. Course Name	Pharmacotherapy I Lecture and Tutorial
2. Course Code	FAT226 dan FAT227
3. Course Load	3 credits [meeting (40 hours), independent learning/assignment (80 hours) per semester]
4. Semester	4 (four)
5. Prerequisite	Biopharmaceuticals
6. Course Learning Outcome	After completing this 3-credit course, students are able to understand and explain the definition/limitation of clinical/laboratory data, therapeutic goals and rationality of drug choice, disease classification, etiology/pathophysiology, clinical-laboratory manifestations, disease complications and therapeutic management. drugs and pharmaceutical care (Pharmaceutical Care) for related diseases.
7. Course Description / Syllabus	Definitions/limitations, disease classification, etiology/pathophysiology, clinical-laboratory manifestations, non-drug therapy, drug therapy, therapeutic algorithms for selected diseases and pharmaceutical care (Pharmaceutical Care) gastrointestinal related diseases (diarrhea), constipation, peptic ulcers, GERD, dyspepsia), infectious diseases I: parasites (malaria, worms, scabies), fungal, dengue, typhoid, diphtheria, TB; common cold (influenza)., Infection (antibiotic prophylaxis, empirical, definitive, ARI, HIV AIDS, Surgery, UTI, Cerebral), Respiratory disease (pneumonia, asthma, COPD)
8. Soft Skill Attributes	Participation, Effective Communication and Critical thinking
9. Learning Methods	Lectures and discussions, case studies
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination, discussions
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Suharjono , MS. Members: Lectures: 1. Dr. apt. Budi Suprapti, MSi. 2. apt. Drs. Didik Hasmono, MS. 3. Dr. apt. Suharjono, MS. 4. apt. Dra. Yulistiani, MSi.</p>

13. Required References	<p>5. apt. Drs. Sumarno, Sp.FRS</p> <p>6. apt. Bambang Subakti Zulkarnain, S.Si., M.Clin.Pharm.</p> <p>Discussion Session:</p> <ol style="list-style-type: none"> 1. Dr. apt. Budi Suprapti, M.Si. 2. apt. Drs. Didik Hasmono, M.S. 3. Dr. apt. Suharjono, M.S. 4. apt. Dra. Yulistiani, M.Si. 5. Dr. apt. Aniek Setyabudiatin, M.Si. 6. apt. Dra. Toetik Aryani, M.Si. 7. apt. Mahardian Rahmadi, S.Si., M.Sc., Ph.D. 8. apt. Bambang Subakti Zulkarnain, S.Si., M.Clin.Pharm. 9. apt. Chrismawan Ardianto, S.Farm., M.Sc., Ph.D. 10. apt. Samirah, S.Si., Sp.FRS. 11. apt. Dewi Wara Shinta, S.Farm., M.Farm.Klin. 12. apt. Junaidi Khotib, S.Si., M.Kes., Ph.D. 13. apt. Pharmasinta Putri Hapsari, S.Farm. 14. apt. Khoirotin Nisak, S.Farm. 15. apt. Mareta Rindang A, S.Farm. 16. apt. Arina Dery Puspitasari, S.Farm., M.Farm.Klin. 17. apt. Dinda Monika Nusantara Ratri, S.Farm., M.Farm.Klin. <ol style="list-style-type: none"> 1. DiPiro, J. et.al., 2020, <i>Pharmacotherapy A Patophysiologic Approach</i> 11th Ed., Mc Graw Hill Education 2. Wells, Barbara et. Al., 2017, <i>Pharmacotherapy Handbook</i> 10th Ed., Mc Graw Hill Education 3. Neal, M.J., 2016 <i>Medical Pharmacology at Glance</i> 8th Ed., Wiley-Blackwell 4. Luellmann, Heins, 2018, <i>Color Atlas of Pharmacology</i> 5rd Ed., Thieme 5. M. Lindsay Grayson., 2017, <i>Kucers' The Use of Antibiotics: A Clinical Review of Antibacterial, Antifungal, Antiparasitic, and Antiviral Drugs, Seventh Edition - Three Volume Set</i> 7 rd Ed., CRC Press
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Table 33 Pharmacokinetics

1. Course Name	Pharmacokinetics
2. Course Code	FAK 201
3. Course Load	3 credits [meeting (40 hours), independent learning/assignment (80 hours) per semester]
4. Semester	4 (four)
5. Prerequisite	Biopharmaceuticals
6. Course Learning Outcome	Students are able to understand the pharmacokinetic concepts of absorption, distribution, metabolism, elimination, multiple doses; determine the general dosing regimen for a particular drug product/clinical condition; determine the dosing regimen for patients with renal failure and/or hemodialysis; determine the dosing regimen of patients with hepatic impairment; determine the dosing regimen of pediatric-geriatric patients; determine the dosage regimen of obese patients-pregnant-breastfeeding mothers
7. Course Description / Syllabus	This course covers the principles of absorption kinetics, distribution, metabolism, elimination, multiple doses, estimation of general/individual drug dosage regimens on a double dose regimen, patients with renal failure and/or hemodialysis, patients with liver disorders, pediatric patients, geriatrics, obesity, maternal pregnant and breastfeeding
8. Soft Skill Attributes	Discipline, communication
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm and final examination
12. Lecturers	COURSE COORDINATOR: Dr. apt. Budi Suprapti , M.Si. Members : 1. Dr. apt. Yulistiani, M.Si. 2. apt. Drs. Didik Hasmono, M.Si. 3. Prof. Dr. apt. Suharjono, M.S. 4. apt. Mareta Rindang A., S.Farm., M.Farm.Klin. 5. apt. Arina Dery P., S.Farm., M.Farm.Klin. 6. apt Zamrotul Izzah, S.Farm., MSc
13. Required References	1. Murphy JE, 2017. <i>Clinical Pharmacokinetic, 6th edition</i> , American Society of Health-System Pharmacists, Inc

	<ol style="list-style-type: none"> 2. Southwood R.L., Flemming VH., Huckaby G, 2018. <i>Concepts in Clinical Pharmacokinetics</i>, 7th edition, American Society of Health-System Pharmacists. 3. Shargel, Wiepong S, Yu AS, 2016. <i>Applied Biopharmaceutics and Pharmacokinetics</i> 6th ed, McGraw Hills. 4. Rowland M, Tozer TN, 2011. <i>Clinical Pharmacokinetics</i> 4th ed, Lea&Febiger Book.
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Table 34 Pharmacokinetics (Practicum)

1. Course Name	Pharmacokinetics (practicum)
2. Course Code	FAK202
3. Course Load	1 Credit [meeting (26.7 hours), independent learning/assignment (13.3 hours) per semester]
4. Semester	4 (four)
5. Prerequisite	Biopharmaceuticals
6. Course Learning Outcome	Students are able to make a simulation of a pharmacokinetic model of a drug, determine pharmacokinetic parameters of blood data and urine data, determine a drug level profile against time from various routes of drug use, create a drug pharmacokinetic test protocol with parameters that affect it.
7. Course Description / Syllabus	This course includes practical activities in making pharmacokinetic model simulations, determining pharmacokinetic parameters through blood and urine data, determining drug levels against time profiles from various drug administration routes, making drug pharmacokinetic test protocols.
8. Soft Skill Attributes	Participation, effective communication and critical thinking
9. Learning Methods	Practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Understanding (practice reports, presentation assignments, exams) and discipline (timeliness)
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Budi Suprapti , M.Si.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Dr. apt. Budi Suprapti, M.Si. 2. Dr. apt. Yulistiani, M.Si. 3. apt. Drs. Didik Hasmono, M.Si. 4. Prof. Dr. apt. Suharjono, M.S. 5. Prof. apt. Junaidi Khotib, S.Si., M.Kes., Ph.D. 6. Dr. apt. Aniek Setiya Budiati, M.Si. 7. apt. Dra. Toetik Aryani, M.Si. 8. apt. Drs. Sumarno, Sp.FRS.
13. Required References	1. Bhise, S.B., Dias, R.J., Dhawale, S.C., Mali, K.K., 2010. <i>Laboratory Manual of Biopharmaceutics and Pharmacokinetics</i> . India: Trinity Publishing House.

	<p>2. Ghosh, MN.2019. <i>Fundamentals of Experimental Pharmacology 7th Ed.</i> Hilton & Company.</p> <p>3. Gibaldi, M. Perrier,D. 2007. <i>Pharmacokinetics</i>. 2nd ed Revised and Expanded. New York: Informa Healthcare USA, Inc. Bhise SB and Diar R J. 2010. <i>Laboratory Manual of Biopharmaceutics and Pharmacokinetics</i>. Trinity Publishing Hause.</p> <p>4. Hubrect R and Kirkwood 2010. <i>The UFAW Handbook on The Care and Management of Laboratory and Other Research Animals 8th Ed.</i> Wiley- Blackwell.</p> <p>5. Hume C.W. 2010. <i>The UFAW Handbook on The Care and Management of Laboratory Animals</i>, 8th edition. Edinburgh & London: E & S Livingstone Limited – Longman Group Limited.</p>
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Table 35 Drug Delivery Design and Technology I

1. Course Name	Drug Delivery Design and Technology I
2. Course Code	FAF216
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	4 (four)
5. Prerequisite	Physical chemistry
6. Course Learning Outcome	Ability to apply basic concepts of solid pharmaceutical formulation, including tablets, coated tablets, capsules and sustained release preparations; The process units involved consist of size reduction, mixing, granulation, drying and compression, as well as evaluation of solid pharmaceutical dosage forms.
7. Course Description / Syllabus	Drug Delivery Design and Technology I is a science that studies the basic concepts of solid-based of the pharmaceutical formulation, including tablets, coated tablets, capsules and slow-release preparations; The process units involved consist of size reduction, mixing, granulation, drying and compression, as well as evaluation of solid pharmaceutical dosage forms.
8. Soft Skill Attributes	Discipline, communication
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. Dwi Setyawan, SSi, MSi, Apt.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Dr.rer.nat. ML Ardhani Dwi Lestari, MPharmSci, Apt. 2. Dr. Muh Agus Syamsur Rijal, SSi, MSi, Apt. 3. Helmy Yusuf, SSi, MSc, PhD, Apt. 4. Dini Retnowati, SFarm, MSi, Apt. 5. Dr. Riesta Primaharinastiti, MSi, Apt. 6. Dr. Asri Darmawati, MSi, Apt. 7. Prof. Dr.rer.nat. Moch Yuwono, MS, Apt.
13. Required References	<ol style="list-style-type: none"> 1. Pharmaceutical Preformulation; The Physicochemical Properties of Drug Substances, 1988 J.T. Wells, Ellis Horwood Ltd

	<ol style="list-style-type: none"> 2. Flow Rate and Repose Angles of Wet Process Granulation ,1977,J.T Carstensen, Ping Ching Can J.Pharm.Sci., 66,p.1235-1328 3. Pharmaceutical Dosage Forms; Tablets,1981,H.A. Lieberman, L.Lachman Volume 1, 2, 3/ Marcell Dekker Inc. 4. The Theory and Practice of Industrial Pharmacy,1986 L.Lachman 3 rd Edition/ Lea & Febiger 5. Modern Pharmaceutics 2002 G.S Banker, C.T Rhodes Marcel Dekker 6. Pharmaceutical : The Science of Dosage Forms 1988 Michael E. Aulton Churchill Livingstone 7. Handbook of Dissolution Testing 1991, W.A.Hanson 2nd Edition/ Aster Publishing Corp 8. Farmakope Indonesia,1995, Departemen Kesehatan, Direktorat Jenderal Obat dan Makanan Edisi IV 9. Design and Fabrication of Oral Controlled Release Drug Delivery System in Controlled Drug Delivery Fundamentals and Application 10. Unit Processes in Pharmacy,D.Ganderton William Heinemann Medical Book Ltd. 11. Advances in Powder Mixing and Segregation in relation to pharmaceutical Process 1982 J.N Staniforth Int. J. Pharm. Tech. Prod. Mfr,3 (Supl) 13. Mixing as a criterion in Process Development 1975 J.E Rees, Manufacturing Chemist & Aerosol tcews (12) 14. Handbook of Pharmaceutical Granulation 1997 Dilip M Parikh Marcel Dekker 15. Test Methods for Granulates,1982,H. Sucker Pharm. Ind., 44, Nr. 3, p. 312 –316 16. Hard Capsules,1987,K. Ridgway,The Pharmaceutical Press 17. Encyclopedia of Pharmaceutical Technology, 2007,James Swarbrick , Informa Healthcare. 18. Use of Polymers in Controlled Release of Active Agent Controlled Drug Delivery Fundamentals and Application 19. Pharmaceutical Coating Technology, 1995 Graham Cole,Taylor and Francis. 20. Aqueous Polymeric Coating for Pharmaceutical Dosage Forms, 1989,James W McGinity Marcel Dekker 21. Farmakope Indonesia, 2014, Departemen Kesehatan, Direktorat Jendera Obat dan Makanan Edisi V 22. United States Food and Drug Administration, United States Pharmacopoeia 36 National Formulary 41, 2018 23. Pharmaceutical Packaging Technology, 2000, D.A Dean, et al. Taylor & Francis
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Table 36 Drug Delivery Design and Technology I practicum

1. Course Name	Drug Delivery Design and Technology I (practicum)
2. Course Code	FAF217
3. Course Load	2 Credit [meeting (53.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	4 (four)
5. Prerequisite	Physical chemistry
6. Course Learning Outcome	After taking part in this practicum, students can understand how to design formulas, manufacturing processes, testing during the process, testing the quality of finished products, how to overcome problems that arise during the manufacturing process, and packaging solid dosage forms.
7. Course Description / Syllabus	Drug Delivery Design and Technology I is a science that studies the basic concepts of solid-based of the pharmaceutical formulation, including tablets, coated tablets, capsules and slow-release preparations; The process units involved consist of size reduction, mixing, granulation, drying and compression, as well as evaluation of solid pharmaceutical dosage forms.
8. Soft Skill Attributes	Participation, effective communication and critical thinking
9. Learning Methods	Practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Understanding (practice reports, presentation assignments, exams) and discipline (timeliness)
12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. Dwi Setyawan, SSi, MSi, Apt. Members :</p> <p>8. Dr.rer.nat. ML Ardhani Dwi Lestari, MPharmSci, Apt. 9. Dr. Muh Agus Syamsur Rijal, SSi, MSi, Apt. 10. Helmy Yusuf, SSi, MSc, PhD, Apt. 11. Dini Retnowati, SFarm, MSi, Apt. 12. Prof. Dr. Sudjarwo, MS, Apt. 13. Dr. Riesta Primaharinastiti, MSi, Apt. 14. Dr. Asri Darmawati, MSi, Apt. 15. Prof. Dr. Djoko Agus Purwanto, MSi, Apt. 16. Prof. Dr.rer.nat. Moch Yuwono, MS, Apt. 17. Dr. Isnaeni, MS, Apt. 18. Dr. Achmad Toto Poernomo, MSi, Apt.</p>

13. Required References	<p>19. Kholis Amalia Nofianti, SFarm, MSc, Apt. Diajeng Putri Paramita, SFarm, MSi, Apt.</p> <ol style="list-style-type: none"> 1. Pharmaceutical Preformulation; The Physicochemical Properties of Drug Substances, 1988 J.T. Wells, Ellis Horwood Ltd 2. Flow Rate and Repose Angles of Wet Process Granulation ,1977,J.T Carstensen, Ping Ching Can J.Pharm.Sci., 66,p.1235-1328 3. Pharmaceutical Dosage Forms; Tablets,1981,H.A. Lieberman, L.Lachman Volume 1, 2, 3/ Marcell Dekker Inc. 4. The Theory and Practice of Industrial Pharmacy,1986 L.Lachman 3 rd Edition/ Lea & Febiger 5. Modern Pharmaceutics 2002 G.S Banker, C.T Rhodes Marcel Dekker 6. Pharmaceutical : The Science of Dosage Forms 1988 Michael E. Aulton Churchill Livingstone 7. Handbook of Dissolution Testing 1991, W.A.Hanson 2nd Edition/ Aster Publishing Corp 8. Farmakope Indonesia,1995, Departemen Kesehatan, Direktorat Jenderal Obat dan Makanan Edisi IV 9. Design and Fabrication of Oral Controlled Release Drug Delivery System in Controlled Drug Delivery Fundamentals and Application 10. Unit Processes in Pharmacy,D.Ganderton William Heinemann Medical Book Ltd. 11. Advances in Powder Mixing and Segregation in relation to pharmaceutical Process 1982 J.N Staniforth Int. J. Pharm. Tech. Prod. Mfr,3 (Supl) 24. Mixing as a criterion in Process Development 1975 J.E Rees, Manufacturing Chemist & Aerosol tcews (12) 25. Handbook of Pharmaceutical Granulation 1997 Diliph M Parikh Marcel Dekker 26. Test Methods for Granulates,1982,H. Sucker Pharm. Ind., 44, Nr. 3, p. 312 –316 27. Hard Capsules,1987,K. Ridgway,The Pharmaceutical Press 28. Encyclopedia of Pharmaceutical Technology, 2007,James Swarbrick , Informa Healthcare. 29. Use of Polymers in Controlled Release of Active Agent Controlled Drug Delivery Fundamentals and Application 30. Pharmaceutical Coating Technology, 1995 Graham Cole,Taylor and Francis. 31. Aqueous Polymeric Coating for Pharmaceutical Dosage Forms, 1989,James W McGinity Marcel Dekker 32. Farmakope Indonesia, 2014, Departemen Kesehatan, Direktorat Jendera Obat dan Makanan Edisi V 33. United States Food and Drug Administration, United States Pharmacopoeia 36 National Formulary 41, 2018
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	Pharmaceutical Packaging Technology, 2000, D.A Dean, et al. Taylor & Francis
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Table 37 Preparative Organic Chemistry

1. Course Name	Preparative Organic Chemistry
2. Course Code	KIO208
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	4 (four)
5. Prerequisite	Students have taken part in the learning activities of Pharmaceutical Organic Chemistry I (KIO105) 2 credits and Pharmaceutical Organic Chemistry II (KIO207) 2 credits
6. Course Learning Outcome	After following this learning with a load of 2 credits through tutorials and practicums offline (outside the network) and online (in the network), students are able to explain the work process in the laboratory based on the basic theories of Organic Chemistry, which will be the basis for making good medicinal raw materials. synthetically or from natural ingredients.
7. Course Description / Syllabus	<p>This course is in the form of a practicum which aims to enable students to:</p> <ol style="list-style-type: none"> 1. Explain theoretically and implement practically how to purify (extraction, distillation, chromatography, crystallization – recrystallization, soxhletation) and determine the purity of organic compounds (boiling point, melting point, refractive index, UV-Vis, IR, NMR spectra and MS). 2. Synthesis of simple organic compounds based on organic reactions including: halogenation, esterification, acetylation, nitration, condensation, hydrolysis, reduction, oxidation, electrophilic/nucleophilic substitution 3. Extract organic compounds from natural materials
8. Soft Skill Attributes	Completeness and correctness of explanation and practice
9. Learning Methods	Practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Soft skills, Assignments, Discussions, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. H. Achmad Syahrani, MS. Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. H. Achmad Syahrani, MS. 2. apt. Hadi Poerwono, MSc., PhD.

<p>13. Required References</p>	<ol style="list-style-type: none"> 3. apt Marcellino Rudyanto, MSi., PhD. 4. Prof. Dr. apt. Juni Ekowati, Apt., MSi. 5. Dr. apt. Suzana, MSi. 6. apt. Melanny Ika, S.Si., MSc., Ph.D. 7. apt. Kholis Amalia Nofianti, S.Farm., MSc <ol style="list-style-type: none"> 1. Laboratory Text in Organic Chemistry. 1970. Cason J, Rapoport H, 3th edition. New Jersey. Prentice Hall Inc. 2. Practicum Organische Chemie. 1972. Cerfontain H., Groningen. Wolters-Nordhoff NV. 3. Laboratory Exercises in Organic Chemistry. 1969. Sugihara JM, 4th edition. Minnesota. Burgess Publishing Company. 4. Advanced Practical Organic Chemistry. 1979. Vishnoi AI, 1st edition. Sahibabas. Vikas Publishing House, Pvt. Ltd. 5. A Textbook of Practical Organic Chemistry. 1968. Vogel AI, 3rd edition. London. English Language Book Society and Longmans Green & Co. Ltd. 6. A Textbook of Practical Organic Chemistr. 1996. Vogel AI, 5rth edition. London. English Language Book Society and Longmans Green & Co. Ltd. 7. An Introduction Modern Experimental Organic Chemistry. 1974. Robert, Gilbert , Robert, Gilbert Rodewald Wingrove, 8. Microscale and Miniscale Organic Chemistry Laboratory Experiments. 2000. Schoffstall AM., Gaddis BA, Druelinger ML, United State of America. Mc Graw Hill Companies, Inc.
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Table 38 Pharmaceutical Analysis

1. Course Name	Pharmaceutical Analysis
2. Course Code	KIA214
3. Course Load	3 Credits [meeting (40 hours), independent learning/assignment (80 hours) per semester]
4. Semester	4 four
5. Prerequisites	Analytical Chemistry, Pharmaceutical Organic Chemistry II
6. Course Learning Outcome	At the end of the Pharmaceutical Analysis, students can: Explain the basic theory of instrumental analysis, including Atomic absorption spectroscopy (SAA), UV-Vis Spectrophotometry, FT-IR Spectrophotometry, Raman Spectrometry, HPLC, KG, potentiometry, for qualitative and quantitative analysis; Explain the application of instrumental analytical methods for identification, purity testing and determination of drug ingredients and drug preparations listed in the pharmacopoeia; Explain the basic principles of analysis stages and sample preparation technology; Analyzing and concluding the suitability of the results of sample analysis with pharmacopoeial requirements; Describe the requirements of the analytical laboratory; Able to master the concept of validation of analytical methods in pharmaceutical preparations; Making presentations on the results of article reviews on the analysis of raw materials and drug preparations,
7. Course Descriptions / Syllabus	This course discusses the basic principles and application of analytical methods based on the physico-chemical properties of analytes using instrumental analysis techniques, including spectroscopy, chromatography and electrochemistry, for qualitative and quantitative analysis of raw materials, drug preparations, food, beverages and cosmetics. This course also discusses analytical laboratory requirements based on international standards and Indonesian pharmacopoeias, validation and development of analytical methods.
8. Soft Skill Attributes	Discipline
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	COURSE COORDINATOR: Prof. Dr. rer.nat . apt. Moch Yuwono , MS.

