MODULE HANDBOOK

PHARMACY STUDY PROGRAM
FACULTY OF HEALTH SCIENCES
UIN SYARIF HIDAYATULLAH JAKARTA

Module designation	Pancasila and Civic Education
Semester(s) in which the module is taught	1/First year
The person responsible for the module	Siti Nadroh, M.Ag
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture, group discussion
Workload (incl. contact hours, self-study hours)	Total workload : 8 hours 30 minutes per week 2 hours 30 minutes for contact study, 3 hours for structured academic assignment, 3 hours for self-study per week
Credit points	5 credits (3 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Have conceptual and applicable knowledge about Pancasila and Civic Education which is civilized with the vision of Good and Smart Citizenship as citizens of the Indonesian nation (Science Competency, Citizenship Attitude Competence, and Citizenship Skill Competence); 2. Demonstrate a critical, independent, participatory, honest and responsible attitude in completing assignments during the learning process; 3. Respect the intellectual work of others when quoting it properly in papers and power point slides made (included in the value of papers and slides presentation); and civilized citizens).
Content	The Pancasila and civic education course is a nationally compulsory undergraduate (S1) level subject. In general, the Pancasila and Citizenship Education course discusses Introduction to Pancasila and Citizenship Education; Pancasila as a Source of Value for Character Education, Pancasila in the Study of the History of the Indonesian Nation; Pancasila as the Foundation and Ideology of the State, the Meaning of the Precepts in Pancasila; Humanity, Islamic, Indonesian-ness and National Insights; Re-actualization of Pancasila in the Reality of National and State Life (Geopolitical Review and National Insight); Civics as a Student Personality Development Course Towards a Civilized Society, National Identity and Globalization; Democracy (Theory and Practice), Constitution and Legislation of Indonesia: State of Law and Human Rights; Relations between Religion, State and Citizens; Good and Clean Governance (good and clear governance), and Civil Society (Civil Society). The final results of the Pancasila and Citizenship Education lectures will strengthen the attitudes and values, knowledge and creative behavior of students who are based on and reflect Pancasila values in the life of society, nation and state as well as

Module designation	Pancasila and Civic Education
	in international relations as well as developing students to become good, intelligent and civilized citizens (good intelligent/smart, and civilized citizens).
Examination forms	Multiple choice,and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	**(Compulsory)** 1. Abdul Aziz Wahab (Ed), Teori dan Landasan Pendidikan Kewarganegaraan, Alfabeta, Bandung, 2011 2. A Ubaedillah & Abdul Rozak, Pancasila Demokrasi, HAM dan Masyarakat Madani, Kencana PrenadaMedia Group, Jakarta : 2012 3. A. Ubaedillah, , Pancasila, Demokrasi dan Pencegahan Korupsi, Jakarta, Prenada, 2015 4. Ahmad Syafii Ma'arif, Islam dan Pancasila Sebagai Dasar Negara, Studi tentang Perdebatan dalam konstituante, LP3ES, Jakarta, 2006 5. Azyumardi Azra, Menuju Masyarakat Madani, Bandung, PT. Remaja Rosdakarya, cet.1. 1999Kaelan MS, Pendidikan Pancasila, Paradigma, Yogyakarta,2014 6. Sapriya Dkk, Konsep Dasar Pendidikan Kewarganegaraan, Laboratorium Pendidikan Kewarganegaraan, Universitas Pendidikan Indonesia, Bandung, 2014 7. Supriatnoko, Pendidikan Kewarganegaraan, Penaku, Jakarta, 2008 8. Tim Nasional Dosen Pendidikan Kewarganegaraan, Paradigma Terbaru Pendidikan Kewarganegaraan Untuk Mahasiswa, Alfabeta, Bandung, 2017 9. Yudi Latif, Negara Paripurna, Historisitas, Rasionalitas, dan Aktualitas Pancasila,Gramedia, Jakarta, 2011 10. Yudi Latif, Wawasan Pancasila, Bintang Penuntun Untuk Pembudayaan, Mizan, 2020 11. Yudi Latif, Revolusi Pancasila, Bandung, Mizan, 2015 **(Recommendation)** 1. A.M Fatwa, Pancasila Karya Bersama Milik Bangsa, the Fatwa Center, Jakarta : 2010 2. Ditjen Dikti Depdiknas, 2001, Kapita Selekta Pendidikan Pancasila, Bag.1, Dirjen Dikti Depdiknas, Jakarta