13. Required References	<p>Members : Lecturer team</p> <ol style="list-style-type: none"> 1. AOAC International. 2013. <i>AOAC Official Methods of Analysis - Appendix K: Guidelines for Dietary Supplements and Botanicals</i>. AOAC: Rockville 2. Departemen Kesehatan Republik Indonesia. 2020. <i>Farmakope Indonesia edisi VI</i>. Jakarta. Departemen Kesehatan Republik Indonesia 3. United states Pharmacopeial convention. 2017. USP 40/NF35. <i>The United states Pharmacopeial convention</i> 12601 Twinbrook Parkway, Rockville 4. Watson DG. 2012. <i>Pharmaceutical Analysis, A Textbook for Pharmacy students and Pharmaceutical Chemists</i>. 3rd ed. Elsevier; Churchill livingtone. 5. Yuwono M, Indrayanto G. 2005. <i>Validation of chromatographic methods of analysis`in Profiles of Drug Substances, Excipients and Related Methodology</i> 32rd
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Table 39 Pharmaceutical Analysis Practicum

1. Course Name	Pharmaceutical Analysis Practicum
2. Course Code	KIA215
3. Course Load	2 Credits [meeting (53.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	4 (four)
5. Prerequisite	Analytical Chemistry practicum, Pharmaceutical Organic Chemistry II practicum
6. Course Learning Outcome	<ol style="list-style-type: none"> 1. Applying science and/or technology in the field of pharmacy through scientific reasoning based on logical, critical, systematic, and innovative thinking: (Decision Maker, Communicator, Teacher, Researcher). 2. Identifying, checking the purity, and determining the levels of drugs and drug ingredients in pharmaceutical preparations with an appropriate analytical approach. 3. Publishing the results of the final project or design work/design/formula, which meet the requirements of scientific writing, and can be accessed by the academic community. 4. Reviewing scientific publications related to the pharmaceutical field
7. Course Description / Syllabus	<p>At the end of the Pharmacy Analysis Practicum, students can:</p> <ol style="list-style-type: none"> 1. Apply instrumental analysis methods for identification, purity testing and determination of drug ingredients and drug preparations listed in the pharmacopoeia 2. Conduct sample preparation according to the working procedure principle for determining drug levels in the pharmacopoeia 3. Analyze and conclude the suitability of the results of sample analysis with pharmacopoeial requirements 4. Make a presentation of review articles on the analysis of raw materials and drug preparations,
8. Soft Skill Attributes	Discipline in following practicum, Honesty in presenting data, cooperation in carrying out tasks, courage in making decisions. On time, cooperation, cleanliness
9. Learning Methods	Practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Pre-test, practicum plan/journal, presentation and doing assignments

12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. rer.nat . apt. Moch Yuwono , MS. Members : Lecturer team</p> <ol style="list-style-type: none"> 1. Prof. Dr.rer.nat. apt. Mochammad Yuwono, MS. 2. Dr. apt. Achmad Toto Purnomo, MS. 3. Prof. Dr. apt. Muhamad Zainuddin 4. Prof. Dr. apt. Amirudin Prawita 5. Prof. Dr. apt. Djoko Agus Purwanto, MSi. 6. Prof. Dr. apt. Sudjarwo, MS. 7. Dr. apt. Asri Darmawati,MS 8. Dr. apt. Isnaeni, MS. 9. apt. Kholies Amalia Novianti, S.Farm, MSc 10. Dr. apt. Riesta Primaharinastiti, SSi.,MSi. 11. Dr. apt. Nuzul Wahyuning Dyah, MSi . 12. apt. Diajeng Putri Paramita, S.Farm, Msi
13. Required References	<ol style="list-style-type: none"> 1. Departemen Kesehatan Republik Indonesia, Farmakope Indonesia edisi VI, FI edisi VI / Departemen Kesehatan Republik Indonesia, Jakarta / 2020. 2. United states Pharmacopeial convention, USP 40/NF35, USP 40/NF35 / The United states Pharmacopeial convention 12601 Twinbrook Parkway, Rockville, MD 20852 / 2017 3. Badan Pengawas Obat dan Makanan RI, Kodeks Makanan Indonesia, Badan Pengawas Obat dan Makanan/2001 4. AOAC International, AOAC Official Methods of Analysis - Appendix K: Guidelines for Dietary Supplements and Botanicals, AOAC: Rockville. 2013 5. Watson DG. Pharmaceutical Analysis, A Textbook for Pharmacy students and Pharmaceutical Chemists, 3rd ed. Elsevier; Churchill livingtone. 2012

Table 40 Pharmaceutical Biotechnology

1. Course Name	Pharmaceutical Biotechnology
2. Course Code	BIT302
3. Course Load	2 Credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	4 (four)
5. Prerequisite	-
6. Course Learning Outcome	Students are able to apply biotechnology theory in the production and biotransformation of medicinal materials
7. Course Description / Syllabus	Pharmaceutical Biotechnology Course presents material on the meaning and scope of biotechnology; understanding of in vitro systems and fermenters and their optimization for microorganisms, plant cells, mammalian cells; understanding of genetically engineered cell fusion; application of biotechnology and enzyme technology for the production and biotransformation of medicinal substances; downstream processes and production optimization methods and marine biotechnology.
8. Soft Skill Attributes	Discipline, Responsibility
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm (50%) and Final Examination (50%)
12. Lecturers	COURSE COORDINATOR: Prof. Dr. apt. Sukardiman , MS. Members : 1. Apt. Suciati, SSi., MPhil., PhD 2. Dr. apt. Aty Widyawaruyanti, MS 3. Apt. Rr. Retno Widyowati, SSi., MSc., PhD 4. Apt. Tutik Sri Wahyuni, SSi., MSi., PhD
13. Required References	1. OL Gamburg, GC Phillips. Plant Cell , Tissue and Organ Culture. 1995. Springer 2. Se-Kwon Kim. Handbook of Marine Biotechnology. 2015. Springer 3. Arindam Kuila and Vinay Sharma. Principles and Application of Fermentation Technology. 2018. Scrivener Publishing 4. Susan Isaac and David Jennings. Microbial Culture. 1995. Taylor & Francis

Table 41 Social Pharmacy

1. Course Name	Social Pharmacy
2. Course Code	FAM302
3. Course Load	1 Credits [meeting (13.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	5 (five)
5. Prerequisite	Communication & Personal Development, Pharmacy Practice I
6. Course Learning Outcome	<p>After attending this course, students are expected to be able to:</p> <ol style="list-style-type: none"> 1. Understand the concept and scope of social pharmacy (Social Pharmacy) 2. Understand and explain the role of pharmacists in the pharmaceutical public health system that focuses on community groups based on the theory and concept of Pharmaceutical Care 3. Identify pharmaceutical problems that exist in the community and prepare plans for implementing health promotion and prevention in the community 5. Understand and explain the laws and regulations in the field of pharmacy in the health care system 6. Understand and explain the basic principles of Pharmacoepidemiology in the health care system 7. Understand and explain the basic principles of Pharmacoeconomics in the health care system
7. Course Description / Syllabus	This course will be delivered using lecture and discussion methods. The materials discussed include: the concept & scope of Social Pharmacy (Social Pharmacy); the role of pharmacists in the public health service system (Pharmaceutical Public Health); Pharmaceutical Care (Understanding the concept, stages of implementation and implementation), strategies and methods in the implementation of health promotion, drug information services in health services, Pharmacoepidemiology & Pharmacoeconomics (basic principles and concepts), as well as Regulations & Legislation in the field of pharmacy in the health care system.
8. Soft Skill Attributes	Punctual attendance, honesty, teamwork, presentation skills
9. Learning Methods	Lectures, discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm Test (35%), Final Test (35%), Assignment (20%), and soft skills (10%)
12. Lecturers	COURSE COORDINATOR:

Table 42 Social Pharmacy Practicum

1. Course Name	Social Pharmacy (Practicum)
2. Course Code	FAM406
3. Course Load	2 Credits [meeting (53.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	5 (five)
5. Prerequisite	Communication & Personal Development, Practical Pharmacy I, Social Pharmacy (parallel)
6. Course Learning Outcome	After completing this practicum, students are expected to be able to identify health needs (from the pharmaceutical aspect) that exist in the community and arrange health promotion activities as an effort to solve them.
7. Course Description / Syllabus	Practicum is carried out to provide learning to students about identifying health needs assessment in the community in terms of pharmaceuticals, as well as preparing health promotion programs as an effort to solve pharmaceutical problems including problem formulation, activity objectives, activity implementation plans, designing health promotion media, and implementing health promotion activities.
8. Soft Skill Attributes	Timely attendance, honesty, teamwork, data collection skills in the field, presentation skills
9. Learning Methods	Discussion and Practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Assessment of Learning Results	<p>Evaluation is based on 2 (two) kinds of assessment, namely:</p> <p>a. The individual score is a maximum of 50% of the total score, which consists of:</p> <ul style="list-style-type: none"> a. Maximum assignment of 25% of the total score. There are 4 assignment components, namely Task I (5%), Task II (5%), Task III (5%), Media Promkes (5%), and popular articles (5%) b. Individual performance in the group is a maximum of 25% of the total score. Performance appraisal includes discipline (5%), group activity (10%) and material mastery (10%) <p>b. The group score is a maximum of 50% of the total score, which consists of:</p> <ul style="list-style-type: none"> a. Manuscript as the final report, with a maximum of 20% of the total score. b. Presentation of data and results of identification of health needs (from the pharmaceutical aspect) a maximum of 15% of the total score.

12.Lecturers	<p>Ability to prepare Health Promotion activities/action plans with a maximum score of 15% of the total score</p> <p>COURSE COORDINATOR: apt. Elida Zairina , S.Si., MPH , PhD</p> <p>Members:</p> <ol style="list-style-type: none"> 1. apt. Gesnita Nugraheni, S.Farm., MSc (coordinator) 2. Dr. apt. Wahyu Utami, MS. 3. Dr. apt. Abdul Rahem, M.Kes. 4. Dr. apt. Liza Pristianty, M.Si. 5. apt. Arie Sulistyarini, S.Si., M.Pharm. 6. Dr. apt. Yunita Nita, S.Si., M.Pharm. 7. Dr. apt. Yuni Priyandani, S.Si., Sp.FRS. 8. apt. Gusti Noorizka Veronika Achmad., M.Sc. 9. apt. Hanni, P. Puspitasari, M.Phil., PhD. 10. apt. Mufarrihah, S.Si., M.Sc. 11. apt. Anila Impian Sukorini, S.Si.,M.Farm. 12. apt. Ana Yuda, S.Si., M.Farm. 13. apt. Andi Hermansyah, S.Farm., M.Sc., PhD.
13. Required References	<ol style="list-style-type: none"> 1. Blenkinsopp A, Paxton P, Blekinsopp J, 2009, Symptoms in the Pharmacy: A Guide to the Management of Common Illness 6th ed, Blackwell Science Ltd 2. Blekinsopp A, Panton R, 1991, Health Promotion for Pharmacists, 1992, Oxford University Press 3. Berardi RR, Ferreri SP, Hume AL., Kroon LA, Newton GD, Popovich NG, Remington TL, Rollins CJ, Shimp LA, Tietze KJ, 2009, Handbook of Non-Prescription Drugs, 16th Ed, American Pharmaceutical Association 4. Dipiro JT, et al., 2008, Pharmacotherapy: A Pathophysiologic Approach 7th Ed, Appleton & Lange 5. Edwards C, Stillman P., 2000, Minor Illness or Major Disease 3rd Ed, 2000, Pharmaceutical Press. P 63-72 6. Egger G, Spark R, Donovan R, 2005, Health Promotion Strategies and Methods 2nd Edition, McGraw Hill-Australia 7. Krska J, 2011, Pharmacy in Public Health, Pharmaceutical Press 8. Nathan, A., 2002, Non-prescription Medicine 2nd Ed, 2002, Pharmaceutical Press. P 99-111 9. Notoatmodjo, Soekidjo, 2005, Metodologi Penelitian Kesehatan, Jakarta: Rineka Cipta 10. Notoatmodjo, Soekidjo, 2010, Promosi Kesehatan, Teori dan Aplikasi, Jakarta: Rineka Cipta

Table 43 Pharmacotherapy II Lecture and Tutorial

1. Course Name	Pharmacotherapy II Lecture and Tutorial
2. Course Code	FAT328 and FAT329
3. Course Load	3 credits [meeting (40 hours), independent learning/assignment (80 hours) per semester]
4. Semester	5 (five)
5. Prerequisite	Pharmacotherapy I
6. Course Learning Outcome	At the end of Pharmacotherapy II learning, students are expected to be able to assess the rationality of drug therapy in diseases/disorders: bones and joints (hyperuricemia, osteoporosis, osteoarthritis, rheumatoid arthritis); cardiovascular (hypertension, IHD-angina, Acute Coronary Syndrome/ACS, dyslipidemia, stroke), liver (hepatic cirrhosis, viral hepatitis); hematology (anemia, coagulation disorders), immunology (allergy, pseudoallergy), dermatology (skin drug reactions/Stephen Johnson's syndrome, acne vulgaris, other skin disorders)
7. Course Description / Syllabus	This course provides explanations related to: etiology and pathophysiology of disease, clinical manifestations and complications, drug and non-drug therapy/therapy algorithms as well as aspects of pharmaceutical services for several diseases/disorders including: bones and joints (hyperuricemia, osteoporosis, osteoarthritis, rheumatoid arthritis) ; cardiovascular (hypertension, IHD-angina, Acute Coronary Syndrome/ACS, dyslipidemia, stroke), liver (hepatic cirrhosis, viral hepatitis); hematology (anemia, coagulation disorders), immunology (allergy, pseudoallergy), dermatology (skin drug reactions/Stephen Johnson's syndrome, acne vulgaris, other skin disorders)
8. Soft Skill Attributes	Discipline/attendance, case study collaboration, activities
9. Learning Methods	Lectures, discussion, case studies
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm and Final Examinations
12. Lecturers	COURSE COORDINATOR: Dr. apt. Yulistiani , M.Si. Members : 1. Prof. Dr. apt. Suharjono, MS 2. apt. Drs. Didik Hasmono, MS

13. Required references	<ol style="list-style-type: none"> 3. Dr. apt. Budi Suprapti, M.Si. 4. Dr. apt. Yulistiani, M.Si 5. Prof. apt. Junaidi Khotib, S.Si., M.Biomed., Ph.D. 6. apt. Drs. Sumarno, Sp.FRS 7. apt. Bambang Subakti Zulkarnain, S.Si., M.Sc. 8. Dr. apt. Samirah, S.Si, Sp.FRS. 9. apt. Wenny Putri Nilamsari, S.Si., Sp.FRS 10. apt. Mareta Rindang A., S.Si., M. Farm. Klin. 11. apt. Arina Dery P., S.Si., M. Farm. Klin. 12. apt. Dinda Monika R.N., S.Si., M. Farm. Klin. 13. apt. Pharmasinta Putri Hapsari, S.Farm., M. Farm. Klin. <ol style="list-style-type: none"> 1. Dipiro J. T., Talbert R. L., Yee G. C., Matzke G. R., <i>et al.</i>, 2020. Pharmacotherapy A Pathophysiologic Approach. 11th Edition. United States: The McGraw-Hill Companies, Inc. 2. McPhee S. J., Hammer G. D., 2019. Pathophysiology of Disease: An Introduction to Clinical Medicine,. 8th Edition. United States: The McGraw-Hill Companies, Inc 3. Papadakis M. A., McPhee S. J., , 2021. Current Medical Diagnosis & Treatment . 60th Edition. United States: The McGraw-Hill Companies, Inc 4. Koda Kimble, <i>et al.</i>, 2021. Applied Therapeutics: The Clinical Use of Drugs. 11th Edition, Philadelphia: Lippincott Williams & Wilkins.
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Table 44 Drug Delivery Design and Technology II

1. Course Name	Drug Delivery Design and Technology II
2. Course Code	FAF304
3. Course Load	3 credits [meeting (40 hours), independent learning/assignment (80 hours) per semester]
4. Semester	5 (five)
5. Prerequisite	Physical Pharmacy
6. Course Learning Outcome	5 th semester Pharmacy students who have taken Drug Delivery Design and Technology II courses are able to design from medicinal raw materials and additives, liquid formulations (solutions, elixirs, suspensions, dry syrups and emulsions) and semisolid (gels, ointments, creams, pastes). , suppositories) and their development at a laboratory scale by taking into account the aspects of effectiveness, stability, safety and acceptability as well as being able to evaluate them.
7. Course Description / Syllabus	This course presents material on preformulation, formulation, manufacturing process, physical evaluation, product packaging of non-sterile liquid preparations (solutions, suspensions, dry syrups, emulsions), non-sterile semisolid preparations (gels, ointments, creams, pastes, suppositories) and its development as well as the evaluation mechanism of the active ingredients in the preparation.
8. Soft Skill Attributes	Honesty, dicipline
9. Learning Methods	Lectures, discussions
10.Learning Media	Electronic media, Learning Management System (LMS)
11.Learning Assessments	Midterm and final examination, active participation in discussions and questions and answers
12.Lecturers	<p>COURSE COORDINATOR: Dr. apt. Tristina Erawati M. , M.Si.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Dr. apt. Tutiek Purwanti, MSi. (coordinator) 2. Dr. apt. Tristiana Erawati, MSi 3. Dr. apt. Noorma Rosita, MSi. 4. Prof. apt. Dra. Esti Hendradi, MSi., Ph.D. 5. Prof. apt. Dewi Melani H., M.Phil., Ph.D. 6. Prof. Dr. apt. Sudjarwo, MS. 7. Dr. apt. Isnaeni, MS. 8. Dr. apt. Asri Darmawati, MS.

13. Required References	<ol style="list-style-type: none"> 1. Lieberman H.A, Martin M.R., Gilbert S.B,1998, Pharmaceutical Dosage Forms; Disperse Systems, Marcel Dekker, Inc, New York, 2nd Ed., Vol. 1,2 and 3 2. Florence A.T., Attwood D., 1988, Physicochemical Principle of Pharmacy. The Macmillan Press Ltd., 2nd Ed. 3. Rowe R.C, Sheskey P.J., Owen S.C., 2006, Handbook of Pharmaceutical Excipients, 5th Ed., 4. Sinko, P.J., Yashveer Singh, 2011, Martin's Physical Pharmacy and Pharmaceutical Sciences, Wolters Kluwer, London 5. Magdassi S., Touitou E., 1999, Novel Cosmetic Delivery Systems, Marcel Dekker Inc., New York,
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Table 45 Drug Delivery Design and Technology II Practicum

1. Course Name	Drug Delivery Design and Technology II Practicum
2. Course Code	FAF305
3. Course Load	2 credits [meeting (53.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	5 (five)
5. Prerequisite	Practical Physical Pharmacy
6. Course Learning Outcome	5 th semester Pharmacy students who have taken Drug Delivery Design and Technology II course (practice) are able to make and evaluate liquid preparations (solutions, elixirs, suspensions, dry syrups and emulsions) and semisolid (gels, ointments, creams, pastes) on a laboratory scale taking into account the aspects of effectiveness, stability, security and acceptability.
7. Course Description / Syllabus	This course is carried out in stages; planning (making journals including preformulation, planning: formulas, manufacture, production equipment, evaluation, and packaging), group discussions, formula optimization, preparation of selected preparations, physical evaluation, packaging, evaluation of active ingredients and seminars on the results of several types of non-sterile liquid preparations (solutions, suspensions and dry syrups) and non-sterile semisolid preparations (gels, ointments, creams, pastes).
8. Soft Skill Attributes	Discipline, effective communication, systematic thinking
9. Learning Methods	Lecture, discussion, practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Daily score of practicum, individual discussion
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Tristina Erawati M. , M.Si.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. apt. Andang Miatmoko, PhD. (Koordinator) 2. Dr. apt. Tutiek Purwanti, MSi. 3. Dr. apt. Tristiana Erawati, MSi 4. Dr. apt. Noorma Rosita, MSi. 5. Prof. apt. Dra. Esti Hendradi, MSi., Ph.D 6. Prof. apt. Dewi Melani H, M.Phil., Ph.D. 7. Prof. Dr. apt. Sudjarwo, MS. 8. Dr. apt. Isnaeni, MS

13. Required References	<p>9. Dr. apt. Asri Darmawati, MS.</p> <p>10. Dr. apt. Riesta Primaharinastiti, MSi.</p> <p>1. Lieberman H.A, Martin M.R., Gilbert S.B,1998, Pharmaceutical Dosage Forms; Disperse Systems, Marcel Dekker, Inc, New York, 2nd Ed., Vol. 1,2 and 3</p> <p>2. Florence A.T., Attwood D., 1988, Physicochemical Principle of Pharmacy. The Macmillan Press Ltd., 2nd Ed.</p> <p>3. Rowe R.C, Sheskey P.J., Owen S.C., 2006, Handbook of Pharmaceutical Excipients, 5th Ed.,</p> <p>4. Sinko, P.J., Yashveer Singh, 2011, Martin's Physical Pharmacy and Pharmaceutical Sciences, Wolters Kluwer, London</p> <p>5. Magdassi S., Touitou E., 1999, Novel Cosmetic Delivery Systems, Marcel Dekker Inc., New York</p>
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Table 46 Phytochemistry

1. Course Name	Phytochemistry
2. Course Code	FAB303
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	5 (five)
5. Prerequisite	-
6. Course Learning Outcome	After following this lesson with a load of 2 credits, students are able to explain the structure, physicochemical properties, bioactivity and biosynthesis of plant secondary metabolites and students are able to extract, isolate and identify plant secondary metabolites and serve as a basis for further studies.
7. Course Description / Syllabus	In this Phytochemistry lecture, students are taught the structure, physicochemical properties, bioactivity and biosynthesis of alkaloids, flavonoids, saponins, steroids, tannins, terpenoids and aromatic compounds. Apart from that, we are taught about selecting thin layer chromatography eluents, how to carry out fractionation using column chromatography, as well as how to isolate alkaloids, flavonoids, saponins, steroids, tannins, terpenoids and aromatic compounds, identification and purification of alkaloids, flavonoids, saponins, steroids, tannins, terpenoids and aromatic compounds in plants, identification of natural product compounds using spectroscopic methods.
8. Soft Skill Attributes	Neatness of serving, communication skills
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm and final examination
12. Lecturers	COURSE COORDINATOR: Dr. Aty Widyawaruyanti, MSi., Apt Members: 1. Prof. Dr. Achmad Fuad H, MS, Apt 2. Dr. Aty Widyawaruyanti, MSi., Apt 3. Suciati, M.Phil, Ph.D., Apt 4. Tutik Sri Wahyuni, MSi, Ph.D., Apt
13. Required References	1. Harry HS Fong, 1978. Phytochemical Screening. Chicago College of Pharmacy, University of Illionis at Medical Centre

	<ol style="list-style-type: none"> 2. Harborne J.B, terjemahan Kosasih Padmawinata dan Iwang Soediro, 1987. Metoda Fitokimia, Penuntun Cara Modern Menganalisa Tumbuhan. edisi kedua, Penerbit ITB Bandung 3. Markham, K.R, terjemahan Kosasih Padmawinata, 1988. Cara Mengidentifikasi Flavonoid. Penerbit ITB Bandung 4. Robinson, T, 1983. The Constituents of Higher Plants, Their Chemistry and Interrelationships. Fifth Edition, Cordus Press, North Amherst 5. Mabry T.J., Markham K.R.and Thomas M.B, 1970. The Systematic Identification of Flavonoids. Springer-Verlag, New York- Heidelberg-Berlin 6. Cannell, Richard J.P, 1998. Natural Products Isolation, Methods in Biotechnology. Humania Press Inc., Totowa-NewJersey 7. Field, LD., Sternhell, S., Kalman, JR., 2013. Organic Structures from Spectra, 5th edition, Wiley, Singapore
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Table 47 Phytochemistry Practicum

1. Course Name	Phytochemistry Practicum
2. Course Code	FAB306
3. Course Load	1 credit [meeting (26.7 hours), independent learning/assignment (13.3 hours) per semester]
4. Semester	5 (five)
5. Prerequisite	Pharmacognosy
6. Course Learning Outcome	After following this learning, pharmacist program participants are expected to be able to apply their understanding of phytochemistry to the pharmaceutical field, including analysis of secondary metabolites, isolation and identification of the contents of plant materials that have the potential to be developed into medicinal ingredients.
7. Course Description / Syllabus	In this Phytochemistry practicum, students are taught how to carry out phytochemical screening, namely determining the class of compounds contained in a plant material. Apart from that, they are also taught about selecting eluents for thin layer chromatography based on polarity, how to carry out fractionation using column chromatography, and how to isolate, identify and purify the contents of a plant material.
8. Soft Skill Attributes	Activeness during discussions, accuracy in quiz answers and reports
9. Learning Methods	Practicum, discussion
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Quizzes, Practicum report, midterm and final examination
12. Lecturers	<p>COURSECO COORDINATOR: Dr. Achmad Fuad Hafid, MS. Member:</p> <ol style="list-style-type: none"> 1. Drs. Herra Studiawan, MS 2. Dra. Rakhmawati, MS 3. Dr. Idha Kusumawati, MSi 4. Dr. Wiwied Ekasari, MSi 5. Dr. Aty Widyawaruyanti, MSi 6. Rr. Retno Widyowati, S.Si., MSc., PhD 7. Suciati, SSi, M.Phil., PhD. 8. Neny Purwitasari, S.Si., MSc 9. Rice Disi Oktarina, S.Farm., MFarm., Apt

13. Required References	<p>10. Tutik Sri Wahyuni, S.Si. MSi., PhD</p> <ol style="list-style-type: none"> 1. Camel, V. Extraction Methodologies: General Introduction in Handbook of Chemical and Biological Plant Analytical Methods. Hostettmann, K. Eds. Volume 1, Wiley: Chichester, 2014, pp 17-42 2. McDonal, PD and Bidlingmeyer, BA., Strategies for succesfull preparative liquid chromatography in Journal of Chromatography Library: Preparative liquid chromatography. Bidlingmeyer BA. Eds,Elsevier: Amsterdam, 1991, Vol. 38 pp 1-95 3. Harborne J.B, terjemahan Kosasih Padmawinata dan Iwang Soediro, Metode Fitokimia, Penuntun Cara Modern Menganalisa Tumbuhan, ITB, Bandung, 1987. 4. Field, LD., Sternhell, S., Kalman, JR. Organic Structures from Spectra. 5th edition Wiley: Brisbane, 2013, pp 34-70.
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Table 48 Medicinal Chemistry

1. Course Name	Medicinal Chemistry
2. Course Code	KIM301
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	5 (five)
5. Prerequisite	Physical Chemistry, Pharmaceutical Organic Chemistry, and Pharmacology & Toxicology
6. Course Learning Outcome	At the end of the lesson, students are able to apply the science of Medicinal Chemistry for the pharmaceutical field, especially in selecting the best drug from derived compounds based on the structure-activity relationship, and in drug development research.
7. Course Description / Syllabus	The Medicinal Chemistry course presents material that contains Introduction to Medicinal Chemistry, the relationship of structure to the process of penetrating biological membranes and drug-biopolymer interactions, the relationship of structural changes to activity in drug metabolism processes, the relationship of physical chemical properties to biological drug activity, the relationship of structure and activity to the drug process. drug-receptor interactions, quantitative structure-biological activity relationships of drugs, structure-activity relationships of compounds acting on the autonomic nervous system, steroid hormones, analgesics and NSAID's, antibiotics, anti-infectives, anticancer, antihistamines, cardiovascular drugs, and drugs acting on the nervous system center.
8. Soft Skill Attributes	Active discussion, Discipline, Cooperation
9. Learning Methods	Lectures, Practices, and Discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm (45%) and Final Examination (45%); Soft Skills (10%)
12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. Siswandono , MS Member :</p> <ol style="list-style-type: none"> 1. Prof. Dr. Suko Hardjono, M.S., 2. Prof. Dr. Bambang Tri Purwanto, M.S., 3. Prof. Dr. Juni Ekowati, M.Si, 4. Dr. Nuzul Wahyuning Diyah, M.Si, 5. Dr. Tri Widiandani, S.Farm, Sp.FRS

13. Required References	<ol style="list-style-type: none"> 1. Siswandono, ed., 2016. <i>Kimia Medisinal I dan II</i>. Edisi Kedua, Surabaya: Airlangga University Press. 2. Beale, J.M. and Block, J.H. eds., 2011. <i>Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry</i>. 12th ed., Philadelphia: Lippincott Williams & Wilkins. 3. Lemke, T.L., Williams, D.A., Roche, V.F. and Zito, S.W. eds., 2013. <i>Foye's Principles of Medicinal Chemistry</i>. 7th ed., Baltimore: Lippincott Williams & Wilkins. 4. Patrick, G.L., 2013. <i>An Introduction to Medicinal Chemistry</i>. 5th ed., Oxford: Oxford University Press. 5. Li, J.J., 2021. <i>Medicinal Chemistry for Practitioners</i>, New York: John Wiley & Sons, Inc.
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Table 49 Medicinal Chemistry Practicum

1. Course Name	Medicinal Chemistry Practicum
2. Course Code	KIM302
3. Course Load	1 credit [meeting (26.7 hours), independent learning/assignment (13.3 hours) per semester]
4. Semester	5 (five)
5. Prerequisite	Physical Chemistry, Pharmaceutical Organic Chemistry, and Pharmacology & Toxicology
6. Course Learning Outcome	At the end of the lesson, students are able to apply the science of Medicinal Chemistry for the pharmaceutical field, especially in selecting the best drug from derived compounds based on the structure-activity relationship, and in drug development research.
7. Course Description / Syllabus	The Medicinal Chemistry Practicum presents material that contains an introduction to the Medicinal Chemistry Practicum, the method used to determine the parameter values for the physical chemical properties (lipophilic, electronic, and steric) of drug compounds used in HKSA, prediction of ADME and toxicity of drug compounds, HKSA analysis of drug derivatives through parameters physical chemical properties with the LFER model from Hansch using a computer (in silico).
8. Soft Skill Attributes	Active discussion, discipline, cooperation
9. Learning Methods	Lecture, discussion, practicum
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Practicum Implementation (40%); Exam Score (40%); Practicum Report Value (20%)
12. Lecturers	COURSE COORDINATOR: Prof. Dr. Siswandono , MS Members : Prof. Dr. Suko Hardjono, M.S., Prof. Dr. Bambang Tri Purwanto, M.S., Dr. Juni Ekowati, M.Si, Dr. Nuzul Wahyuning Diyah, M.Si, Dr. Tri Widiandani, S.Farm, Sp.FRS
13. Required References	1. Siswandono, ed. 2021. <i>Petunjuk Praktikum Kimia Medisinal</i> , Surabaya.

	<ol style="list-style-type: none"> 2. Siswandono, eds. 2016. <i>Kimia Medisinal I, Edisi ke 2</i>, Surabaya: Airlangga University Press. 3. Singh, D.B., 2020. <i>Computer-Aided Drug Design</i>, Singapore: Springer Nature Singapore Pte Ltd. 4. Sun, H., 2016. <i>A Practical Guide to Rational Drug Design</i>, Amsterdam: Elsevier Ltd. 5. Silakari, O. & Singh, P.K., 2021. <i>Concepts and Experimental Protocols of Modelling and Informatics in Drug Design</i>, London: Elsevier Inc. 6. Jayaveera, K.N., Subramanyam, S., Reddy, Y., 2014. <i>Practical Medicinal Chemistry</i>, New Delhi: S. Chand & Company PVT. Ltd.
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Table 50 Traditional and Complementary Medicine

1. Course Name	Traditional and Complementary Medicine
2. Course Code	FAB313
3. Course Load	2 Credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	5 (five)
5. Prerequisite	Pharmaceutical Botany, Pharmacognosy
6. Course Learning Outcome	Students are able to evaluate traditional and complementary medicinal ingredients based on Indonesian traditional medicine regulations and monographs on native Indonesian ingredients to ensure the success of therapy with traditional medicines
7. Course Description / Syllabus	<p>In the Traditional and Complementary Medicine course, students learn the concepts of Traditional Medicines in Indonesia and other countries, understand various monographs and regulations on traditional medicines, the concept of herbal sciences, complementary medicine, recognize various kinds of traditional herbs to help treat diseases, the safety of using traditional medicines, specialists Indonesian and foreign traditional medicines and understand the manufacture of traditional medicines for internal, external and aromatherapy use.</p> <p>In the tutorial, students are able to understand the manufacture of preparations for internal use, external use, cosmetics and aromatherapy, know foreign traditional ingredients and be able to analyze the safety of using traditional medicine, complementary medicine for various diseases, interactions between traditional medicine and conventional medicine, as well as, ingredients for complementary medicine. group of Covid-19 disease.</p>
8. Soft Skill Attribut	Dicipline, honesty
9. Learning Methods	Lectures and discussions
10.Learning Media	Electronic media, Learning Management System (LMS)
11.Learning Assessments	Understanding, completeness of data and analysis
12.Lecturers	<p>COURSE COORDINATOR: Dr. apt. Wiwied Ekasari , MSi</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt Bambang Prajogo EW., MS 2. Prof. Dr. apt. Sukardiman, MS 3. Dr. apt. Aty Widyawaruyanti, MS 4. Dr. apt. Wiwied Ekasari, MSi

13. Required References	<p>5. apt. Rr. Retno Widyowati, SSi., MSc., PhD</p> <ol style="list-style-type: none"> 1. Anonim. 1995. <i>Farmakope Indonesia</i>. Departemen Kesehatan Republik Indonesia 2. Sudardi B, 2002. <i>Konsep Pengobatan Tradisional Menurut Primbon Jawa</i>. Humaniora. Vo.14. 12-19 3. Anonim. <i>Kebijakan Obat Tradisional Nasional</i>. Kepmenkes No. 381/ MENKS/III/2007 4. Decai, Tang. 2003. <i>Science of Chinese Materia Medica</i>. Shanghai: Publishing House of Shanghai University of Traditional Chinese Medicine. 5. Jingsheng, Zhao. 2002. <i>Chinese Acupuncture and Moxibustion</i>. Shanghai: Publishing House of Shanghai University of Traditional Chinese Medicine
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Table 51 Pharmacy Practice II

1. Course Name	Pharmacy Practice II
2. Course Code	FAM304
3. Course Load	2 credits [meeting (53.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	6 (six)
5. Prerequisite	Practical Pharmacy I, Social Pharmacy, Pharmacotherapy II, Drug Delivery Design & Technology.
6. Course Learning Outcome	<p>After taking this Human Behavior course, it is expected that second semester students of the Faculty of Pharmacy, Universitas Airlangga will:</p> <p>KKs 1.1 Making preparations of drugs, traditional medicines and cosmetics, which meet the process requirements and pharmaceutical products that are Correct.</p> <p>KKs 1.2. Procurement of drugs and make drug preparations by understanding and applying basic knowledge about drugs, of chemical-physical properties, pharmacology, formulation and technology.</p> <p>KKs 2.3. Explaining the basic principles and manufacturing techniques and can explain the use and service of groups of drugs special.</p> <p>KKs 4.1. Providing information and communicate about drugs and other pharmaceutical supplies, to patients, the community and fellow health professionals in an objective, scientific and responsible manner.</p> <p>KKs 5.1. Reviewing and assessing the validity / scientific truth of drug information, and is oriented to the interests of the patient.</p> <p>KKs 6.1. Demonstrating a professional attitude and performance, namely competent in their field, a sense of belonging and love for the profession, insightful in the development of science and the pharmaceutical profession.</p> <p>KKp 7.4. Respecting the dignity of patients and show a sense of empathy in service.</p> <p>CCP 9.1. Be able to assess prescription.</p> <p>CCP 9.2. Be able to consider the accuracy of prescribed drugs.</p> <p>CCP 9.3. Be able to dispense prescribed drugs.</p> <p>CCP 9.6. Registering primary health services.</p> <p>KKp 10. Be able to manage pharmaceutical preparations and medical devices, according to applicable standards.</p> <p>Ps 1. Mastering the theory, method, application of pharmaceutical science and technology.</p> <p>Ps 2. Mastering knowledge of pharmaceutical management, socio-pharmaceutical, pharmaceutical law and ethics, communication techniques and basic principles of work safety.</p>

	Pp 3. Being able to solve problems in the development and management of pharmaceutical preparations and services with a pharmaceutical science approach.
7. Course Description / Syllabus	<p>This practicum discusses:</p> <ol style="list-style-type: none"> 1. Drug management (procurement, recording, storage, arrangement, destruction). 2. Drug services (screening, dispensing with/without extemporaneous compounding, counseling, documentation) based on doctor's prescription.
8. Soft Skill Attributes	Confident, discipline
9. Learning Methods	Practicum and discussion
10. Learning Media	Printed and Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	<ol style="list-style-type: none"> 1. Understanding (30%) <ul style="list-style-type: none"> - Interpretation (10%) - Completion(10%) - Submission (10%) 2. Skill(60%): <ul style="list-style-type: none"> - Communication - Setup technique - Packaging 3. Attitude (10%): <ul style="list-style-type: none"> - Self-confident, - Order
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Yuni Priyandani , S.Si , Sp.FRS . Members :</p> <ol style="list-style-type: none"> 1. Dr. apt. Abdul Rahem, M.Kes. 2. apt. Ana Yuda, S.Si, M.Farm. 3. apt. Andi Hermansyah, S.Farm, M.Sc, Ph.D. 4. Dr. apt. Aniek Setiya Budiatin, M.Si. 5. apt. Anila Impian Sukorini, S.Si, M.Farm. 6. apt. Arie Sulistyarini, S.Si, M.Pharm. 7. apt. Bambang Subakti Zulkarnain, S.Si, M.Pharm.Clin. 8. apt. Dewi Wara Shinta, S.Farm, M.Farm.Klin. 9. apt. Dinda Monika Nusantara Ratri, S.Farm, M.Farm.Klin. 10. apt. Elida Zairina, S.Si, M.P.H., Ph.D. 11. apt. Gesnita Nugraheni, S.Farm, M.Sc. 12. apt. Gusti Noorrizka Veronika Achmad, S.Si, M.Sc.. 13. apt. Hanni Prihhastuti Puspitasari, S.Si, M.Phil, Ph.D. 14. Dr. apt. Liza Pristianty, M.Si, M.M. 15. apt. Mufarrihah, S.Si, M.Sc. 16. apt. Toetik Aryani, M.Si. 17. Dr. apt. Wahyu Utami, M.S.

13. Required References	<p>18. Dr. apt. Yuni Priyandani, S.Si, Sp.FRS.</p> <p>19. Dr. apt. Yunita Nita, S.Si, M.Pharm.</p> <ol style="list-style-type: none"> 1. British Medical Association, 2015, British National Formulary 69, London: Pharmaceutical Press. 2. Kemenkes RI, 2014, Standar pelayanan kefarmasian di apotek, Permenkes 35, Kementerian Kesehatan RI. 3. BPOM RI, 2013, Informatorium obat nasional Indonesia, Badan Pengawas Obat dan Makanan. 4. Marriott JF et al, 2010, Pharmaceutical compounding and dispensing 2nd ed, London: Pharmaceutical Press. 5. Sweetman SC, 2009, Martindale the complete drug reference 36th ed, London: Pharmaceutical Press.
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Table 52 Pharmacotherapy III Lecture and Tutorial

1. Course Name	Pharmacotherapy III Lecture and Tutorial
2. Course Code	FAT331 and FAT 332
3. Course Load	3 credits [meeting (40 hours), independent learning/assignment (80 hours) per semester]
4. Semester	6 (six)
5. Prerequisite	Pharmacotherapy 1
6. Course Learning Outcome	After completing the 3-credit course, students are expected to be able to understand and explain clinical definitions/limitations, disease classification, etiology, pathophysiology, clinical-laboratory manifestations, disease complications and management of drug and non-drug therapy as well as potential drug related problems from the given therapy, pharmaceutical care (Pharmaceutical Care) for diseases in the topic of discussion.
7. Course Description / Syllabus	Definition/limits, disease classification, etiology, pathophysiology, clinical-laboratory manifestations, non-drug therapy, drug therapy, therapeutic algorithms, complications of selected diseases and pharmaceutical care of endocrine-related diseases (Diabetes Mellitus), Kidney Disease (Renal Disease), Diseases Neurology, Reproductive-organ-related-diseases, eye-related-diseases, cancer-related-diseases.
8. Soft Skill Attributes	Good manners in lectures are in the form of participation, effective communication and critical thinking.
9. Learning Methods	Lectures, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Budi Suprapti , M.Si. Members : Dr. apt. Yulistiani, M.Si., MSi Prof. Dr. apt. Suharjono, MS Prof. apt. Junaidi Khotib, M.Kes. Ph.D apt. Drs. Didik Hasmono, MS apt. Bambang Subakti Zulkarnain, S.Si., M.Clin.Pharm apt., Wenny Putri Nilamsari, SSi.,SP.FRS apt. Dinda Monika, S.Farm, M.Farm.Klin apt. Arina Dery P, S.Farm, M.Farm.Klin apt.Mareta Rindang, S.Farm,M.Farm.Klin</p>

13. Required References	<p>apt. Samirah, SSi, SpFRS, apt. Sumarno, SSi,SpFRS apt. Pharmashinta Putri Hapsari, S.Farm., SpFRS</p> <ol style="list-style-type: none"> 1. DiPiro, J et. al. 2020, Pharmacotherapy: A Pathophysiologic Approach Ed., Mc. Graw Hill Education 2. Wells, Barbara et al, Pharmacotherapy Handbook 11th Ed, Mc Graw Hill Education 3. Pagana, K.D., and Pagana, T.J., 2013, Mosby's Manual of Diagnostic and Laboratory Tests, USA: Mosby
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Table 53 Drug Delivery Design and Technology III

1. Course Name	Drug Delivery Design and Technology III
2. Course Code	FAF306
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	6 (six)
5. Prerequisite	Biomedical Sciences Drug Delivery Design and Technology I Drug Delivery Design and Technology II
6. Course Learning Outcome	After following this lesson with a load of 2 credits through lectures and practicum, students will be able to formulate parenteral preparations and ophthalmic preparations based on pre-formulation considerations, formulation principles and determine sterilization and evaluation methods.
7. Course Description / Syllabus	Drug Delivery Design and Technology III is defined as a science that studies aspects of preformulation and formulation of sterile preparations, unit processes that include microbiological aspects in the sterilization process, various sterilization methods and aseptic techniques, disinfection and packaging and evaluation of sterile preparations.
8. Soft Skill Attributes	Discipline and responsibility
9. Learning Methods	Lectures
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	The assessment includes four components, each of which is described as follows: 1. Midterm Test 25% (essay and or MCQ) 2. Final Test 25% (essay and or MCQ) 3. Structured assignments 40% 4. Soft skills 10% (discipline and responsibility)
12. Lecturers	COURSE COORDINATOR: Prof. Dr. apt. Retno Sari, M. Sc. Members : 1. Dr. apt. Dewi Isadiartuti, M.Si. 2. apt. Muh. Agus Syamsur Rijal, S.Si., M.Si. 3. apt. Dini Retnowati, S.Farm., M.Si.
13. Required References	1. Aulton's Pharmaceutics, 4th ed: The Design and Manufacture of Medicines, 2013, Michael E , Aulton, Churchill Livingstone, New York

	<p>2. Remington: The Science and Practice of Pharmacy 21st ed., 2012, Loyd V. Allen, Jr., Pharmaceutical Press, Philadelphia</p> <p>3. Farmakope Indonesia Edisi VI, 2020, BPOM, Depkes RI</p> <p>4. CPOB, Anonim, BPOM, Depkes RI 2018</p>
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Table 54 Drug Delivery Design and Technology III Practicum

1. Course Name	Drug Delivery Design and Technology III Practicum
2. Course Code	FAF307
3. Course Load	2 credits [meeting (53.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	6 (six)
5. Prerequisite	Biomedical Sciences Drug Delivery Design and Technology I Drug Delivery Design and Technology II
6. Course Learning Outcome	Students are able to conduct preformulation studies, develop formulas, manufacturing procedures and quality control as well as make parenteral preparations and laboratory-scale ophthalmic preparations that are safe, effective and of good quality based on pre-formulation considerations, formulation principles and determine sterilization methods and evaluations.
7. Course Description / Syllabus	Practicum of Drug Delivery Design and Technology III consists of the following activities: 1. Formulation of parenteral formulations based on pre-formulation aspects for single-dose, multiple-dose, eye-drop preparations, and determine the sterilization method 2. Manufacturing and packaging of parenteral preparations 3. Dispensing sterile preparations 4. Evaluation of sterile preparations
8. Soft Skill Attribute	Discipline, cooperation, and responsibility
9. Learning Methods	Practice
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	The assessment includes six components, each of which is described as follows: 1. Daily Score (report, quiz) (30%) 2. Soft skills (10%) 3. Sterility/Duty Test (10%) 4. Seminars (10%) 5. Practical Exams (UTS & UAS) (40%)
12. Lecturers	COURSE COORDINATOR: Prof. Dr. apt. Retno Sari, M. Sc. Members : 1. Dr. apt. Dewi Isadiartuti, M.Si. 2. Apt. Muh. Agus Syamsur Rijal, S.Si., M.Si.