Module designation	Pancasila and Civic Education
	3. H.A.M. Effendy, 1993, Falsafah Negara Pancasila : Sejarah, Fungsi, Pengamalan dan Pelestariannya, Semarang, Duta Grafika 4. Irfan Nasution dan Rommy Agustinus, Restorasi Pancasila : Mendamaikan Politik Identitas dan Modernitas, Jakarta P2D, 2006 5. Jimly Assidiqie, Pengantar Ilmu Hukum Tata Negara, Mahkamah Konstitusi Republik Indonesia 6. Masykuri Abdilah, Demokrasi di Persimpangan Makna: Respon Intelektual Muslim Indonesia Pendidikan Indonesia Terhadap Konsep Demokrasi (1966-1993), Yogyakarta, Tiara Wacana, 1999 7. Mochtar Buchori, Peranan Pendidikan dalam pembentukan Pendidikan Budaya Politik di Indonesia, dalam buku Menggagas Paradigma Baru Pendidikan Demokrasi, Otonomi, Civil Society, Globalisasi, Kanisius, Yogyakarta, 2000 8. Rojali Abdullah, Perkembangan HAM dan Keberadaan Peradilan di Indonesia, Jakarta, Ghalia Indonesia, 2002 Yudi Latif, Mata Air Keteladanan Pancasila Dalam Perbuatan, Jakarta 2014 9. Syafruddin Bahar, 1995, Risalah Sidang-Sidang BPUPKI-PPKI 28 Mei – 22 Agustus 1945, Jakarta, Sekneg RI

Module designation	Islamic Studies
Semester(s) in which the module is taught	1/First year
Person responsible for the module	Alfiah, S.Ag., M.Ag.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture, group discussion, Collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 11 hours 20 minutes per week 3 hours 20 minutes for contact study, 4 hours for structured academic assignment, 4 hours for self-study per week
Credit points	7 credits (4 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students are able to understand the introduction of IPE in Islamic studies courses 2. Students are able to explain the meaning of Islamic Studies; scope, method, 3. Students are able to understand the meaning of religion and its related aspects 4. Students are able to understand the human need for religion in a convincing manner based on the arguments of naqli and aqli. 5. Students are able to understand the meaning and purpose of teaching Islamic teachings in a comprehensive manner. 6. Students are able to understand the characteristics and characteristics, teachings of Islam, the similarities and differences between Islam and other religions 7. Students are able to understand the integration of health and Islamic sciences 8. Students are able to understand the meaning, function and various sources of Islamic teachings and their contents. 9. Students are able to understand the concept of health and illness based on the Koran and al hadith 10. Students are able to understand the main points of Islamic teachings: faith, Islam and Ihsan; faith, knowledge and charity in an academic and comprehensive manner based on the arguments of naqli and aqli, as well as examples of their practice 11. Students are able to explain about worship and spiritual practice and reverse it with moral development in Islam; ideal ethical principles (al-akhlak al-fadhilah/akhlak al-karimah)

Module designation	Islamic Studies
	12. Students are able to explain the meaning and function of Islamic history and civilization, the periodization of Islamic history and its characteristics. 13. Students are able to explain the political system and government in Islam and its application in the Islamic world. 14. Students are able to explain social institutions regarding preaching and education in Islam and their functions in life. 15. Students are able to explain social institutions regarding the economy and society and their functions in life 16. Students are able to explain social institutions regarding human rights and democracy and their functions in life. 17. Students are able to explain social institutions regarding multiculturalism and gender equality and their functions in life. 18. Students are able to understand the position of Islamic theology and the main points of its teachings in a comprehensive manner. 19. Students are able to understand the position of Islamic philosophy and the scope of its teachings comprehensively. 20. Able to understand the position of Sufism.Thariqat Islam and the main points of its teachings in a comprehensive manner. 21. able to understand the position of Islamic Fiqh and the main points of its teachings in a comprehensive manner. 22. Able to understand and explain modern thinking and renewal in Islam comprehensively. 23. Students are able to understand the contribution of Islam to European and Western civilization objectively and critically. 24. Students are able to understand the Islamic concept of Rahmatan lil 'alamin with its various related aspects in an objective and comprehensive manner. 25. Students are able to understand the history of the entry of Islam into Indonesia based on convincing evidence 26. Students know about the existence of Islamic kingdoms in Indonesia and their progress and setbacks 27. Students know the influence of Islam on the birth of socio-religious and political institutions in Indonesia 28. Students know the various challenges and opportunities that Muslims have in building civilization.
Content	Islamic studies courses discuss the meaning, origin, types, elements and functions of religion for human life;

Module designation	Islamic Studies
	understanding of Islam, characteristics, similarities and differences with other religions, sources and main points of Islamic teachings. This course also discusses aspects of Islamic teachings regarding worship, spiritual and moral training, Islamic history and culture, politics, education, preaching, society and gender equality in aspects of Islamic teachings, contemporary issues regarding Islam's contribution to the civilization of the Islamic world. In this course, the Interprofessional Education learning method is applied which aims to introduce communication and collaboration between health profession students from the start.
Examination forms	Multiple choice,and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Nasution, Harun, Haji, (1985). *Islam ditinjau dari berbagai aspeknya / Harun Nasution*. Jakarta :: Penerbit Universitas Indonesia (UI-Press),. 2. Nor Huda, Abdul Qodir Shaleh (editor). 2019). *Islam nusantara : sejarah sosial intelektual Islam di Indonesia*. Yogyakarta :; Yogyakarta 3. Abuddin Nata, Haji, *Metodologi studi Islam* Jakarta :: PT RajaGrafindo Persada, 2016 4. Ira M. Lapidus. Sejarah Sosial Umat Islam. 2020. Raaja Grafindo Persada 5. Quraish Shihab, M; Syukur DJ, Abd; Wahid Hizbullah. (2006). *Wawasan Al-qur'an tentang zikir & doa / M.* Lentera Hati,. 6. Muhaimin, Abdul Mujib; Jusuf Mudzakkir .2018. *Studi Islam dalam ragam dimensi dan pendekatan.* Prenadamedia Group,.

Module designation	Qira'ah and Worship Practice
Semester(s) in which the module is taught	1/First year
Person responsible for the module	Sopyan, SE.,MM
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab works, simulation
Workload (incl. contact hours, self-study hours)	5 Hours and 40 minutes of total workload per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students are able to explain the meaning of qira`ah as a reflection of piety to Allah SWT 2. Students are able to demonstrate Makhroj Hruf Hijaiyyah 3. Students are able to demonstrate Ghunnah Reading 4. Students are able to demonstrate Mad Reading 5. Students are able to demonstrate Ghorib Readings 6. Students are able to memorize selected letters 7. Students are able to memorize selected verses regarding health
Content	This course focuses on practicing or developing skills in reading the Quran. The discussion of worship includes how to read the Qur'an with tartil.
Examination forms	Practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% of structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	Ahmad Muzzammil, Panduan Tahsin Tilawah