13. Required References	<p>3. Apt. Dini Retnowati, S.Farm., M.Si.</p> <ol style="list-style-type: none"> 1. Aulton's Pharmaceutics, 4th ed: The Design and Manufacture of Medicines, 2013, Michael E, Aulton, Churchill Livingstone, New York 2. Remington: The Science and Practice of Pharmacy 21st ed., 2012, Loyd V. Allen, Jr., Pharmaceutical Press, Philadelphia 3. Farmakope Indonesia Edisi VI, 2020, BPOM, Depkes RI 4. CPOB, Anonim, BPOM, Depkes RI 2018
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Table 55 Phytopharmacy

1. Course Name	Phytopharmacy
2. Course Code	FAB304
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	6 (six)
5. Prerequisite	Pharmaceutical Analysis and Traditional & Complementary Medicine
6. Course Learning Outcome	After participating in this study, participants in the Phytopharmacy course are able to design phytopharmaceutical products in accordance with regulations through the project base learning model.
7. Course Description / Syllabus	This course is an advanced course and a compulsory course in the Pharmacy Undergraduate Study Program. After completing this course, students are expected to be able to design phytopharmaceutical preparations according to applicable regulations. This lecture discusses the regulation and registration of OT products; marker compounds and the concept of phytoequivalents; implementation of quality control in the process and at the end of the process; extracts, manufacturing processes and the development of their preparations; as well as preclinical and clinical testing of phytopharmaceutical preparations. The lecture also examines the issues and problems encountered in the application, development and design of various phytopharmaceutical preparations currently available. Lectures use synchronous and asynchronous approaches at AULA in the form of lectures, questions and answers and assignments in the form of project base learning and case studies. The student mastery stage in addition to evaluation through UTS and UAS is also an evaluation of assignments, presentations and discussions.
8. Soft Skill Attributes	Active communication
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Qualitative (accuracy of analysis, communication skills), midterm and final examination
12. Lecturers	COURSE COORDINATOR: Dr. apt. Idha Kusumawati , S.Si. , M.Si Members :

13. Required References	<ol style="list-style-type: none"> 1. Dr. apt. Idha Kusumawati , S.Si. , M.Si 2. Prof. Dr. apt. Bambang Prajogo EW., MS 3. apt. Rr. Retno Widyowati , S.Si. , M.Pharm ., PhD 4. apt. Tutik Sri Wahyuni , S.Si. , M.Si. , PhD <ol style="list-style-type: none"> 1. BPOM. 2019. Per BPOM No. 32 tahun 2019 tentang Persyaratan keamanan dan mutu Obat Tradisional 2. Kemenkes RI. 2017. Farmakope Herbal Edisi 2. 3. BPOM. 2016. Pedoman cara uji klinik yang baik di Indonesia edisi III 4. BPOM. 2014. Perka Bpom RI Nomor 7 Tahun 2014 Tentang Pedoman Uji Toksisitas Nonklinik Secara In Vivo 5. Kemenkes RI. 2008. Farmakope Herbal Edisi 1.
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Table 56 Phytopharmacy Practicum

1. Course Name	Phytopharmacy (practicum)
2. Course Code	FAB307
3. Course Load	1 credit [meeting (26.7 hours), independent learning/assignment (13.3 hours) per semester]
4. Semester	6 (six)
5. Prerequisite	Pharmaceutical Analysis and Traditional & Complementary Medicine
6. Course Learning Outcome	After participating in this study, participants in the Phytopharmacy course are able to design phytopharmaceutical products in accordance with regulations through the project base learning model.
7. Course Description / Syllabus	This course is an advanced course and a compulsory course in the Pharmacy Undergraduate Study Program. After completing this lecture, students are expected to be able to design extract raw materials for phytopharmaceutical preparations according to applicable regulations. This lecture discusses marker compounds and the concept of phytoequivalents; implementation of quality control in the extract manufacturing process; and preclinical testing of extracts. The lecture also examines issues and problems encountered in the application, development and design of extract raw materials for currently circulating phytopharmaceutical preparations. Implementation of lectures using synchronous and asynchronous approaches at AULA in the form of lectures, questions and answers and assignments in the form of project base learning. The student mastery stage in addition to evaluation through UTS and UAS is also an evaluation of assignments, presentations and discussions.
8. Soft Skill Attributes	Active communication
9. Learning Methods	Practicum, discussion
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Qualitative (accuracy of analysis, communication skills)
12. Lecturers	COURSE COORDINATOR: Dr. apt. Idha Kusumawati , S.Si. , M.Si Members : 1. Dr. apt. Idha Kusumawati , S.Si. , M.Si 2. Prof. Dr. apt. Bambang Prajogo EW., MS

13. Required References	<p>3. apt. Rr. Retno Widyowati , S.Si. , M.Pharm ., PhD</p> <p>4. apt. Tutik Sri Wahyuni , S.Si. , M.Si. , PhD</p> <p>5. apt. Dra. Rakhmawati , M.Si</p> <p>6. apt. Drs. Herra Studiawan , M.Si</p> <p>1. BPOM. 2019. Per BPOM No. 32 tahun 2019 tentang Persyaratan keamanan dan mutu Obat Tradisional</p> <p>2. Kemenkes RI. 2017. Farmakope Herbal Edisi 2.</p> <p>3. Ira S. K. 2012. Analytical Chemistry, In Tech.</p> <p>4. Leonardo A. C. 2012. Chromatography – The most Versatile Method of Chemical Analysis, In Tech.</p> <p>5. Kemenkes RI. 2008. Farmakope Herbal Edisi 1.</p>
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Table 57 Thesis Proposal

1. Course Name	Thesis Proposal
2. Course Code	PNF498
3. Course Load	2 credits [Independent learning (80 hours) per semester]
4. Semester	7 (seven) open semester
5. Prerequisite	Data and Library, Logic and Critical Thinking courses and have passed all courses presented in semesters 1-4.
6. Course Learning Outcome	At the end of the study Proposal students can design a thesis research proposal according to scientific research principles and disseminate the research design to be approved by the reviewing lecturer and implemented.
7. Course Description / Syllabus	This course presents the basics of research design for the undergraduate level as outlined in a thesis proposal by following the rules of scientific writing, especially in the pharmaceutical field.
8. Soft Skill Attributes	Discipline, Responsibility, Cooperation, Initiative
9. Learning Methods	Discussion and literature review
10. Learning Media	Face to face with a supervisor, can be supported by the electronic media
11. Learning Assessments	Writing ability; presentation and discussion skills
12. Lecturers	COURSE COORDINATOR: Head of study program (apt. Chrismawan Ardianto , PhD)
13. Required References	Members : Supervisors are appointed by the Dean References follow the planned scientific field of research

Table 58 Hindu Religion II

1. Course Name	Hindu Religion II
2. Course Code	AGH401
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	7 (seven)
5. Prerequisite	Hindu Religion Course I Fundamental Pharmacy
6. Course Learning Outcome	At the end of the study, student will able to implement the basic principles of holistic medicine, basic principles of medicine and classification of medicine according to Usada Bali, basic principles of medicine according to Ayurveda
7. Course Description / Syllabus	Hindu Religion II presents material on human potential, morality, basic principles of holistic medicine, basic principles of medicine and classification of medicine according to Usada Bali, basic principles of medicine according to Ayurveda.
8. Soft Skill Attribute	Punctual or disciplined, polite, active.
9. Learning Methods	Lecture, discussion, presentations
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Middle Tes 25%, Final Test 25%, Written Assignment 25%, Presentation and Discussion 25%
12. Lecturers	COURSE COORDINATOR: apt. I Nyoman Wijaya, SSi , SpFRS Member : Apt. I Nyoman Wijaya, SSi, SpFRS
13. Required References	<ol style="list-style-type: none"> 1. Sudharta Tj.R. 2001. Upadesa tentang Ajaran-ajaran Hindu Paramita, Surabaya. 2. Nala,N. 1991. Ayurveda Ilmu Kedokteran Hindu. PT. Upada Sastra, Denpasar. 3. Kementerian Riset, Teknologi dan Pendidikan Tinggi Republik Indonesia. 2016. PENDIDIKAN AGAMA HINDU untuk Perguruan Tinggi. Direktorat Jenderal Pembelajaran dan Kemahasiswaan Kementerian Riset, Teknologi, dan Pendidikan Tinggi Republik Indonesia, Jakarta. 4. Krishna,A. 1998. Bhagavad Gita Bagi Orang Modern. PT. Gramedia Utama Pustaka, Jakarta.

	<ol style="list-style-type: none"> 5. Murray,A.H. dan Pickup, T., 1998. Penyembuhan dengan Ayurveda, penterjemah, Susi Purwoko. PT. Gramedia Utama Pustaka, Jakarta. 6. Sri Srimad A.C. Bhaktivedanta Swami Prabhupada., 2006. Bhagavad Gita. Hanuman Sakti dibawah lisensi The Bhaktivedanta Book Trust International, Inc.
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Table 59 Religion Islam II

1. Course Name	Religion Islam II
2. Course Code	AGI401
3. Course Load	2 Credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	7 (seven)
5. Prerequisite	Islamic Religion I
6. Course Learning Outcome	After taking the Religion II (Islam) subject, God willing, students will be able to understand the Islamic moral foundations in the application of science and technology, especially pharmacy, and be able to explain and apply Imtaq and science and technology in life and what is developing in the global era.
7. Course Description / Syllabus	This course presents various kinds of life problems, especially in forming the character of the pharmaceutical profession, which is intelligent and has good morals (Excellence with Morality) and is ready to compete in the global era.
8. Soft Skill Attribute	Communication skills, respect for opinions and cooperation
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Dr. Abdul Rahem, M.Kes., Apt.</p> <p>Members:</p> <ol style="list-style-type: none"> 1. Prof. Dr. Mochammad Yuwono, MS. 2. Dr. Abdul Rahem, M.Kes., Apt. 3. Helmy Yusuf, S.Si., M.Sc., Ph.D., Apt. 4. Mahardian Rahmadi, M.Sc., Ph.D., Apt. 5. Andi Hermansyah, M.Sc., Ph.D., Apt. 6. Andang Miatmoko, Ph.D., Apt. 7. Dr. Tri Widiandani, Sp.FRS., Apt. 8. Kholis Amalia, M.Sc., Apt.
13. Required References	<ol style="list-style-type: none"> 1. Al Qur'an dan terjemahnya, 2007. Departemen Agama Republik Indonesia 2. Al-Qur'anulkarim, 2010. Miracle the Reference, Sygma Publishing, Bandung.

	<ol style="list-style-type: none"> 3. Muhammad Fuad Abdul Baqi (Penerjemah: Achmad Sunarto, Jilid 1,2 dan 3. 2011. Tafsir Tematis Ayat-ayat AlQur'an AlHakim, Halimjaya, Surabaya. 4. Hadits-Hadits shahih, mutawatir, arba'in nawawiyah, dari berbagai sumber. 5. Donald G. Krause, Kiat Sang Pemimpin, The Way of the Leader. PT Elex Media Komputindo – Jakarta 6. Abdullah Gymnastiar, 2004. Jagalah Hati MQ Publishing, Bandung 7. Hisham Al Talib, 1996. Panduan Dakwah bagi Juru Dakwah, Media Dakwah, Jakarta. 8. Mohammad Mazhar Hussaini,1993. Islamic Dietary Concepts & Practices, The Islamic Food & Nutrition Council of America, Bedford Park, Illionis. 9. Fauzi Fauzan (Editor), Tim Multitama Communication, 2006. Islamic Bussiness Strategy for Entrepreneurship, Penerbit Zikrul hakim, Jakarta. 10. MUI, 2014. Kumpulan Fatwa MUI, LPPOM MUI, Jakarta. 11. Jamal Madhi, 2001. Menjadi Pemimpin yang Efektif dan Berwibawa: Tinjauan Manajemen Kepemimpinan Islam, PT. Syaamil Cipta Media, Bandung. 12. Muhammad Chozin Dahlan & Muhammad Sya'roni, 2012. Teori dan Gaya Kepemimpinan di Dunia, Lembaga Penyantun Pendidikan "Multazam Jombang" 13. Ahmad H. Sakr, 1993.A Muslim Guide to Food Ingredients, Foundation for Islamic Knowledge, Lombard - Illionis. 14. Ahmad H. Sakr, 1996. Understanding Halal Foods, Fallacies & Facts. Foundation for Islamic Knowledge, Lombard - Illionis. 15. The Institute of Islamic Jurisprudence of U.K.Muslim Food Guide. 3rd Ed., Al Madina Publications, West Yorkshire. 16. Ibn Qayyim al Jauziyyah, 2006.The Prophetic Medicine, Rahasia Kesehatan Nabi, Diglossia Media, Jogjakarta. 17. Mas Udik Abdullah, 2005. Islamic Quantum, Meledakkan IESQ dengan langkah Takwa & Tawakal. Zikrul Hakim, Jakarta. 18. Ary Ginanjar Agustian, Rahasia Sukses Membangun Kecerdasan Emosi dan Spiritual ESQ (Emotional Spiritual Quotient) Berdasarkan 6 Rukun Iman dan 5 Rukun Islam. Penerbit Arga, Jakarta. 19. Syamsul Rijal Hamid, 2014. Buku Pintar Ayat-ayat Al-Qur'an, Edisi Revisi, PT BIP (Buana Ilmu Populer), Jakarta. 20. Bobbi DePorter & Mike Hernacki, 1999. Quantum Business. Membiasakan Berbisnis Secara Etis dan Sehat. Kaifa, Bandung. 21. Syekh Thantawi jauhari, 1984. Al Qur'an dan Ilmu Pengetahuan Moderen. (Alih Bahasa: Muhammad Ja'far). Al-Ikhlash, Surabaya, Indonesia. 22. UU nomor 33 Tahun 2014 tentang JPH 23. HAS 23000 dan turunannya.
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	24. LPPOM MUI, 2016. Materi Pelatihan Sistem Jaminan Halal.
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Table 60 Religion Catholic II

1. Course Name	Religion Catholic II
2. Course Code	AGK401
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	7 (seven)
5. Prerequisite	Catholic Religion I
6. Course Learning Outcome	Students are able to explain the teachings of the Catholic Church related to the world of the pharmaceutical/health profession, especially issues related to bioethics, as well as social life and church in general, while also being able to direct learning independently (self-directed learning).
7. Course Description / Syllabus	Study of selected topics regarding the teachings of the Catholic Church relating to the world of the pharmaceutical/health profession, especially bioethical issues, as well as social life and the church in general.
8. Soft Skill Attribute	Teamwork, communication skills
9. Learning Methods	Lectures, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments and Presentations
12. Lecturers	COURSE COORDINATOR: Drs. Marcellino Rudyanto, Apt., MSi., PhD Anggota: Drs. Marcellino Rudyanto, Apt., MSi., PhD
13. Required References	<ol style="list-style-type: none"> 1. UNESCO (2016). Bioethics Core Curriculum, Section I: Syllabus Ethics Education Programme. 2. Fisher, A. (2012). Catholic Bioethics for A New Millenium. Cambridge: Cambridge University Press. 3. McQueen, M. (2009). Bioethics Matters: A Guide for Concerned Catholics. New York: Burns & Oates. 4. Kompendium Ajaran Sosial Gereja (2009). https://www.vatican.va/roman_curia/pontifical_councils/justp_eace/documents/kompendium_text_id.pdf 5. Paus Fransiskus (2015). Ensiklik Laudato Si tentang Perawatan Rumah Kita Bersama. Terj. Martin Harun OFM. Jakarta:Obor.

	<p>6. Paus Fransiskus (2016). <i>Amoris Laetitia</i> (Sukacita Kasih). Terj. Komkel KWI & CFC. Jakarta: Departemen Dokumentasi dan Penerangan KWI.</p> <p>7. Http://www.katolisitas.org.</p>
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Table 61 Religion Protestant Christianity II

1. Course Name	Religion Protestant Christianity II
2. Course Code	AGP401
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	7 (seven)
5. Prerequisite	Protestant Christianity I
6. Course Learning Outcome	After taking this course, students are expected to be able to apply/implement (C3) an understanding of the main teachings of the Christian faith in their mindset, attitudes and behavior both vertically towards God and horizontally in the practice of national, state and social life in accordance with science and their respective professions, so that they are able to participate in overcoming problems related to their science and profession wisely and responsibly.
7. Course Description / Syllabus	<p>The Protestant Christian Religion Lecture II is presented through lectures using learning media, which are combined with discussion/sharing and case studies (problem based learning) to discuss problem material related to moral ethics based on the teachings of the Christian faith and its implementation in the life of the nation, state and society. There are four subjects that are used as learning material, namely Personal Identity and Integrity, Leadership, Social Ethics, and Scientific and Professional Ethics, which are explained into the following sub-subjects or topics:</p> <ol style="list-style-type: none"> 1. Introduction to your own & other people's personal character 2. The values of the Christian life of faith 3. Implementation of the values of Christian faith in facing global culture 4. Emotional, social & spiritual intelligence 5. Effective leadership & communication 6. Socio-political ethics 7. Ethics of interpersonal relations 8. Family ethics 9. Christian Ethics 10. Pharmacy professional ethics 11. Bioethics I 12. Bioethics II
8. Soft Skill Attribute	Cooperation, communication, motivation and empathy skills
9. Learning Methods	Lectures and discussion
10. Learning Media	Electronic media, Learning Management System (LMS)

11. Learning Assessments	Assignments and Presentations
12. Lecturers	Course Coordinator: Drs. Hadi Poerwono, Apt., MSc., PhD. Member: Drs. Hadi Poerwono, Apt., MSc., PhD.
13. Required References	<ol style="list-style-type: none"> 1. Lembaga Alkitab Indonesia. 2001. Alkitab (Terjemahan Baru), Jakarta: LAI. 2. Geisler, NL. 2010. Etika Kristen: Pilihan & Isu Kontemporer, Ed. 2. Malang: SAAT. 3. Youth for Christ/USA (Ed.). 2002. Penerapan Praktis Pola Hidup Kristen. Malang: Yayasan Gandum Mas. 4. UNESCO. 2008. Bioethics Core Curriculum. Paris: UNESCO.

Table 62 Pharmacy Practice III

1. Course Name	Pharmacy Practice III
2. Course Code	FAM406
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	7 (seven)
5. Prerequisite	Practical Pharmacy II, Pharmacotherapy III, Drug Delivery Design and Technology III, Phytopharmacy.
6. Course Learning Outcome	<p>Students are able to analyze drug-related problems, evaluate the use of drugs by patients, and develop treatment action plans in order to realize the success of patient therapy. Specifically, students are able to:</p> <ol style="list-style-type: none"> 1) Implementing the concept of pharmaceutical care in drug service simulations through identification, analysis, and problem solving approaches related to drugs, 2) Make decisions, evaluate and develop treatment action plans to ensure the safety and effectiveness of therapy, and 3) Simulate communication and interaction with patients/patient families/doctors/other health workers in drug services with/without a doctor's prescription, drug reconciliation, and home pharmacy care in order to achieve patient health improvement.
7. Course Description / Syllabus	This subject is delivered with a discussion method of problem-solving (problem-based learning) by utilizing e-learning facilities. Students in one class are divided into several groups who actively discuss at each meeting, facilitated by a lecturer who acts as a tutor. There were three cases of drug therapy management being discussed, each completed within four weeks, referred to as Sessions 1 to 4.
8. Soft Skill Attribute	Discipline in participating in learning (including attending meetings and uploading assignments), activities and initiation of discussions, as well as honesty and independence in completing exams
9. Learning Methods	Discussion of problem solving (problem-based learning)
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	<p>Consists of the following components and weights:</p> <ol style="list-style-type: none"> 1) Discussion (initiation and discussion material), 25% 2) Presentation (skills and presentation materials), 35% 3) Communication skills, 20% 4) Ability to solve exam questions, 25%

12. Lecturers	<p>COURSE COORDINATOR: apt. Hanni Prihhastuti Puspitasari , S. Si , M. Phil , Ph.D.</p> <p>Members :</p> <ol style="list-style-type: none"> 01. Dr. apt. Abdul Rahem, MKes 02. apt. Ana Yuda, SSi, MFarm 03. apt. Andi Hermansyah, SFarm, MSc, PhD 04. Dr. apt. Aniek Setiya Budiatin, MSi 05. apt. Anila Impian Sukorini, SSi, MFam 06. apt. Arie Sulistyarini, SSi, MPharm 07. apt. Arina Dery Puspitasari, SFarm, MFarmKlin 08. Dr. apt. Aty Widyawaruyanti, MSi 09. apt. Bambang Subakti Zulkarnain, SSi, MCLinPharm 10. Prof. Dr. apt. Bambang Tri Purwanto, MS 11. Dr. apt. Budi Suprapti, MSi 12. apt. Catur Dian Setiawan, SFarm, MKes 13. apt. Chrismawan Ardianto, SFarm, MSc, PhD 14. apt. Dewi Wara Shinta, SFarm, MFarmKlin 15. apt. Drs. Didik Hasmono, MS 16. apt. Dinda Monika Nusantara Ratri, SFarm, MFarmKlin 17. apt. Elida Zairina, SSi, MPH, PhD 18. apt. Gesnita Nugraheni, SFarm, MSc 19. apt. Gusti Noorrizka Veronika Achmad, SSi, MSc 20. apt. I Nyoman Wijaya, SSi, SpFRS 21. Prof. apt. Junaidi Khotib, SSi, MKes, PhD 22. Dr. apt. Liza Pristianty, MSi, MM 23. apt. Mahardian Rahmadi, SSi, MSc, PhD 24. apt. Mareta Rindang Andarsari, SFarm, MFarmKlin 25. apt. Mufarrihah, SSi, MSc 26. apt. Pharmasinta Putri Hapsari, SFarm, MFarmKlin 27. apt. Samirah, SSi, SpFRS 28. Prof. Dr. apt. Suharjono, MS 29. apt. Drs. Sumarno, SpFRS 30. apt. Dra. Toetik Aryani, MS 31. Prof. Dr. apt. Umi Athijah, MS 32. Dr. apt. Wahyu Utami, MS 33. apt. Wenny Putri Nilamsari, SFarm, SpFRS 34. Dr. apt. Yulistiani, MSi 35. Dr. apt. Yuni Priyandani, SpFRS 36. Dr. apt. Yunita Nita, MPharm 37. apt. Zamrotul Izzah, SFarm, MSc
13. Required References	<ol style="list-style-type: none"> 1. Alldredge BK, et al. (2013). Koda -Kimble and Young's applied therapeutics: the clinical use of drugs. Lippincott Williams & Wilkins. 2. Berardi RR, et al. (2009). Handbook of non-prescription drugs, 16th edition. American Pharmaceutical Association 3. Brunton LL, Chabner BA, Knollmann BC (2011). Goodman and Gilman's the pharmacological basis of therapeutics. McGraw-Hill Education.

	<p>4. Dipiro JT, et al. (2017). Pharmacotherapy: a pathophysio - logic approach, 10th edition. McGraw-Hill.</p> <p>5. Gennaro AR (2005). Remington: the science and practice of pharmacy, 21st edition. Philadelphia: Lippincott Williams & Wilkins.</p> <p>6. Marriott JF et al. (2010). Pharmaceutical compounding and dispensing, 2nd edition. London: Pharmaceutical Press.</p>
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Table 63 Pharmacy Practice III Practicum

1. Course Name	Pharmacy Practice III Practicum
2. Course Code	FAM407
3. Course Load	2 credits [meeting (53.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	7 (seven)
5. Prerequisite	Practical Pharmacy II, Pharmacotherapy III, Design and Technology Drug Delivery III, Phytopharmacy
6. Course Learning Outcome	<p>Students are able to analyze drug-related problems, evaluate the use of drugs by patients, and develop treatment action plans in order to realize the success of patient therapy. Specifically, students are able to:</p> <ol style="list-style-type: none"> 1) Implementing the concept of pharmaceutical care in drug service simulations through identification, analysis, and problem solving approaches related to drugs, 2) Making decisions and conducting evaluations by taking into account legal, ethical, socio-cultural and economic aspects to ensure the availability, quality and safety and effectiveness of therapy, 3) Simulating communication and interaction with patients/patient families/doctors/other health workers in drug services with/without a doctor's prescription, counseling, monitoring drug therapy, monitoring drug levels in the blood, and drug information services by showing empathy for the sake of achieved improvement in patient health, and 4) Simulating communication with other doctors/health workers by showing professionalism.
7. Course Description / Syllabus	<p>This course is delivered using a practicum method in a service setting simulation room in a pharmacy or hospital. Each meeting discusses the same study material but with different learning issues for each group (consisting of 10-12 students). At the beginning of the meeting, data related to the learning issues faced were shared by the supervisors for each group to be solved individually. Furthermore, the supervising lecturer can act as a patient/relative of a patient/doctor/other health worker (according to the case) so that students perform communication simulations. About 30 minutes before the meeting ended, a discussion was held so that students received input from the supervisor as material for evaluation and preparation of group resumes. In addition to being uploaded to the e-learning facility, resumes are presented in learning share sessions so that students can add insight by listening and discussing other learning issues for the same study material.</p>

8. Soft Skill Attributes	Discipline in participating in learning (including attending meetings and uploading assignments), activities and initiation of discussions, as well as honesty and independence in completing exams.
9. Learning Methods	Practicum with communication simulation
10. Learning Media	Electronic media, Learning Management System (LMS), Laboratory and laboratory instruments/equipment
11. Learning Assessments	Consists of components and weights: 1) Discussion (initiation and discussion material), 20% 2) Presentation (skills and presentation materials), 25% 3) Communication skills, 25% 4) Ability to solve exam questions, 30%
12. Lecturers	<p>COURSE COORDINATOR: apt. Hanni P Puspitasari, SSi, MPhil, PhD</p> <p>Members:</p> <ol style="list-style-type: none"> 01. Dr. apt. Abdul Rahem, MKes 02. apt. Ana Yuda, SSi, MFarm 03. apt. Andi Hermansyah, SFarm, MSc, PhD 04. apt. Anila Impian Sukorini, SSi, MFam 05. apt. Arie Sulistyarini, SSi, MPharm 06. apt. Arina Dery Puspitasari, SFarm, MFarmKlin 07. apt. Bambang Subakti Zulkarnain, SSi, MCLinPharm 08. apt. Catur Dian Setiawan, SFarm, MKes 09. apt. Dewi Wara Shinta, SFarm, MFarmKlin 10. apt. Dinda Monika Nusantara Ratri, SFarm, MFarmKlin 11. apt. Elida Zairina, SSi, MPH, PhD 12. apt. Gesnita Nugraheni, SFarm, MSc 13. apt. Gusti Noorrizka Veronika Achmad, SSi, MSc 14. apt. I Nyoman Wijaya, SSi, SpFRS 15. Dr. apt. Liza Pristianty, MSi, MM 16. apt. Mahardian Rahmadi, SSi, MSc, PhD 17. apt. Mareta Rindang Andarsari, SFarm, MFarmKlin 18. apt. Mufarrihah, SSi, MSc 19. apt. Pharmasinta Putri Hapsari, SFarm, MFarmKlin 20. apt. Samirah, SSi, SpFRS 21. Dr. apt. Wahyu Utami, MS 22. apt. Wenny Putri Nilamsari, SFarm, SpFRS 23. Dr. apt. Yuni Priyandani, SpFRS 24. Dr. apt. Yunita Nita, MPharm 25. apt. Zamrotul Izzah, SFarm, MSc
13. Required References	1. Alldredge BK, et al. (2013). Koda-Kimble and Young's applied therapeutics: the clinical use of drugs. Lippincott Williams & Wilkins.

	<ol style="list-style-type: none"> 2. Beardsley RS, Kimberlin CL, Tindall WN (2012). Communication skills in pharmacy practice, 6th edition. Philadelphia: Lippincott Williams & Wilkins. 3. Berardi RR, et al. (2009). Handbook of non-prescription drugs, 16th edition. American Pharmaceutical Association 4. Brunton LL, Chabner BA, Knollmann BC (2011). Goodman and Gilman's the pharmacological basis of therapeutics. McGraw-Hill Education. 5. DiPiro JT, et al. (2017). Pharmacotherapy: a pathophysiologic approach, 10th edition. McGraw-Hill. 6. Gennaro AR (2005). Remington: the science and practice of pharmacy, 21st edition. Philadelphia: Lippincott Williams & Wilkins. 7. Marriott JF et al. (2010). Pharmaceutical compounding and dispensing, 2nd edition. London: Pharmaceutical Press.
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Table 64 Pharmaceutical Manufacture

1. Course Name	Pharmaceutical Manufacture
2. Course Code	FAI401
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	7 (seven)
5. Prerequisite	Physical Pharmacy, Pharmaceuticals of Solid Preparations, Pharmaceuticals of Liquid Preparations, Pharmaceuticals of Semisolid Preparations, Analytical Chemistry, Pharmaceutical Analysis, Pharmacognosy, Phytochemistry, Phytopharmaceuticals.
6. Course Learning Outcome	At the end of the lesson with a load of 2 credits through tutorials, students will be able to formulate pharmaceutical preparations both drugs, traditional medicines, sterile preparations and cosmetics in solid form, liquid preparations, semisolid preparations based on pre-formulation considerations, formulation principles, and develop manufacturing procedures, quality control both in process control and finished products, compiling procedures for validation or verification of analytical methods, BA/BE test procedures and registration documents.
7. Course Description / Syllabus	PBL in manufacturing pharmaceutical preparations is defined as learning that combines various aspects, including aspects of Pharmacy (preformulation, formulation, quality control) and pharmaceutical analysis (analysis and validation methods) in preparing a formula design and compiling manufacturing procedures, quality control both in process control and the final product, prepare validation or verification procedures for analytical methods, BA/BE test procedures and registration documents.
8. Soft Skill Attributes	Discussion
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination, communication skills, ability to cooperate in groups, the ability to comply with academic rules, accuracy in answering assignments and exams, communication skills, compliance with academic regulations.
12. Lecturers	COURSE COORDINATOR: Dr. apt. Juni Ekowati, MSi. Members : 1. Prof. Dr. apt. Widji Soeratri, DEA 2. Prof. Dr. apt. Amiruddin Prawita

	<ol style="list-style-type: none"> 3. Prof. Dr. rer.nat. apt. M.Yuwono, MS 4. Prof. apt. Dra. Esti Hendradi, MSi, PhD 5. Dr. apt. Tristiana Erawati, MSi 6. apt. Dra. Tutiek Purwanti, MSi 7. Dr. apt. Isnaeni, MS 8. Dr. apt. Asri Darmawati, MSi 9. Prof. Dr. apt. Retno Sari, MSc 10. Dr. apt. Dewi Isadiartuti, MSi 11. Dr. apt. Noorma Rosita, MSi, Apt 12. Dr. apt. M.Agus Syamsur R, SSi., MSi 13. Prof. Dr. apt. Dwi Setyawan, SSi, MSi 14. Dr. apt. Riesta Primaharinastiti, M.Si. 15. Prof. apt. Dewi Melani H., M.Phil., Ph.D 16. apt. Helmy Yusuf, M.Sc., Ph,D 17. Dr.rer.nat. apt. M.L. Ardhani D.L., M.Pharm.Sci. 18. apt. Andang Miatmoko,Ph.D 19. apt. Dini Retnowati, M.Si. 20. apt. Kholis Amalia, M.Sc. 21. Prof. Dr. apt. Sukardiman, MS. 22. Prof. Dr. apt. Mangestuti, MS. 23. Prof. Dr. apt. Fuad H 24. Dr. apt. Aty W, MSi. 25. apt. Neny Purwitasari, SSi., MSc. 26. Dr. apt. Juni Ekowati, MSi. 27. Prof. Dr. apt. Bambang Prayogo, MS. 28. Prof. Dr. apt. Siswandono, MS 29. Dr. apt. Suzana, Msi 30. apt. Rice Disi O, SFarm., Mfarm 31. apt. Rr. Retno Widyowaty, MPharm., PhD 32. Dr. apt. Wiwied E, Msi 33. Dr. apt. Marcelino Rudyanto, Msi 34. Dr. apt. Hadi Poerwono, MSc.
13. Required References	<ol style="list-style-type: none"> 1. Pfizer Laboratories (2018) Revatio (sildenafil). Available at: http://labeling.pfizer.com/ShowLabeling.aspx?id=645. 2. Pirhayati, F. H. et al. (2017) ‘Thermodynamic solubility and density of sildenafil citrate in ethanol and water mixtures: Measurement and correlation at various temperatures’, Journal of Molecular Liquids. Elsevier B.V., 225, pp. 631–635. doi: 10.1016/j.molliq.2016.11.055. 3. Provenza, N. et al. (2014) ‘Design and physicochemical stability studies of paediatric oral formulations of sildenafil’, International Journal of Pharmaceutics. Elsevier B.V., 460(1–2), pp. 234–239. doi: 10.1016/j.ijpharm.2013.11.006. 4. Jung, S. Y. et al. (2011) ‘Comparison of the solubility and pharmacokinetics of sildenafil salts’, Archives of Pharmacal Research, 34(3), pp. 451– 454. doi: 10.1007/s12272-011-0313-y. 5. Pharmaceutical Practice 1991 Michael E , Aulton Churchill Livingstone, New York

Table 65 Thesis

1. Course Name	Thesis
2. Course Code	PNF499
3. Course Load	6 credits [Independent learning (15 hours) per week]
4. Semester	8 (eight) open semester
5. Prerequisite	Thesis Proposal
6. Course Learning Outcome	At the end of the Thesis learning, students can carry out thesis research according to scientific research principles and disseminate research results to be approved by the reviewing lecturers.
7. Course Description / Syllabus	This course presents the basics of preparation, implementation and analysis of research results for the undergraduate level, especially in the field of pharmacy as outlined in a thesis script by following the rules of scientific writing and disseminating the research in scientific forums.
8. Soft Skill Attributes	Discipline, Responsibility, Cooperation, Initiative
9. Learning Methods	Research practice, discussion and literature review
10. Learning Media	Face to face with a supervisor, can be supported by the electronic media
11. Learning Assessments	Ability to carry out research, data analysis and discussion as well as presentation in manuscripts and presentations and discussions.
12. Lecturers	COURSE COORDINATOR: Head of Study Program (apt. Chrismawan Ardianto, PhD) Members : supervisors are appointed by the Dean
13. Required References	References follow the scientific field of research being carried out.

Table 66 Pharmaceutical Management

1	Course Name	Pharmaceutical Management
2	Course Code	MNS412
3.	Course Load	4 credits [meeting (53.3 hours), independent learning/assignment (106.7 hours) per semester]
4.	Semester	8 (Eight)
5.	Prerequisite	-
6	Course Learning Outcome	After following this course, students are expected to be able to implement the concept of pharmaceutical management in all pharmaceutical practice settings.
7.	Course Description / Syllabus	Management principles, application in the pharmaceutical field in all practice settings, Management Functions and Basic Concepts of Planning in Management, Human resource management in the pharmaceutical field, HR Management in the pharmaceutical industry, Management of pharmaceutical supplies. Drug Inventory Management (Inventory Management, Aspects of production in the pharmaceutical industry Handling complaints, product returns, and withdrawals of finished products Aspects of GMP in the pharmaceutical industry, Management of distribution of pharmaceutical supplies, Aspects of CDOB in pharmaceutical preparations, Quality and quality system, Documentation in pharmaceutical practice, Management Lay Out and Arrangement of Drugs Funding Management Pharmaceutical Practices BEP Calculation, Supply Chain, Risk Management in Pharmaceutical Practices
8.	Soft Skill Attribute	Honesty, Discipline, Cooperation, Responsibility, Entrepreneurship
9.	Learning Methods	Lecture, discussion
10.	Learning Media	Electronic media, Learning Management System (LMS)
11.	Learning Assessment	Presentation, assignments, midterm and final examination
12.	Lecturers	COURSE COORDINATOR: Dr. apt. Liza Pristianty , M.Si. , MM 1. Dr. apt. Liza Pristianty , MSi ., MM. 2. apt. Ana Yuda , S.Si M. Farm . 3. Dr. apt Retno Sari M.Sc. 4. Dr. apt. Yulistiani MS 5. Dr. apt. Abdul Rahem , M.Kes . 6. apt. Andi Hermansyah , M.Sc., Ph.D. 7. apt. Catur Dian Setiawan, MSi.
13.	Required References	1. Dessele SP and Zgarrick DP, 2009. Pharmacy Management Essential for All Practice Settings, Edition 2nd, Mc Graw Hill Medical, New York, 2. Tootelian DH, Gaedeke RM, 1993. Essentials of Pharmacy Management, Mosby Year Book, Inc, 1183 Westline Industrial Drive, St. Louis,MO 63146 3. Anief, M., 2001. Manajemen Farmasi, Jogjakarta: Gadjah Mada University Press. 4. Dirjen Yanfar Alkes, 2003. Materi Pelatihan Pengelolaan Obat Di Kabupaten/Kota, Jakarta.

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| | 5. Seto, S. dan Nita, Y., 2002. Dasar-Dasar Akuntansi Untuk Apotek, Edisi II, Surabaya: Airlangga University Press. |
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Table 67 Introduction to Drug Synthesis

1. Course Name	Introduction to Drug Synthesis
2. Course Code	KIO430
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	Students have taken courses in Pharmaceutical Organic Chemistry I, Pharmaceutical Organic Chemistry II and Preparative Organic Chemistry Practicum
6. Course Learning Outcome	<ol style="list-style-type: none"> 1. Students are able to apply the principles and theories of drug synthesis in procuring drugs and making drug preparations by understanding and applying the basic science of drugs, from chemical-physical properties, pharmacology, formulations and technology. 2. Students are able to apply the principles and theories of drug synthesis in explaining the basic and applied principles in the field of drug development and medicinal ingredients in the natural and synthetic groups. 3. Students are able to apply the principles and theories of drug synthesis in explaining the basic principles and techniques of making medicinal ingredients, as well as the relationship between structural changes and biological activity. 4. Students are able to apply the principles and theories of drug synthesis in explaining the basic principles of the field of chemistry in specific applied aspects relevant to pharmacy.
7. Course Description / Syllabus	This course studies the meaning, scope and importance of synthesis in drug development, history of drug synthesis, retrosynthetic analysis, latent polarity and functional group interconversion, strategies in synthesis planning, chemoselectivity, regioselectivity, stereoselectivity, as well as some real examples of drug synthesis.
8. Soft Skill Attributes	Honesty, Discipline, Cooperation, Responsibility
9. Learning Methods	Lectures , Exercises & discussions , Assignments group
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Accuracy of answers to assignments and exams, cooperation, communication skills.
12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Suzana , MSi .</p> <p>Members :</p>

13.Required References	<ol style="list-style-type: none"> 1. apt. Drs. Hadi Poerwono , MSc., PhD. 2. apt. Drs. Marcellino Rudyanto , MSi ., PhD. 3. Dr. apt. Suzana , MSi . 4. apt. Melanny Ika Sulistyowaty , S.Farm ., MSc.,PhD . <ol style="list-style-type: none"> 1. Christine L. Willis and Martin Wills (trans. M. Rudyanto), 2004, Synthesis Organic, Surabaya: Airlangga University Press. 2. Stuart Warren & Paul Wyatt 2008, Organic Synthesis: The Disconnection Approach 2nd Ed. a John Willey & Sons Inc. Publications. 3. John Saunders, 2000, Top Drugs Top Synthetic Approach, Oxford: Oxford Science Publications. 4. Douglas S. Johnson and Jie Jack Li, 2007, The Art of Drug Synthesis, a John Willey & Sons Inc. Publications.
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Table 68 Determination of Structure Compound Organic

1. Course Name	Determination Structure Compound Organic
2. Course Code	KIO312
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	Students have taken courses in Pharmaceutical Organic Chemistry I, Pharmaceutical Organic Chemistry II, Preparative Organic Chemistry
6. Course Learning Outcome	At the end of the lesson on Determining the Structure of Organic Compounds, students can explain the basic theories of determining the structure of organic compounds and can determine organic compounds to be applied in science development and quality control.
7. Course Description / Syllabus	In this course, the basic theories of Determination of the Structure of Organic Compounds are studied and their applications. The topics covered in this course include an introduction to the determination of the structure, molecular weight and molecular formula, mass spectrometry, UV-VIS spectroscopy, IR spectroscopy, NMR spectroscopy, and their applications. In the last part students will practice determining the structure of simple organic compounds.
8. Soft Skill Attributes	Collaboration, communication, motivation &
9. Learning Methods	Group assignments and discussions
10. Learning Media	Electronic media, Learning Management System (LMS), Online Spectra Database
11. Learning Assessments	<p>Criteria:</p> <p>1) Accuracy of task answer;</p> <p>2) Accuracy of argument during discussion;</p> <p>3) Accuracy of case study analysis;</p> <p>4) Cooperation ability, communication, motivation & empathy.</p> <p>Indicators: Accuracy of answers, argument and analysis:</p> <p>A = logical, systematic, 100% complete.</p> <p>B = logical, systematic, 80% complete.</p> <p>C = logical, systematic, 60% complete.</p> <p>D = logical, not systematic.</p> <p>E = illogical.</p>

12. Lecturers	<p>Indicator No. 4 (soft skills) be a complement to the Criteria</p> <p>COURSE COORDINATOR: apt. Drs. Marcellino Rudyanto, MSi ., PhD</p> <p>Members:</p> <ol style="list-style-type: none"> 1. apt. Drs. Hadi Poerwono, MSc., PhD. 2. apt. Melanny Ika Sulistyowaty, SFarm., MSc., PhD. 3. apt. Kholis Amalia Novianti, SFarm., MSc.
13. Required References	<ol style="list-style-type: none"> 1. Pavia DL, Lampman GM, Kriz GS, Vyvyan JR. (2015). Introduction to Spectroscopy. 5th ed. Cengage Learning. 2. Field LD, Li HL, Magill AM. (2020) Organic Structures from Spectra. 6th ed. Wiley 3. 3. Silverstein RM, Webster FX, Kiemle DJ. (2005). Spectrometric Identification of Organic Compounds. 7th ed. Wiley.

Table 69 Cosmetics

1. Course Name	Cosmetics
2. Course Code	FAF302
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	6 th semester Pharmacy student who has taken the Elective course: Cosmetics explains the difference between drugs and cosmetics as well as the mechanism of action, composition and evaluation of cosmetic preparations (which include: cleanser and skin care, cleanser and hair care, moisturizer, anti aging and sunscreen), as well as packaging. cosmetics
7. Course Description / Syllabus	This course presents material on skin and hair problems, delivery of cosmetic preparation systems, mechanisms, classifications, formulas and evaluation of cosmetic products (which include: cleansing preparations, skin care, protection, skin repair), cosmetic preparation packaging, and cosmetic development technology.
8. Soft Skill Attributes	Honesty, Discipline, Cooperation, Responsibility
9. Learning Methods	Lectures , discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Using the Assessment Reference Guidelines (PAP) includes: - Ability to answer UTS questions / UTS scores - Active in discussion and question and answer - Collect assignments in the AULA on time
12. Lecturers	COURSE COORDINATOR : Prof. Dr. Widji Soeratri , DEA Members : Dr. apt. Noorma Rosita, MSi (Coordinator) Dr. apt. Tristina Erawati , MSi Dr. apt. Tutiek Purwanti , Msi
13. Required References	1. Gaurav Kumar Sharma Jayesh Gadiya Meenakshi Dhanawat, 2018, Textbook of Cosmetic Formulations.