Module designation	Basic Science of Pharmacy
Semester(s) in which the module is taught	1/First year
Person responsible for the module	apt. Yuni Anggraeni, M.Farm apt. Ismiarni Komala, Ph.D Dr. apt. Supandi, M.Si apt. Estu Mahanani, M.Si Dr. Isra Janatiningrum M.si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture, presentation, Co-operative learning
Workload (incl. contact hours, self-study hours)	Total workload : 8 hours 30 minutes per week 2 hours 30 minutes for contact study, 3 hours for structured academic assignment, 3 hours for self-study per week
Credit points	5 credits (3 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to use basic mathematical concepts in pharmaceutical calculations 2. Able to convert units of weight, length, and volume using the international system of units 3. Able to calculate the concentration of solutions with various units/quantities 4. Be able to use the concept of exact numbers in stating measurement results 5. Be able to explain how to determine the right measuring instrument 6. Be able to explain the concept of organization of living things 7. Be able to explain the principle of reproduction of living things 8. Be able to explain the characteristics of each state of matter 9. Be able to adjust the tonicity of the solution 10. Be able to explain the structure of atoms and molecules 11. Be able to explain the mechanism of formation of chemical bonds and the polarity of a molecule 12. Be able to explain the nature of solutions 13. Be able to explain acid-base solutions and chemical equilibrium 14. Be able to explain and calculate the capacity of buffer and composition of buffer to determine the pH of the solution
Content	This course is a combination of several basic science courses such as mathematics, biology, chemistry, and physics which are closely related to pharmacy. Some of the topics that will be discussed in this course include: basic calculations, the international system of units, concentration quantities, measurements and exact numbers, basic concepts of biology,

Module designation	Basic Science of Pharmacy
	concepts of the organization of living things, living things' reproductive systems, states of matter, tonicity and isotonic solutions , atomic and molecular structures, chemical bonds, properties of solutions, acids and bases, buffers.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Khan, M.A. and Reddy, I.K. (2000). Pharmaceutical and Clinical Calculation 2nd ed. CRC press 2. Sinko, P.J. (2015). Martin Farmasi Fisika dan Ilmu Farmasetika. ed. 5. Alih bahasa, Joshita Djajadisastra dan Amalia H. Hadinata. Jakarta: EGC. 3. Jambhekar, S.S. and Breen, P.J. (2009). Basic Pharmacokinetics. London: Pharmaceutical Press. 4. Bettelheim, F.A. and Landesberg, J.M. (2013). Laboratory Experiments for Introduction to General, Organic, and Biochemistry. ed. 8. Belmont: Brooks/cole 5. Campbell NA, Urry LA, Cain ML, Wasserman SA, Minorsky PV, Reece JB. (2016). Campbell Biology 11th edition. New York: Pearson

Module designation	Basic Science of Pharmacy Practice
Semester(s) in which the module is taught	1/First year
Person responsible for the module	Dr. Isra Janatiningrum, M.Si Dr. apt. Eka Putri, M.Si Apt. Rosa Adelina, M.Sc Apt. Estu Mahanani Dhilasari, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab Works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand and explain glassware, measuring tools and instruments used in pharmaceutical laboratories as well as safety while in the laboratory 2. Able to practice and carry out heating techniques and separation of precipitates 3. Able to practice and carry out weighing, dissolving and diluting techniques 4. Able to identify cations 1-5 and anions 5. Able to practice making acid-base and buffer solutions 6. Able to practice and standardize solutions 7. Be able to understand the colligative properties of solutions 8. Be able to understand the differences in the structure of animal and plant cells 9. Be able to understand differences in parasite morphology 10. Be able to identify the taxonomy of spermatophyta plants 11. Be able to understand the differences in the morphology of plant tissues of Angiosperms 12. Able to understand the concept of osmosis system 13. Able to understand the permeability of cell membranes 14. Able to understand the process of photosynthesis
Content	This course is a combination of several basic science courses such as mathematics, biology, chemistry, and physics which are closely related to pharmacy. Some topics to be. Discussed in this course include the basics of calculation, the international system of units, concentration quantities, measurements and exact numbers, basic concepts of biology, the concept of organization of living things, the reproductive system of living things, the state of matter, tonicity and isotonic solutions, atomic structure and molecule, chemical bond, nature of the solution, acid-base, buffer.
Examination forms	Multiple choice, essay, and Practice exam