	<ol style="list-style-type: none"> 2. Lieberman H.A, Martin M.R., Gilbert S.B,1998, Pharmaceutical Dosage Forms; Disperse Systems, Marcel Dekker, Inc, New York, 2nd Ed., Vol. 1,2 and 3 3. Florence A.T., Attwood D., 1988, Physicochemical Principle of Pharmacy. The Macmillan Press Ltd., 2nd Ed. 4. Rowe R.C, Sheskey P.J., Owen S.C., 2006, Handbook of Pharmaceutical Excipients, 5th Ed., 5. Sinko, P.J., Yashveer Singh, 2011, Martin's Physical Pharmacy and Pharmaceutical Sciences, Wolters Kluwer, London
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Table 70 Nutrition

1. Course Name	Nutrition
2. Course Code	NUF 401
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	After attending the lesson, students are expected to be able to explain the formulation of nutritional preparations: nutraceutical, enteral and parenteral by considering aspects of safety, effectiveness, acceptability and product stability as well as the application of parenteral nutritional preparations.
7. Course Description / Syllabus	This course presents the definition, ingredients, and classification of nutrition, nutrition as long as it is needed in the life cycle, safe and toxic foods, manufacturing and product properties, utilization of nutritional products, enteral and parenteral nutrition products and manufacturing parenteral nutrition products, as well as parenteral nutrition applications at the clinic.
8. Soft Skill Attributes	Discipline and Honest
9. Learning Methods	Lectures, discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Hard skills: Answering the questions correctly; Making materials and make presentations well Soft skills: discipline and honest
12. Lecturers	COURSE COORDINATOR : Prof. Dr. apt. Retno Sari, MSc. Members : 1. apt. Dra. Tutiek Purwanti, MSi.,Apt. 2. Prof. apt. Dra. Esti Hendradi,MSi.,Ph.D. 3. apt. Helmy Yusuf, SSi., MSc., PhD. 4. apt. Samirah,SSi., SpFRS
13. Required References	1. Bender,D.A. 2005. Introduction to Nutrition and Metabolism. Second Edition. Taylor and Francis: London-Philadelphia 2. DiPiro. 2008. Textbook of Pharmacotherapy. A Patophysiologic Approach 3. Annalynn Skipper (Ed). 2012. Enteral and Parenteral Nutrition, 3 rd Edition. London: Jones&Barlett Laerning 4. Trissel. 2012. Handbook of Injectable Drug

Table 71 Drug Delivery System

1. Course Name	Drug Delivery System
2. Course Code	FAT 418
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	After following this lesson with a load of 2 credits, through lectures students are able to explain the concepts of developing drug delivery systems, oral drug delivery systems, transdermal drug delivery, parenteral drug delivery, lipid-based vesicular drug delivery systems, vaccine delivery systems, micellar SOPs, and polymers in SOP development.
7. Course Description / Syllabus	Drug Delivery System discusses the concept of developing drug delivery systems, oral drug delivery systems, transdermal drug delivery, parenteral drug delivery, lipid-based vesicular delivery systems, vaccine delivery systems, micellar SOPs, and polymers in the development of SOPs.
8. Soft Skill Attributes	Honesty, Discipline, Cooperation, Responsibility
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	<ol style="list-style-type: none"> 1. Explaining the concept of SOP correctly 2. Describing aspects of oral, transdermal, parenteral, lipid, micellar, and SOP development SOPs 3. Preparing tasks related to SOP Vaccine
12. Lecturers	<p>COURSE COORDINATOR :</p> <p>Prof. apt. Dra. Esti Hendradi, MSi., Ph.D</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. apt. Dra. Esti Hendradi, MSi., Ph.D 2. Prof. apt. Dra. Retno Sari, MSc 3. Prof. Dr. apt. Dwi Setyawan, SSi., MSi 4. apt. Dewi Melani H, S.Si., M.Phil., Ph.D 5. apt. Helmy Yusuf, SSi., M.Sc., Ph.D 6. Dr. apt. Muh. Agus Syamsur R, SSi., MSi 7. apt. Andang Miatmoko, S.Farm., M.Sc., M.Pharm.Sci
13. Required References	<ol style="list-style-type: none"> 1. Hillery, A. , Lloyd, AW, Swarbrick. 2001. Drug Delivery and Targeting for Pharmacists and Pharmaceutical Scientists. New York: Taylor&Francis

	<ol style="list-style-type: none"> 2. Guy, RH and Hadgraft, J ., 2002. Transdermal Drug Delivery, 2nd Ed., Series of Drugs and Pharmaceutical Sciences, Vol. 123. Marcell Dekker 3. Birnbaun, Dt ., Peppas , LB. 2003. Microparticle Drug Delivery System In: Drug Deliver System in Cancer Therapy., New Jersey: Humana Press Inc 4. Freitas S, <i>et al.</i> 2005. Microencapsulation by Solvent Extraction/ Evaporation. J. Contr. Rails , Vol 102
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Table 72 Aromatherapy

1. Course Name	Aromatherapy
2. Course Code	FAB321
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	Pharmaceutical Botany Pharmacognosy Phytochemicals
6. Course Learning Outcome	Students are able to plan, create and evaluate aromatherapy preparations using natural ingredients in groups based on aromatherapy concepts and entrepreneurial values
7. Course Description / Syllabus	<p>In the aromatherapy course, students learn the concept of aromatherapy and its relationship to essential oils, how to manufacture, purify and control the quality of essential oils, types and dosage forms of aromatherapy, the use of aromatherapy as antibacterial, antifungal, sedative, immunodulator, analgesic, spasmolytic, mucolytic and expectorant.</p> <p>In the aromatherapy practicum, students make essential oils using the distillation method and quality control based on SNI, make several aromatherapy preparations, and arrange designs, make and evaluate aromatherapy preparations made in groups.</p>
8. Soft Skill Attributes	Honesty, Discipline, Cooperation, Responsibility
9. Learning Methods	Lectures and discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Test scores Practical activity report Score of discussion and product creation Score of discussion and presentation
12. Lecturers	<p>COURSE COORDINATOR : apt. Suciati , SSi ., MPhil., PhD</p> <p>Members :</p> <ol style="list-style-type: none"> 1. Prof. Dr. apt. Mangestuti Agil, MS 2. Dr. apt. Aty Widyawaruyanti, MS 3. Dr. apt. Wiwied Ekasari, MSi 4. Dr. apt. Idha Kusumawati, MSi 5. apt. Rr. Retno Widyowati, SSi., MSc., PhD 6. apt. Neny Purwitasari, S.Farm., MSc.

13.Required References	<ol style="list-style-type: none"> 1. K. Husnu Can Baser and Gerhard Buchbauer. Handbook of Essential Oils: Science, Technology and Applications, 2021. 3rd edition, CRC Press. Boca Raton Florida 2. Jennifer Peace Rhind. Essential Oils: A Handbook for aromatherapy practice. 2012, 2nd edition. Singing Dragon, London. 3. Robert Tisserand and Rodney Young. Essential Oil Safety: A guide for health care professionals. 2014. 2nd edition. Churchill Livingstone Elsevier. London 4. Kurt Schnaubelt. The Healing Intelligence of Essential Oils: The Science of Advanced Aromatherapy. 2011. Healing Arts Press. Toronto 5. Susan Curtis, Pat Thomas and Fran Johnson. Essential Oils. 2016. Dorling Kindersley. USA.
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Table 73 Ethnomedicine

1. Course Name	Ethnomedicine
2. Course Code	FAB322
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	Pharmaceutical Botany Pharmacognosy Phytochemicals
6. Course Learning Outcome	Students are able to understand the meaning and rules of ethnomedicine based on scientific principles in the process of developing and utilizing natural materials for medicinal purposes
7. Course Description / Syllabus	Students learn the concepts, scope, regulations, methods (survey, collection and documentation) as well as the application of ethnomedicine, which is the local wisdom of the Javanese, Sundanese, Madurese, Tengger, Osing, Balinese, NTT, Dayak, Gorontalo, Makasar, Bugis and Papuans in supporting research based on natural ingredients and use them for medicinal purposes
8. Soft Skill Attributes	Honesty, Discipline, Cooperation, Responsibility
9. Learning Methods	Lectures and discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments
12. Lecturers	COURSE COORDINATOR : Dr. apt. Wiwied Ekasari , MSi Members : 1. Prof Dr. apt. Mangestuti Agil, MS 2. Prof.Dr. Bambang Prajogo EW., MS 3. Prof. Dr. Sukardiman, MS 4. Dr. apt. Aty Widyawaruyanti, MS 5. Dr. apt. Wiwied Ekasari, MSi 6. apt. Rr. Retno Widyowati, SSi., MSc., PhD
13. Required References	1. Sukiada, K. (2016). Sistem Medis Tradisional Suku Dayak Dalam Kepercayaan Hindu Kaharingan di Kota Palangkaraya, Provinsi Kalimantan Tengah. <i>Dharmasmrti: Jurnal Ilmu Agama dan Kebudayaan</i> , 14(27), 52-67.

	<ol style="list-style-type: none"> 2. Marina Silalahi, “Studi etnomedisin di Indonesia dan pendekatan penelitiannya”. Jurnal Penelitian Universitas Kristen Indonesia Vol.9 No.3(November 2016),h.118 3. Tahir, M. Dalyan., dkk, “The Buginese’s Knowledge of Traditional Medicine in South Sulawesi”. (International Journal of Science and Research (IJSR) Vol.7 No.2, 2018) 4. Maximus M T, 2020. Etnomedisin, Nusa Tenggara Timur. 5. Kristiyanto, J., Mamosey, Welly E., Damis, M. 2020. <i>Budaya Pengobatan Etnomedisin Di Desa Porela Kecamatan PpipikOro Kabupaten Sigi Sulawesi Tengah</i>. Antropologi UNSTRAT.
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Table 74 Non-clinical Test of Natural Products

1. Course Name	Non-clinical Test of Natural Products
2. Course Code	FAB324
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	<ol style="list-style-type: none"> 1. Applying science and/or technology in the field of pharmacy through scientific reasoning based on logical, critical, systematic, and innovative thinking 2. To test the efficacy, dynamics, and kinetics of drug ingredients and drug preparations, in vitro and in vivo 3. Explain the basic and applied principles in the field of drug development and medicinal ingredients of the natural ingredients group
7. Course Description / Syllabus	Explaining the principle of preclinical testing in the development of natural medicinal products, provisions related to preclinical testing, as well as the application of preclinical testing both activity and toxicity to products made from natural ingredients in several therapeutic classes.
8. Soft Skill Attributes	Understanding, Truth, Active discussion
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: apt. Tutik Sri Wahyuni , SSi . MSi . PhD.</p> <p>Members :</p> <ol style="list-style-type: none"> 1. apt. Tutik Sri Wahyuni, SSi. MSi. PhD. 2. Prof. Dr. apt. Bambang Prajogo, MS. 3. Prof. Dr. apt. Sukardiman, MS. 4. Dr. apt. Aty widyawruyanti 5. Dr. apt. Wiwied Ekasari 6. Dr. apt. Idha Kusumawati 7. apt. Retno Widyowati, PhD
13. Required References	<ol style="list-style-type: none"> 1. WHO. 2000. <i>General Guidelines for Methodologies on Research and Evaluation of Traditional Medicine.</i>

	<ol style="list-style-type: none"> 2. Mark C. Rogge, David R. 2005. <i>Preclinical Drug Development</i>, Tylor nd Francis. 3. Wiley. 2010. <i>Evaluation of drug candidate for Preclinical Development: Pharmacokinetics, metabolism, Pharmaceutics and Toxicology</i>. 4. Peraturan BPOM, No 7 tahun 2014, <i>Pedoman uji toksisitas non klinik in vivo</i>. 5. EOCd 425, Acute oral toxicity
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Table 75 Pharmaceutical Quantitative Research Methodology

1. Course Name	Pharmaceutical Quantitative Research Methodology
2. Course Code	PNF481
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	Students are able to understand the research methods used in quantitative research in the field of practical pharmacy and are able to prepare a thesis proposal design (Background, Objectives, Problem Formulation, Hypotheses, Conceptual Framework and Methods) including the preparation of research instruments and data processing with statistical software
7. Course Description / Syllabus	The material will be delivered face-to-face in the form of lectures, discussions, case studies and student presentations. The material discussed includes research methods and designs, titles, formulations
8. Soft Skill Attributes	Honesty, Discipline, Cooperation, Responsibility
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: apt. Elida Zairina , S.Si., MPH , PhD</p> <p>Members :</p> <ol style="list-style-type: none"> 1. apt. Elida Zairina, S.Si., MPH., PhD. 2. Dr. apt. Yunita Nita, S.Si.,M.Pharm 3. apt. Arie Sulistyarini, S.Si.,M.Pharm 4. apt. Gesnita Nugraheni, S.Farm, MSc
13. Required References	<ol style="list-style-type: none"> 1. Jan E. Allen, Chris M. Golde. 2019. The Productive Graduate Student Writer: How to Manage Your Time, Process, and Energy to Write Your Research Proposal, Thesis, and Dissertation and Get Published, Stylus P. 2. Babar, Zaheer-Ud-Din (Ed). 2018. Pharmacy Practice research Methods, Elsevier. 3. Ho, Robert. 2018. Understanding Statistics for the Social Sciences with IBM SPSS, CRC Press.

	<p>4. Jason Seawright, Jason. 2016. Multi-Method Social Science: Combining Qualitative and Quantitative Tools, Cambridge University Press.</p> <p>5. John W. Creswell. 2013. Research Design: Qualitative, Quantitative, and Mixed Method Approaches, SAGE Publications.</p>
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Table 76 Pharmaceutical Qualitative Research Methodology

1. Course Name	Pharmaceutical Qualitative Research Methodology
2. Course Code	PNF482
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	After completing this course, students are expected to be able to explain the application of qualitative research methods in the pharmaceutical field and design qualitative research designs according to the topic of the final research to be carried out.
7. Course Description / Syllabus	This course is delivered using the lecture method, discussion of the results of the study of scientific publications, and presentations of qualitative research designs that have been prepared. The materials discussed include: data sources, types of analysis designs, data analysis processes, and principles of writing qualitative research results.
8. Soft Skill Attributes	Honesty, Discipline, Cooperation, Responsibility
9. Learning Methods	Lectures, discussions, presentations
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	COURSE COORDINATOR: apt. Hanni Prihastuti Puspitasari, SSi , MPhil, PhD. Members : 1. apt. Andi Hermansyah, SFarm, MSc, PhD. 2. apt. Hanni Prihastuti Puspitasari, SSi, MPhil, PhD.
13. Required References	1. Aparasu R. 2011. <i>Research methods for pharmaceutical practice and policy</i> . London: Pharmaceutical Press. 2. Birks M, Mills J. 2011. <i>Grounded theory: a practical guide</i> . London: SAGE. 3. Bowling A. 2009. <i>Research methods in health: investigating health and health services</i> , 3 rd edition. Berkshire: McGraw-Hill. 4. Bryman A. 2008. <i>Social research methods</i> . New York: Oxford University Press.

	5. Creswell JW. 2013. <i>Qualitative inquiry and research design: choosing among five approaches</i> , 3 rd edition. Thousand Oaks: SAGE.
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Table 77 Pharmacogenomics

1. Course Name	Pharmacogenomics
2. Course Code	FAT321
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	After following this course, undergraduate students in Pharmacy are expected to be able to understand the concepts of pharmacogenomics and implementation in the pharmaceutical field, genetic polymorphisms and drug effects, pharmacogenomic relationships on drug kinetics, pharmacogenomic relationships on drug dynamics.
7. Course Description / Syllabus	After following this course, undergraduate students (S1) in Pharmacy are expected to be able to understand and explain the concepts of pharmacogenomics, precision medicine and individual therapy; the influence of genomic aspects on drug pharmacokinetics in the absorption, distribution, metabolism and excretion phases; influence of genomic aspects on drug pharmacodynamics (drug effect on target receptors & transporters); implementation of pharmacogenomics in the treatment of diseases of the endocrine system, central nervous system and cardiovascular system; pharmacogenomic analysis methods, principles and applications of epigenetics in disease development and treatment; Ethics and regulation in the implementation of pharmacogenomics and current trends in pharmacogenomics research
8. Soft Skill Attributes	Discipline
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	COURSE COORDINATOR: apt. Mahardian Rahmadi . MSc., PhD. Members : 1. apt. Mahardian Rahmadi. MSc., PhD. 2. apt. Chrismawan Ardianto, MSc., Ph.D. 3. Prof. apt. Junaidi Khotib, M.Kes., Ph.D.

<p>13. Required References</p>	<p>4. Prof. Dr. apt. Sujarwo, M.S.</p> <ol style="list-style-type: none"> 1. Bertino JS, Kashuba A, Ma JD, Fuhr W. 2012. <i>Pharmacogenomics An Introduction and Clinical Perspective, 1 edition</i>. McGraw-Hill Professional. 2. Altinan RB, Flockhart D, Goldstein DB. 2012. <i>Principles of Pharmacogenetics and Pharmacogenomics, 1 edition</i>. Cambridge University Press. 3. Zdanowicz MM. 2010. <i>Concepts in Pharmacogenomics (Zdanowicz, Concepts in Pharmacogenomics), 1 edition</i>. Cambridge University Press. <i>1 edition</i> . Cambridge University Press.
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Table 78 Dependency on Drugs and Other Addictive Substances

1. Course Name	Dependency on Drugs and Other Addictive Substances
2. Course Code	FAT322
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	Students can explain the meaning of drug and other addictives dependence, Anatomy, physiology and pathophysiology of dependence, addiction in the central nervous system, types and classifications of drugs and other addictive substances chemically and pharmacological effects, Mechanisms of action of drugs and other addictive substances in causing dependence, Legislation in the world and in Indonesia related to the abuse of drugs and other addictive substances, principles and management of drug and other addictive substance dependence therapy, identification and proof of the use of drugs and other addictive substances, strategies for preventing drug and other addictive substance abuse.
7. Course Description / Syllabus	This course contains an introduction to explain the meaning of drug dependence and other addictions, physiology and pathophysiology of dependence, addiction in the central nervous system, types and classifications of drugs and other addictive substances chemically and pharmacological effects, Mechanism of action of drugs and other addictive substances in causing dependence , Laws and regulations in the world and in Indonesia related to the abuse of drugs and other addictive substances, principles and management of drug dependence therapy and other addictive substances, strategies for preventing drug and other addictive substances abuse.
8. Soft Skill Attribute	Discipline
9. Learning Methods	Electronic media, Learning Management System (LMS)
10. Learning Media	E-learning aula, zoom platform
11. Learning Assessments	Hard skill: Assignments, midterm and final examination Soft skills: Discipline
12. Lecturers	COURSE COORDINATOR: apt. Mahardian Rahmadi . MSc., PhD. Members: 1. apt. Mahardian Rahmadi. MSc., PhD. 2. apt. Chrismawan Ardianto, MSc., Ph.D.

13.Required References	<ol style="list-style-type: none"> 1. Brunton, LL., 2017, Goodman and Gilman's The Pharmacological Basis of Therapeutics, 13th Edition, McGraw-Hill Education, New York 2. Katzung, B.G., Vanderah, T.W., 2020, Basic and Clinical Pharmacology, 15th edition, McGraw-Hill Education, New York 3. Neal, M.J., 2020, Pharmacology At a Glance, 9th edition, Wiley-Blackwell, New Jersey 4. Dep. Farmakologi dan Terapetik, 2015, Farmakologi dan Terapi, edisi 6, FKUI, Jakarta
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Table 79 Drug Use Evaluation

1. Course Name	Drug Use Evaluation
2. Course Code	FAT324
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	Students are able to design and carry out an evaluation of drug use using appropriate evaluation methods and parameters so that valid results are obtained in order to improve the quality of drug use.
7. Course Description / Syllabus	This course covers the scope of drug use studies; design, method, and unit of measurement used in evaluating drug use; as well as the application of the study of drug use in various conditions.
8. Soft Skill Attributes	Discipline
9. Learning Methods	Online
10. Learning Media	Zoom Platform, E-Learning aula
11. Learning Assessments	Hard skill: Assignments, midterm and final examination Soft skills: Discipline
12. Lecturers	COURSE COORDINATOR: apt. Dewi Wara Shinta, M.Farm.Klin. Members : apt. Dewi Wara Shinta, M.Farm.Klin
13. Required References	1. Elsevier, M. et al., 2016, <i>Drug Utilization Research</i> , Methods and Application, John Wiley & Sons, Ltd, UK 2. WHO. 1993. <i>How to investigate drug use in health facilities: selected drug use indicators</i> .

Table 80 Translational Study

1. Course Name	Translational Study
2. Course Code	PNF483
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	After completing this 2-credit course, students are expected to be able to design and understand appropriate translational research so that valid results are obtained in order to carry out translational research
7. Course Description / Syllabus	This course includes Introduction to translational research, preclinical research, animal models, translational pharmacogenetics and PCR, translational research on bone and joint, translational research on neuroscience and stroke, statistics supporting translational research, transitioning research from preclinical to clinical.
8. Soft Skill Attributes	Participation, Effective Communication and Critical Thinking Online
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Hard skill: Midterm and final examination Soft skills: Participation, effective communication and critical thinking
12. Lecturers	COURSE COORDINATOR: Samirah , S.Si., SpFRS Members 1. Samirah, S.Si,SpFRS 2. Dr. Aniek Setiya Budiadin, M.Si, 3. Prof. Junaidi Khotib, M.Kes, PhD
13. Required References	1. Martin Wehling <i>et al.</i> , 2021, Principles of Translational Science in Medicine from Bench to Bedside, 7 th edition, Elsevier 2. Woolf, SH, 2008, The meaning of Translational research and why it matters, JAMA 299, 211-213

Table 81 Food Pharmacy and Additives

1. Course Name	Food Pharmacy and Additives
2. Course Code	KIA311
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	Pharmaceutical Analysis
6. Course Learning Outcome	Students can explain and identify foods that have health functions, explain the function and correct use of food additives, apply the principles of qualitative and quantitative analysis of food additives and contamination in food.
7. Course Description / Syllabus	This course covers the study areas of: functional food, analysis of essential ingredients in functional food, food additives, analysis of food additives and contamination in food.
8. Soft Skill Attributes	Communication skills
9. Learning Methods	Lectures and discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignment
12. Lecturers	Course Coordinator: Dr. Nuzul Wahyuning Diyah, M.Si., Apt. Members: 1. Prof. Dr. Djoko Agus Purwanto, M.Si., Apt. 2. Dr. Nuzul Wahyuning Diyah, M.Si., Apt. 3. Dr. Riesta Primaharinastiti, M.Si., Apt. 4. Melanny Ika Sulistyawati, M.Sc., PhD., Apt. 5. Febri Annuryanti, M.Sc., Apt.
13. Required References	1. Handbook of Nutraceuticals and Functional Foods, second Edition. 2007. Wildman, REC CRC Press, Boca Raton. 2. Peraturan Kepala BPOM No. HK 00.0s.52.0685 tentang Ketentuan Pokok Pengawasan Pangan Fungsional. 2005. BPOM RI. BPOM RI, Jakarta. 3. Food Chemistry, 4th revised edition. 2009. Belitz, H.D., Grosch, W., Schieberle, P. Springer-Verlag, Berlin. 4. Farmakope Indonesia V. 2007. Departemen Kesehatan RI Departemen Kesehatan RI 5. Functional Food Carbohydrates. 2007. Biliaderis, CG., Izydorczyk, MS. CRC Press, Boca Raton.

	<ol style="list-style-type: none"> 6. Chemistry of Food Additives and Preservatives. 2012. Msagati, T.A.M. Wiley-Blackmell. 7. Handbook of Disinfectant and Antiseptics. 2005. Ascenzi, J.M. CRC Press. 8. Safety evaluation of certain food additives. 2010. Joint FAO/WHO Expert Committee on Food Additives. Meeting; World Health Organization. International Program on Chemical Safety, WHO 9. Chemical Analysis of Food, First edition. 2012. Pico, Y. Elsevier. 10. Analysis of pesticides in food and environmental samples. 2008. Tadeo, J.L. CRC Press
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Table 82 Phytotherapy

1. Course Name	Phytotherapy
2. Course Code	FAB323
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	Students have taken courses in Pharmaceutical Botany, Pharmacognosy and Phytochemistry
6. Course Learning Outcome	At the end of the Phytotherapy course, students are able to explain the concept of using plant materials and important chemical compounds derived from plants in the treatment of various diseases in society.
7. Course Description / Syllabus	In this Phytotherapy lecture, students are taught about the use of plants containing efficacious chemical compounds in the treatment of various diseases, such as: gastro-intestinal disorders, cardiovascular system, respiratory system, central nervous system, infectious diseases, endocrine system and urinary tract, reproductive system, musculoskeletal system, skin, eyes, ears, nose and nasopharynx, as well as supportive and protective therapy (cancer, tonic, adaptogen, immunostimulant).
8. Soft Skill Attributes	Honest, responsible, disciplined, independent, communication skills
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignment
12. Lecturers	<p>COURSE COORDINATOR: Dr. Aty Widyawaruyanti, MSi, Apt.</p> <p>Members:</p> <ol style="list-style-type: none"> 1. Prof. Dr. Mangestuti Agil, MS, Apt 2. Prof. Dr., Achmad Fuad Hafid., MS., Apt 3. Prof. Dr., Sukardiman, MS, Apt. 4. Dr. Aty Widyawaruyanti, MSi, Apt. 5. Dr. Wiwied Ekasari, MSi., Apt. 6. Idha Kusumawati, MSi., Apt. 7. Rr.Retno Widyowati, MSc., PhD., Apt. 8. Tutik Sri Wahyuni, MSi, Ph.D., Apt. 9. Suciati, M.Phil, Ph.D., Apt 10. Neny Purwitasari, S.Si, M.Sc., Apt.

13. Required References	<p>11. Rice Disi Oktarina, S.Farm., M.Farm, Apt.</p> <ol style="list-style-type: none"> 1. Heinrich, et al., 2017, Fundamentals of Pharmacognosy and Phytotherapy (e-book), 3rd ed, Elsevier 2. World Health Organization, 2007, WHO monographs on Selected Medicinal Plants, Vol.3, Spain : WHO Press 3. Kemenkes RI, 2017, Farmakope Herbal Indonesia, Ed.2, Jakarta
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Table 83 Forensic chemistry

1. Course Name	Forensic chemistry
2. Course Code	KIA305
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	Pharmaceutical Analysis
6. Course Learning Outcome	After taking this course, students are able to explain forensic chemical molecular analysis methods related to blood type, DNA fingerprinting, kinship as well as drug and doping analysis.
7. Course Description / Syllabus	This course is given using lecture and discussion methods which include: how to identify blood groups, determine a child's blood group, PCR analysis, electrophoresis, use of endonuclease enzymes, drug analysis and analysis of doping drugs.
8. Soft Skill Attributes	Communication skills
9. Learning Methods	Lectures, discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments and Final Examination
12. Lecturers	<p>COURSE COORDINATOR: Prof. Dr. Djoko Agus Purwanto, Apt. MSi</p> <p>Members: 1. Prof. Dr. Djoko Agus Purwanto, Apt. MSi 2. Prof. Dr. rer. nat. M Yuwono., MS., Apt 3. Dr. Magdalena Sri Handayani, Apt.</p>
13. Required References	1. Anthony C. Moffat, M. David Osselton, and Brian Widdop, 2001. Clarke's Analysis of Drugs and Poisons, 4th ed., London: Pharmaceutical Press. 2. Kokate, C.K., and Gokhale, S.B., 2008. Text Book of Forensic Pharmacy. 1st ed., PharmaMed Press, Giriraj Lane, Sultan Bazar, Hyderabad - 500 095. 3. UNDANG-UNDANG REPUBLIK INDONESIA NOMOR 35 TAHUN 2009 TENTANG NARKOTIKA 4. UNDANG-UNDANG REPUBLIK INDONESIA NOMOR 5 TAHUN 1997 TENTANG PSIKOTROPIKA

	<ol style="list-style-type: none"> 5. Nelu Grinberg, Sonia Rodriguez (Editor), 2019. Ewing's Analytical Instrumentation Handbook, 4th edition, New York, CRC Press. 6. World Anti Doping Agency. Prohibited List. https://www.wada-ama.org 7. Detlef Thieme, Peter Hemmersbach (eds.), 2010, Doping in Sports: Biochemical Principles, Effects and Analysis, Berlin, Springer Verlag
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Table 84 Pharmaceutical Marketing and Logistics

1. Course Name	Pharmaceutical Marketing and Logistics
2. Course Code	MNP311
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	Students are able to explain the basic theory of marketing, management and distribution of pharmaceutical logistics and are able to design marketing plans for various pharmaceutical activities.
7. Course Description / Syllabus	This Marketing course is delivered using lecture, discussion and presentation methods. The material discussed in the lecture and discussion topics includes Marketing Concepts, Analyzing Consumer Markets and Human Behavior, Building Value Satisfaction and Retaining Customers, Positioning Market Offerings Throughout the Product Life Cycle, Managing Marketing Channels, and Service Marketing, pharmaceutical logistics management and distribution. Sharing with practitioners. Meanwhile, the presentation material includes marketing plan material in various pharmaceutical activities.
8. Soft Skill Attributes	Communication skills, and discipline
9. Learning Methods	Lectures, discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	COURSE COORDINATOR: Dr. apt. Liza Pristianty M.Si., M.M. Members: 1. Dr. apt. Liza Pristianty M.Si., M.M. 2. Apt. Anila Impian Sukorini, M.Farm. 3. Dr., apt. A.Rahem., MKes 4. Apt. Ana Yuda, M.Farm
13. Required References	1. Kotler Philip, Marketing Management, International ed, 13th edition, 2009 2. Holdford David, Marketing for Pharmacists, American Pharmaceutical Association, Washington, 2003

	<ol style="list-style-type: none"> 3. Martha Embrey. MDS-3: Managing Access to Medicines and Health Technologies. Management Sciences for Health, Arlington, VA, 2012 4. ASHP. Basic Skills in Clinical Pharmacy Practice. North Carolina: Health Sciences Consortium Inc; 1983 5. Hughes, J. Clinical Pharmacy: A Practical Approach. 2nd edition. 2002. p. 1-7 6. Walker R, Edwards C. Clinical Pharmacy and Therapeutics. 2nd edition. Edinburgh: Churchill Livingstone; 1999. p.33-45 7. Speight TM, Holford NHG. Avery's Drug Treatment. 4th edition. Auckland: Adis International; 1997. p.261-338 8. Collett DM, Aulton ME. Pharmaceutical Practice. Churchill Livingstone; 1990. p.339-372 9. Mayne PD. Clinical Chemistry in Diagnosis and Treatment. 6th Ed. 1994 10. Cohen MR. Medication Errors. American Pharmaceutical Association. 1999 11. Malone PM, Mosdell KW, Kier KL, Stanovich JE. Drug Information a Guide for Pharmacist. 2nd edition. McGraw Hill. 1996
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Table 85 Drug quality

1. Course Name	Drug quality
2. Course Code	FAT323
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	<p>After taking this course, students in the Bachelor of Pharmacy (S1) program are able to relate drug design, product quality, effectiveness and safety to product standards in compendials, regulations and pharmaceutical technology development. For this reason, the CPMK is systematically as follows:</p> <ol style="list-style-type: none"> (1) Explain drug design, drug development and requirements based on compendials (general and special requirements) as well as the application of quality by design in product quality assurance (2) Explain the quality of drugs and their assessment (effectiveness, efficacy and safety) (3) Linking drug quality with applicable regulations (Indonesia, Southeast Asia, America, European Union and their harmonization) (4) Explain the quality of the innovator drug (5) Explain the quality of generic drugs and interchangeability (6) Explain the quality and similarity of biopharmaceutical products (7) Linking quality with the effectiveness of drug use in its application in clinics
7. Course Description / Syllabus	<p>The Medicine Quality course presents the scope and benefits of medicine quality and its standardization as well as the application of quality by design in guaranteeing medicinal products; relationship between drug design and drug product quality based on compendials both in general and specific requirements; study of drug quality and assessment of its effectiveness, efficacy and safety; the relationship between drug quality and applicable regulations both in Indonesia, ASIAN harmonization and ICH countries; study of the quality of innovator drugs and their assessment, study of the quality of generic medicines and interchangeability, study of the quality of biopharmaceutical products and their similarities and the relationship between quality and effectiveness, efficacy and safety in their use.</p>
8. Soft Skill Attributes	Perseverance and discipline, analytical skills, self-learning abilities and fostering long life learning
9. Learning Methods	Lecture

10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	<p>COURSE COORDINATOR: Prof. Junaidi Khotib, S.Si, Apt, M.Kes, Ph.D</p> <p>Member: Prof. Junaidi Khotib, S.Si, Apt, M.Kes, Ph.D</p>
13. Required References	<ol style="list-style-type: none"> 1. Schlindwein WS, Gibson M, Pharmaceutical Quality by Design: A Practical Approach (Advances in Pharmaceutical Technology) 1st Edition, Willey, 2018 2. Allport-Settle MJ, International Conference on Harmonisation (ICH) Quality Guidelines: Pharmaceutical, Biologics, and Medical Device Guidance Documents Concise Reference, PharmaLogica, 2010 3. Avis KE, Wagner CM, Wu VL, Biotechnology: Quality Assurance and Validation (Drug Manufacturing Technology Book 4) 1st Edition, CRC Press, 2020 4. Jameel F, Herhenson S, Khan MA, Martin-Moe S, Quality by Design for Biopharmaceutical Drug Product Development (AAPS Advances in the Pharmaceutical Sciences Series Book 18) 2015 th Edition, AAPSPress-Springer, 2015

Table 86 Drug Design

1. Course Name	Drug Design
2. Course Code	KIM303
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	Physical Chemistry, Pharmaceutical Organic Chemistry, Pharmacology and Toxicology
6. Course Learning Outcome	After following this learning, students are able to apply (C5) understanding of new drug development to the pharmaceutical field, especially in rationally designing and developing drugs, and using them in drug development research.
7. Course Description / Syllabus	The Drug Design course presents material that contains the scope and benefits of drug design, activities in drug design, design of agonist and antagonist compounds, and rational drug design, steps in developing new drugs, structure modification in drug development, quantitative relationships between structure and activity in drug development, methods for optimizing parent compounds, and the relationship between structure, metabolism and drug development. Also computer practice for predicting pharmacokinetic properties (ADMET) and biological activity of drugs.
8. Soft Skill Attributes	Dicipline
9. Learning Methods	Lecture, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignments, midterm and final examination
12. Lecturers	COURSE COORDINATOR: Prof. Dr. Siswandono, M.S. Members: 1. Prof. Dr. Siswandono, M.S., 2. Prof. Dr. Suko Hardjono, M.S., 3. Prof. Dr. Bambang Tri Purwanto, M.S. 4. Dr. Nuzul Wahyuning Diyah, M.Si
13. Required References	1. Siswandono, ed., 2016. Kimia Medisinal I, Edisi Kedua, Surabaya: Airlangga University Press 2. Siswandono, 2014. Pengembangan Obat Baru. Surabaya: Airlangga University Press.

	<ol style="list-style-type: none"> 3. Beale, J.M. and Block, J.H. eds., 2011. Wilson and Gisvold's Textbook of Organic Medicinal and Pharmaceutical Chemistry. 12th ed., Philadelphia: Lippincott Williams & Wilkins. 4. Singh, D.B., 2020. Computer-Aided Drug Design, Singapore: Springer Nature SingaporePte Ltd. 5. Cavasotto, C.N., ed., 2016. In Silico Drug Discovery and Design; Theory, Methods, Challenges, and Applications. Boca Raton: Taylor & Francis Group, LLC. 6. O'Donnell, J.J., Somberg, J., Idemyor, V., O'Donnell, J.T., 2020. Drug Discovery and Development, 3rd ed., Boca Raton: Taylor & Francis Group, LLC. 7. Tutorial dalam Program Komputer ChemDraw 19, AutoDock 4.2 dan Molegro 5.5.
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Table 87 Pharmaceutical Information and Communication Technology

1. Course Name	Pharmaceutical Information and Communication Technology
2. Course Code	SOK376
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	Odd and Even (open semester)
5. Prerequisite	-
6. Course Learning Outcome	At the end of the lesson, students can explain and provide examples related to theories and concepts of information and communication technology in the pharmaceutical sector and are able to create scientific ideas in the form of written works, papers, designs, product designs, reports or promotional materials related to the application of information and communication technology in pharmaceutical sector.
7. Course Description / Syllabus	This course presents theories, concepts and techniques as well as examples of the application of information and communication technology in the pharmaceutical sector, including the role and relevance of information and communication technology in the pharmaceutical sector, digital pharmaceutical care and patient medication safety, legal and regulatory aspects of information and communication technology, telemedicine and telepharmacy, implementation of electronic pharmaceutical systems, data and information management, use of social media for pharmaceutical practice, management information systems in pharmacies, electronic consumer service and digital marketing concepts, and prospects for the use of cutting-edge technology in pharmacies (emerging technology).
8. Soft Skill Attributes	Communication and argumentation skills, teamwork ability
9. Learning Methods	Lectures, discussions
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	Assignment
12. Lecturers	COURSE COORDINATOR: apt. Andi Hermansyah, MSc., PhD Members: 1. apt. Andi Hermansyah, MSc., PhD 2. apt. Catur Dian Setiawan, MKes 3. apt. Anila Impian Sukorini, MFarm

<p>13. Required References</p>	<ol style="list-style-type: none"> 4. apt. Dinda Monika Nusantara R, MFarm Klin 5. apt. Ari Kurnianingsih, MFarm. Klin 6. apt. Nasrul Wathoni, PhD <ol style="list-style-type: none"> 1. Goundrey-Smith, S. (2012). Information Technology in Pharmacy: An Integrated Approach. Springer Science & Business Media. 2. Babar, Zaheer-ud-Din. (2019). Encyclopedia of Pharmacy Practice and Clinical Pharmacy. Elsevier 3. Agboola, S. O., Bates, D. W., & Kvedar, J. C. (2016). Digital health and patient safety. <i>Jama</i>, 315(16), 1697-1698. 4. Cruz, A. et al. (2020). Digital and social media marketing: a results-driven approach. Routledge 5. Hermansyah, A., Sukorini, A. I., Asmani, F., Suwito, K. A., & Rahayu, T. P. (2019). The contemporary role and potential of pharmacist contribution for community health using social media. <i>Journal of basic and clinical physiology and pharmacology</i>, 30(6). 6. Bashshur, R., & Shannon, G. W. (2009). History of telemedicine: evolution, context, and transformation (Vol. 2009). New Rochelle, NY: Mary Ann Liebert. 7. UU No. 36 tahun 2009 tentang Kesehatan 8. PP No. 51 tahun 2009 tentang Pekerjaan Kefarmasian 9. PMK No. 26 tahun 2018 tentang Pelayanan Perizinan Berusaha Terintegrasi Secara Elektronik Sektor Kesehatan 10. PMK No. 14 tahun 2021 tentang Standar Kegiatan Usaha dan Produk Pada Penyelenggaraan Perizinan Berusaha Berbasis Risiko Sektor Kesehatan
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Table 88 Quality Management

1. Course Name	Quality Management
2. Course Code	FAF502
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	9-10 (nine or ten)
5. Prerequisite	-
6. Course Learning Outcome	After completing this course, students will be able to: <ol style="list-style-type: none"> 1. Designing quality assurance for pharmaceutical preparations by complying with quality assurance system standards 2. Designing the development of pharmaceutical preparation products by considering the developments of science and technology
7. Course Description / Syllabus	Quality Management discusses: Quality and Quality Systems, Validation of Analytical Methods, Production Process Evaluation (SPC), Stability Testing, Development of Analytical Methods, Risk Management, Development of Analytical Methods, Cleaning Validation, Quality Control in the Distribution Chain.
8. Soft Skill Attributes	Discipline (including attending meetings and uploading assignments), honesty, responsibility, communication skills.
9. Learning Methods	Lectures, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	The learning assessment consists of the following components: <ol style="list-style-type: none"> 1) Assigment (case), 50% 2) Exam, 50%
12. Lecturers	COURSE COORDINATOR: Prof. Dr. Retno Sari, M.Sc., Apt Members: <ol style="list-style-type: none"> 1. Prof. Dr. rer.nat. Moch. Yuwono, MS., Apt. 2. Prof. Dr..Dwi Setyawan, S.Si., MSi., Apt. 3. Dr. Dewi Isadiartuti, MS..Apt. 4. Sentot Purwandi, S.Si., Apt. 5. Drs. Imam Muchlis, M.Farm., Apt. 6. Dewi Ratnawati, S.Farm., Apt.
13. Required References	<ol style="list-style-type: none"> 1. Peraturan Kepala Badan POM RI No HK.03.1.33.12.12.8195 Tahun 2012 tentang Penerapan CPOB

	<ol style="list-style-type: none"> 2. Petunjuk Operasional Penerapan Pedoman CPOB 2012 Jilid II POPP-04/CPOB 3. Guide to good manufacturing practice for medicinal products Annex 15 tahun 2015 4. Guidelines for Failure Modes & Effect Analysis for Medical Devices, Dyadem Press , 2003 5. Frank, T., et al. 2011. PQRI Case Study (1): Defining Process Design Space A Risk-Management Case Study (Part 1) 6. Frank, T., et al. 2008. Quality Risk Management and Industry Case Study 7. Mc Dermot, R.E., Mikulak, R.J., Beauregard, M.R. 2009. The Basic of FMEA, Taylor & Francis Group, New York 8. Morvai, M. 2011. Risk Management in Pharma Industry 9. Mollah, A.H., Long, M., Baseman, H.S. 2013. Risk Management Application in Pharmaceutical and Biopharmaceutical Manufacturing, Wiley & Sons, New Jersey 10. Snyder LR, Glajch JL, dan Kirkland JJ. 1997. Practical HPLC Method Development. 2nd Edition, John Wiley & Sons, New York 11. Kromidas S. 2006. HPLC Made to Measure. A Practical Handbook for Optimization. Wiley-VCH 12. Kazakevich Y., LoBruto R. 2007. HPLC for Pharmaceutical Scientists. Wiley-Interscience,
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Table 89 Production Management

1. Course Name	Production Management
2. Course Code	MNG501
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	9-10 (nine or ten)
5. Prerequisite	-
6. Course Learning Outcome	After completing the Production Management course, students are expected to be able to explain the application of production management systems in the pharmaceutical industry in accordance with Good Manufacturing Practice (GMP) standards.
7. Course Description / Syllabus	Production Management discusses the GMP, Product Development (QDB), Production Aspects in the Pharmaceutical Industry, HR Management in the Pharmaceutical Industry, Handling Complaints, Returned Products and Withdrawals of Finished Products, Waste Handling, Support Units, Supply Chain.
8. Soft Skill Attributes	Discipline (including attending meetings and uploading assignments), honesty, responsibility, communication skills.
9. Learning Methods	Lectures, discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	The learning assessment consists of the following components: 1) Assingment, 50% 2) Exam, 50%
12. Lecturers	COURSE COORDINATOR: Prof. Dr. Retno Sari, MSc., Apt. Members: 1. Dr. Sugiyartono, MS., Apt. 2. Dr. Muh. Agus Syamsur Rijal, S.Si, 3. Dra. Ferial Baswedan, MM., Apt. 4. Dr. Sugiyartono. MS., Apt. 5. Ir. Novian Zein, SE, MBA. 6. Bambang Djati Sasongko, SSi. , Apt. 7. Drs. Adi Suroso, Apt. 8. Drs. Mursyam, Apt. 9. Hilmi Gatneh, S.Si., Apt.
13. Required References	1. Pedoman Cara Pembuatan Obat Yang Benar, 2012, Badan POM RI

	<ol style="list-style-type: none"> 2. Petunjuk Operasional Penerapan Pedoman CPOB 2012 3. PIC/S Guide to good manufacturing practice for medicinal products Annex 15 tahun 2015 (PS/INF 11/2015) 4. Badan POM RI, Peraturan Kepala Badan POM RI No HK.03.1.33.12.12.8195 ,Tahun 2012 tentang Penerapan CPOB 5. Buku Etik dan Disiplin Aopteker Indonesia, 2014, Pengurus Pusat Apoteker Indonesia. 6. Besterfield, D.H., 1998, Quality Control, 5th Ed, Prentice-Hall International, Inc., New Jersey, 457-477 7. CDOB 2012 8. BPOM, Regulasi Pengelolaan Distribusi Obat Dan Urgensi Sertifikasi CDOB, 2017 9. Kementrian Kesehatan Republik Indonesia, Kebijakan Dan Implementasi Sistem Distribusi Obat
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Table 90 Applied Pharmacokinetics

1. Course Name	Applied Pharmacokinetics
2. Course Code	FAK501
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	9-10 (nine or ten)
5. Prerequisite	-
6. Course Learning Outcome	After completing this course students are expected to be able to determine general dosage regimens for a medicinal product/clinical condition; create drug dosage regimens for kidney failure and/or hemodialysis patients; create drug dosage regimens for patients with liver disorders; create drug dosage regimens for pediatric patients; create drug dosage regimens for obese patients; create a drug dosage regimen for pregnant and breastfeeding women.
7. Course Description / Syllabus	The Applied Pharmacokinetics course covers the principles of estimating general/individual drug regimens for Multiple Dosage Rules, Patients with Renal Failure and/or Hemodialysis, Patients with Hepatic Disorders, Pediatric Patients, Obese Patients, Pregnant and Breastfeeding Women.
8. Soft Skill Attributes	Critical thinking, logical thinking, systematic, comprehensive and scientifically-academic validity.
9. Learning Methods	Lectures, case study discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	The learning assessment consists of the following components: Exam 100%
12. Lecturers	COURSE COORDINATOR: Prof. Dr. Budi Suprapti, MSi., Apt. Members: 1. Prof. Dr. Budi Suprapti, MSi., Apt. 2. Drs. Didik Hasmono, M.Si., Apt.
13. Required References	1. Shargel L, Wu-Pong S, Yu ABC, 2016. Applied Biopharmaceutics & Pharmacokinetics, 5ed. New York: McGraw-Hill Medical Publishing Division, pp.51-72, 108-129, 613-672. 2. Rowland M, & Tozer TN, 2011. Clinical Pharmacokinetics . Concepts and Applications, 4 rd ed. Baltimore: Lea & Febiger Book.

Table 91 Applied Pharmacotherapy

1. Course Name	Applied Pharmacotherapy
2. Course Code	FAT501
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	9-10 (nine or ten)
5. Prerequisite	-
6. Course Learning Outcome	After completing this course, students are expected to be able to assess the rationality of drug therapy in diseases such as infections, diabetes mellitus, gastrointestinal tract, bones and joints, cirrhosis, and cardiovascular.
7. Course Description / Syllabus	This course equips students to apply pharmacotherapy knowledge in analyzing the rationality of drug use in clinics.
8. Soft Skill Attributes	Critical thinking, logical thinking, systematic, comprehensive and scientifically-academic validity.
9. Learning Methods	Lectures, case study discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	The learning assessment consists of the following components: Exam 100%
12. Lecturers	COURSE COORDINATOR: Dra. Yulistiani, M.Si., Apt. Members: 1. Dra. Yulistiani, M.Si., Apt. 2. Prof. Dr. Budi Suprpti, MSi., Apt. 3. Dr. Suharjono, M.S., Apt. 4. Drs. Didik Hasmono, M.Si., Apt.
13. Required References	1. Dipiro J. T., Talbert R. L., Yee G. C., Matzke G. R., et al., 2020. Pharmacotherapy A Pathophysiologic Approach. 11th Edition. United States: The McGraw-Hill Companies, Inc. 2. McPhee S. J., Hammer G. D., 2019. Pathophysiology of Disease: An Introduction to Clinical Medicine, 8th Edition. United States: The McGraw-Hill Companies, Inc 3. Papadakis M. A., McPhee S. J., 2021. Current Medical Diagnosis & Treatment 60th Edition. United States: The McGraw-Hill Companies, Inc 4. Koda Kimble, et al., 2021. Applied Therapeutics: The Clinical Use of Drugs. 11th Edition, Philadelphia: Lippincott Williams & Wilkins.

Table 92 Specialities for Drugs and Medical Devices

1. Course Name	Specialities for Drugs and Medical Devices
2. Course Code	FAF501
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	9-10 (nine or ten)
5. Prerequisite	-
6. Course Learning Outcome	After completing this course students are expected to be able to explain the basics of drug therapy groups in DOEN; carry out rational use of drugs from over the counter, OWA, psychotropics, narcotics, orphan drugs, off-label, traditional medicines, phytopharmaca and nutraceuticals; explain the potential for abuse of drugs/precursors and their impacts; get to know about medical devices and their uses
7. Course Description / Syllabus	Specialities for Drugs and Medical Devices covers the basis for determining the rational use of drugs from the DOEN including over the counter, OWA, cyclootropic, narcotics, orphan drug, off-label, traditional medicine, phytopharmaca and nutraceutical groups and the necessary information. This course also determines new drug specialties as well as the introduction of medical devices and their uses
8. Soft Skill Attributes	Discipline, motivation for self-actualization in related sciences
9. Learning Methods	Lecture
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	The learning assessment consists of the following components: Exam 100%
12. Lecturers	COURSE COORDINATOR: Prof. Dr. Suharjono, MS, Apt. Members: 1. Prof. Dr. Suharjono, MS, Apt. 2. Dr. apt. Yulistiani, M.Si.
13. Required References	1. Handbook Non-prescription Drugs, APhA, 2009 2. Non Prescription Drugs, Nathan, Pharmaceutical Press, 2010 3. Drug abuse handbook, 2015 4. Essential Drug list, WHO, 2016 5. DOEN 2013

Table 93 Accounting

1. Course Name	Accounting
2. Course Code	AKK503
3. Course Load	1 credits [meeting (13.3 hours), independent learning/assignment (26.7 hours) per semester]
4. Semester	9-10 (nine or ten)
5. Prerequisite	-
6. Course Learning Outcome	After completing this course, students are expected to be able to apply accounting to support pharmacy practice.
7. Course Description / Syllabus	This course introduces accounting as knowledge and practice. The main discussion is about the importance of accounting for pharmacies, preparing financial reports as a reporting media, preparing cash budgets, determining drug prices, calculating break-even points and controlling drug supplies. This course is a basis for students' knowledge in carrying out one of the professional activities in a pharmacy.
8. Soft Skill Attributes	Discipline (including attending meetings and uploading assignments), honesty, communication skill.
9. Learning Methods	Lectures, case study discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	The learning assessment consists of the following components: 1) Assignment, 50% 2) Exam, 50%
12. Lecturers	COURSE COORDINATOR: Drs. Ali Syamlan, SE, MARS, Apt Members: Drs. Ali Syamlan, SE, MARS, Apt
13. Required References	1. Basics of pharmacy accounting 2. Pharmacist management 3. Principles and methods of pharmacy management 4. Essentials of pharmacy management 5. Financial management

Table 94 Pharmacist Professional Fieldwork Practice: Pharmaceutical Industry

1. Course Name	Pharmacist Professional Fieldwork Practice: Pharmaceutical Industry
2. Course Code	KLF509
3. Course Load	8 credits [Independent learning/assignment (320 hours) per semester]
4. Semester	9-10 (nine or ten)
5. Prerequisite	-
6. Course Learning Outcome	After taking part in the Pharmaceutical Industrial Pharmacist Professional Fieldwork Practice (PKPA), student will be able to: Explains about effective and efficient management and leadership in managing pharmaceutical work at the pharmaceutical industry (manufacturing) to provide quality, safe and efficacious/beneficial pharmaceutical supplies for clients/people. Furthermore, student will be able to explain the application of the Good Manufacturing Practice (CPOB) aspects and experienced a realistic of pharmaceutical work in the pharmaceutical industry.
7. Course Description / Syllabus	This course is a mandatory course which aims to develop pharmacist competence in the pharmaceutical industry. Industrial PKPA provides a clearer and more realistic picture of the pharmacist's in the pharmaceutical industry. This PKPA included the implementation of CPOB, application of laws and regulations related to the pharmaceutical industry, pharmaceutical preparations process, facilities and infrastructure in the pharmaceutical industry, and the role of pharmacists in the pharmaceutical industry.
8. Soft Skill Attributes	Honesty; discipline; critical thinking, and teamwork
9. Learning Methods	Plant tour, presentation, discussion
10. Learning Media	LMS Unair, LCD, power point, facilities in the pharmaceutical industry
11. Learning Assessments	The assessment consists of the following components: 1) PKPA score from industry, 35% 2) Seminar score (learning share), 5% 3) Report score, 20% 4) Exam, 40%
12. Lecturers	COURSE COORDINATOR: Dr. rer.nat. Maria Lucia Ardhani Dwi Lestari, S.Si., M.Pharm.Sci., Apt.

13. Required References	<p>Members:</p> <ol style="list-style-type: none"> 1. Industrial Preceptor/Practitioner 2. Industrial PKP Supervisor from the Faculty <ol style="list-style-type: none"> 1. Pedoman Cara Pembuatan Obat Yang Baik, 2018, Badan POM RI 2. Petunjuk Operasional Penerapan Pedoman CPOB 2012 3. PIC/S Guide to good manufacturing practice for medicinal products Annex 15 tahun 2015 (PS/INF 11/2015) 4. Badan POM RI, Peraturan Kepala Badan POM RI No HK.03.1.33.12.12.8195 ,Tahun 2012 tentang Penerapan CPOB 5. Buku Etik dan Disiplin Apoteker Indonesia, 2014, Pengurus Pusat Apoteker Indonesia. 6. Besterfield, D.H., 1998, Quality Control, 5th Ed, Prentice-Hall International, Inc., New Jersey, 457-477
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Table 95 Pharmacist Professional Fieldwork Practice: Community

1. Course Name	Pharmacist Professional Fieldwork Practice: Community
2. Course Code	KLF508
3. Course Load	8 credits [Independent learning/assignment (320 hours) per semester]
4. Semester	9-10 (nine or ten)
5. Prerequisite	-
6. Course Learning Outcome	<p>After taking part in the Community Pharmacy Professional Fieldwork Practice (PKP), Students are expected to have:</p> <ol style="list-style-type: none"> 1. Profession Judgment 2. Pharmaceutical Care 3. System Management 4. Practice Business Plan 5. Public Health 6. Research and Development 7. Continuous Professionalism Development
7. Course Description / Syllabus	<p>Assessment criteria: Commitment (attendance), Professional pharmacist work practices (practicing soft-skills), Participation. This course is a mandatory course which aims to develop pharmacist competence in the community pharmacy. The students are expected to be able to demonstrate abilities including profession judgment, pharmaceutical care, system management, practice business plan, public health, research and development, and continuous professionalism development.</p>
8. Soft Skill Attributes	<p>Soft-Skills:</p> <ol style="list-style-type: none"> 1. Profession Judgment 2. Pharmaceutical Care 3. System Management 4. Practice Business Plan 5. Public Health 6. Research and Development 7. Continuous Professionalism Development
9. Learning Methods	Practices Work in community pharmacies and health centers, presentations, discussions
10. Learning Media	LMS Unair, LCD, power point, facilities at community pharmacies and health centers
11. Learning Assessments	<p>The assessment consists of the following components:</p> <ol style="list-style-type: none"> 1) PKPA score from the preceptor, 30% 2) Report score, 30% 3) Exam, 40%

12. Lecturers	<p>COURSE COORDINATOR: Dr. apt. Yuni Priyandani, S.Si, Sp.FRS.</p> <p>Members:</p> <ol style="list-style-type: none"> 1. PKPA supervisor in the field of Community Pharmacy 2. Pharmacy Preceptor in Surabaya City and surrounding areas (Sidoarjo and Gresik) 3. Puskesmas Preceptor in Surabaya City 4. Preceptor of the Surabaya City Pharmacy Warehouse
13. Required References	<ol style="list-style-type: none"> 1. Cipolle R. J., Strand L. M. & Morley P. C., 1998. Pharmaceutical Care Practice, New York, McGraw Hill. 2. Cipolle RJ., Strand LM., Morley PC., 2012, Pharmaceutical Care Practice : The Patient Centered Approach to Medication Management, third edition, New York : McGraw Hill 3. Hepler CD., Strand LM., 1990, Opportunities and responsibilities in pharmaceutical care, American Journal of Hospital Pharmacy, Vol.47 p.533 4. Fink, J.L., 2005, Scope of Pharmacy, In : Troy David, Remington The Science dan Practice of Pharmacy, 21th Edition, Philadelphia : Lippincott Williams and Wilkins, A Wolters Kluwer Company, p.3. 5. Pemerintah RI, 2009a, Undang-Undang Nomor 36 Tahun 2009 tentang Kesehatan, Jakarta. 6. Pemerintah RI, 2009b, Peraturan Pemerintah Republik Indonesia Nomor 51 Tahun 2009 tentang Pekerjaan Kefarmasian, Jakarta. 7. Peraturan Presiden No 72 Tahun 2012 tentang SISTEM KESEHATAN NASIONAL 8. Permenkes 74 Tahun 2016 Tentang Standar Pelayanan Kefarmasian Di Puskesmas 9. Permenkes 73 Tahun 2016 Tentang Standar Pelayanan Kefarmasian Di Apotek 10. PP No 5 Tahun 2021 Tentang Penyelenggaraan Perizinan Berusaha Berbasis Risiko. 11. Seto S., Yunita, 2022. Dasar-dasar Akuntansi untuk Apotek, Edisi II, Airlangga University Press. 12. Seto S., dkk., 2001. Manajemen Apoteker, Airlangga University Press. 13. Carroll, N V, 1991. Financial Management for Pharmacists, Lea & Febiger. 14. Anonymous, 1996. Effective Pharmacy Management a Comprehensive Presentation of Practical Technique for Pharmacies, 8th edition, NARD, Virginia. 15. Tootelian D H, Gaedike R M, 1993. Essentials of Pharmacy Management, Mosby Year Book Inc. 16. Anonymous, 1997. Managing Drug Supply, USA. 17. Everet E A Jr., Ebert R J, 1992. Production and Operation Management, 5th Ed., Prentice Hall Inc., New Jersey.

Table 96 Pharmacist Professional Fieldwork Practice: Hospital Pharmacy

1. Course Name	Pharmacist Professional Fieldwork Practice: Hospital Pharmacy
2. Course Code	KLF508
3. Credits Load	8 credits [Independent learning/assignment (320 hours) per semester]
4. Semester	9-10 (nine or ten)
5. Prerequisite	-
6. Expected Learning Outcome	<p>At the end of the course, students will be able to:</p> <p>K4. Uphold professionalism, moral, ethical, and legal aspects, in the practice of pharmacy.</p> <p>K5. Perform pharmaceutical care and collaborate with patients, colleagues, and other health professionals by considering all legal, ethical, professional, sociocultural, and economic aspects to ensure the rational drug therapy and participate in preventive and promotive efforts.</p> <p>SS8. Manage and serve the demand of pharmaceutical and medical devices according to the prevailing standards, either by prescription or non-prescription, accurately and safely.</p> <p>SS9. Perform formulation, manufacturing and quality assurance of pharmaceutical preparations, on the basis of pharmaceutical science and technology.</p> <p>SS10. Be introspective and do self-development according to the development of pharmaceutical science and technology.</p>
7. Description	<p>This course is carried out using the method of professional work practice (PKP) in a hospital pharmacy installation. Students are expected to learn the organization and application of laws and regulations related to hospital pharmacy installations. In addition, students will learn about the management of pharmaceutical supplies (planning and selection, procurement, distribution); drug use and preparation in IFRS, PSPM; CSSD; internal laboratory; drug information management system; control system and nosocomial infection; clinical pharmacy practice, and hospital waste management.</p>
8. Soft Skill Attribute	Discipline (including attending meetings and uploading assignments), initiation of discussions, honesty, communication skill.
9. Learning methods	Practices Work in Hospital, presentations, discussions
10. Learning media	Learning Management System HEBAT UNAIR, Video Conference (Zoom), Power Point file, Patient Data Sheets, Recipe.

11. Learning Assessment	Portfolio & Oral exam (integrated)
12. Lecturers	<p>COURSE COORDINATOR: Drs. Apt. Didik Hasmono, MS</p> <p>Members:</p> <ol style="list-style-type: none"> 1. Prof. apt. Junaidi Khotib, S.Si., M.Kes., Ph.D. 2. Prof. Dr. apt. Budi Suprpti, M.Si. 3. Prof. Dr. apt. Suharjono, M.S. 4. Dr. apt. Yulistiani, M.Si. 5. Dr. apt. Aniek Setyabudiatin, M.Si. 6. Dra. apt. Toetik Aryani, M.Si. 7. apt. Mahardian Rahmadi, S.Si, M.Sc, Ph.D. 8. apt. Bambang Subakti Zulkarnain, SSi, MCLinPharm 9. apt. Chrismawan Ardianto, S.Farm., M.Sc., Ph.D. 10. apt. Zamrotul Izzah, SFarm, MSc 11. apt. Dewi Wara Shinta, SFarm, MFarmKlin 12. apt. Mareta Rindang Andarsari, SFarm, MFarmKlin 13. apt. Arina Dery Puspitasari, SFarm, MFarmKlin 14. apt. Dinda Monika Nusantara Ratri, SFarm, MFarmKlin <p>Preceptor members:</p> <ol style="list-style-type: none"> 1. apt. Nur Fauzi Hamidi, S.Farm 2. apt. Maria Al-Qibityah, S.Farm 3. apt. Khusnul Fitri Hamidah, S.Farm., M.Farm.Klin 4. apt. Ajeng Widya Utami, S.Farm 5. apt. Marcha Debby Saraswati, S.Farm., M.Farm.Klin 6. apt. Hargus Haraudi Barkah, S.Farm., M.Farm.Klin 7. apt. Titik Sugiarti, S.Farm 8. apt. Okki Fajrin Dhisati, S.Farm 9. apt. Febri Kusumowidagdo, S.Farm 10. apt. Febriansyah Nur Utomo, S.Farm., M.Farm.Klin 11. apt. Fairuza Syarfina, S.Farm 12. apt. Yuli Putri Lestari, S.Farm 13. apt. Varadila Fahma, S.Farm 14. apt. Putri Kusniawati, S.Farm
13. Primary References	<ol style="list-style-type: none"> 1. Dipiro J. T., Talbert R. L., Yee G. C., Matzke G. R., et al., 2020. Pharmacotherapy A Pathophysiologic Approach. 11th Edition. United States: The McGraw-Hill Companies, Inc. 2. McPhee S. J., Hammer G. D., 2019. Pathophysiology of Disease: An Introduction to Clinical Medicine, 8th Edition. United States: The McGraw-Hill Companies, Inc 3. Papadakis M. A., McPhee S. J., 2021. Current Medical Diagnosis & Treatment 60th Edition. United States: The McGraw-Hill Companies, Inc 4. Koda Kimble, et al., 2021. Applied Therapeutics: The Clinical Use of Drugs. 11th Edition, Philadelphia: Lippincott Williams & Wilkins.

Table 97 National Pharmacist Competency Examination

1. Course Name	National Pharmacist Competency Examination
2. Course Code	KLF12
3. Course Load	2 credits [meeting (26.7 hours), independent learning/assignment (53.3 hours) per semester]
4. Semester	9-10 (nine or ten)
5. Prerequisite	Have taken or are currently taking all courses in the Pharmacist Professional Education Study Program
6. Course Learning Outcome	After taking this course, students can understand pharmaceutical sciences including clinical science (CS), pharmaceutical science (PS) and social behavioral administration (SBA).
7. Course Description / Syllabus	The course discusses material tested in the National Pharmacist Competency Examination which includes clinical science (CS), pharmaceutical science (PS) and social behavioral administrative (SBA).
8. Soft Skill Attributes	Discipline, Attendance, Presentation Ability
9. Learning Methods	Case discussion
10. Learning Media	Electronic media, Learning Management System (LMS)
11. Learning Assessments	The assessment consists of the following components: 1) CBT Exam 1, 20 % 2) CBT Exam 2, 20% 3) CBT Exam 3, 20% 4) CBT Exam 4, 20% 5) CBT Exam 5, 20%
12. Lecturers	COURSE COORDINATOR: Dr. apt. Yunita Nita, S.Si., M.Pharm. Members: 1. Dr. apt. Yunita Nita, S.Si., M.Pharm. 2. Dr. apt. Yuni Priyandani, S.Si., Sp.FRS. 3. Dr. apt. Liza Pristianty, M.Si., M.M. 4. apt. Elida Zairina, S.Si., MPH., Ph.D. 5. apt. Hanni Prihastuti Puspitasari, S.Si., M.Phil., Ph.D. 6. apt. Gusti Noorrizka Veronika Achmad, S.Si., M.Sc. 7. apt. Andi Hermansyah, S.Farm., M.Sc., Ph.D. 8. Dr. apt. Abdul Rahem, M.Kes. 9. Drs. apt. Didik Hasmono, M.S. 10. Dr. apt. Wenny Putri Nilamsari, S.Farm., Sp.FRS. 11. apt. Dinda Monika Nusantara Ratri, S.Farm., M.Farm.Klin. 12. apt. Mareta Rindang Andarsari, S.Farm., M.Farm.Klin.

	13. Prof. Dr. apt. Retno Sari., M.Sc. 14. Dr. apt. Muh. Agus Syamsur Rijal, S.Si., M.Si. 15. Dr. rer.nat. apt. Maria Lucia Ardhani Dwi Lestari, S.Si., M.Pharm.Sci. 16. Dr. apt. Dewi Isadiartuti, M.Si. 17. apt. Dini Retnowati, S.Farm., M.Si. 18. Prof. apt. Dra. Esti Hendradi, M.Si., Ph.D. 19. Dr. apt. Tutiek Purwanti, M.Si. 20. apt. Helmy Yusuf, S.Si., M.Sc., Ph.D. 21. Drs. apt. Marcellino Rudyanto, M.Si., Ph.D. 22. Dr. apt. Riesta Primaharinastiti, S.Si., M.Si. 23. Dr. apt. Nuzul Wahyuning Diyah, M.Si. 24. Dr. apt. Achmad Toto Poernomo, M.Si. 25. apt. Tutik Sri Wahyuni, S.Si., M.Si., Ph.D.
13. Required References	National Pharmacist Competency Examination Blue Print