Module designation	Basic Science of Pharmacy Practice
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% of structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P. 2008. Molecular Biology of The Cell. Edisi ke 5. Penerbit Garland Science 2. Campbell NA, JB Reece, LG Mitchell. 1999. Biologi. Edisi Kelima Jilid 1. Penerbit Erlangga. 3. Campbell NA, JB Reece, LG Mitchell. 1999. Biologi. Edisi Kelima Jilid 2. Penerbit Erlangga. 4. Campbell NA, JB Reece, LG Mitchell. 2003. Biologi. Edisi Kelima Jilid 2. Penerbit Erlangga. 5. Fessenden, Ralph J. & Fessenden, Joan S. 1997. Kimia Organik Jilid I. Edisi Ketiga. Penerbit Erlangga. 6. Fessenden, Ralph J. dan Fessenden, Joan S. 2010. Dasar-dasar Kimia Organik. Penerbit Binarupa Aksara. 7. Hardjono Sastrohamidjojo. 2007. Spektroskopi. Edisi Ketiga. Penerbit Liberty. 8. Meloan, Clifton E. 1999. Chemical Separations: Principles, Techniques and Experiments. Penerbit Wiley-Interscience. 9. Raven, Peter H; R.F. Evert and S.E. Eichhorn. 1992. Biology of Plants. 5th Ed. Penerbit Worth Publihers.

Module designation	Biomedicine
Semester(s) in which the module is taught	1/First year
Person responsible for the module	Dr. apt. Lina Elfita, M.Si Dr. Isra Janatiningrum, M.Si apt. Hendri Aldrat, M.Si., Ph.D
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture, Collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to understand and explain the definition, the role of biomedical science and the basic concepts of biochemistry and nutrition in the Koran 2. Be able to explain human genetics 3. Be able to explain the regulation of gene expression and DNA repair 4. Be able to explain about bioenergetics and cell transport systems 5. Be able to explain cell communication and cell cycle 6. Be able to explain structure, classification, metabolism and acid metabolism disorders amino 7. Be able to explain the structure, classification, metabolism and disorders of protein metabolism 8. Be able to explain the structure, classification, metabolism and disorders of carbohydrate metabolism 9. Be able to explain the structure , classification, metabolism and disorders of lipid metabolism 10. Be able to explain xenobiotic metabolism 11. Be able to explain classification, mechanism, kinetics, regulation, supporting and inhibiting factors of enzyme action and biomedical functions 12. Be able to explain metabolism in the elderly and pediatrics 13. Be able to explain the concept and terminology of fluids and electrolytes in the body 14. Be able to explain the regulation of calcium in body fluids.
Content	Biomedical Science focuses on human health and public welfare, whose function is to understand how the human body works starting from the molecular-cellular-organ level and the functions of organismal systems. An understanding of biomedical science is very important for pharmacy students because it forms the basis for discovering and designing therapeutic strategies, spearheads

Module designation	Biomedicine
	progress in the health industry and plays an important role in discovering new therapies to cure disease. The development of biomedical science will continue to innovate as a central step in designing advanced therapies and treatments in the healthcare industry. It is hoped that in the future, biomedical science can find solutions to health problems that have occurred so far and their direct application. The scope of biomedical science includes cell biology, genetics, biomacromolecules and nutrition, metabolism (carbohydrates, lipids, amino acids, proteins and xenobiotics), biochemistry in pediatrics and the elderly, fluid and electrolyte balance and calcium regulation.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% of structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P. 2008. Molecular Biology of The Cell. Edisi 5. Garland Science, UK 2. Marshall WJ, Lapsley M, Day AP, Ayling RM. 2014. Clinical Biochemistry: Metabolic and Clinical Aspects. Edisi 3. Churchill Livingstone. UK 3. Gerard JT, Bryan HD. 2016. Principles of Anatomy and Physiology 14th edition. Philadelphia: Wiley 4. Sanghani P. 2011. Human Anatomy And Physiology (With Health Education). New Delhi: Tata McGraw Hill Education Private Limited 5. Sherwood L. 2016. Human, Physiology - From Cells to System 9th edition. Boston: Cengage Learning USA 6. Janeway CA, Travers P, Walport M, Shlomchick M. 2001. Immunobiology: The Immune system in health and disease. Edisi 5. Garland Publishing. USA 7. Murray. R.K, Granner. D.K, Rodwell V.W. 2006.Biokimia Harper, Edisi 27, Penerbit EGC, Jakarta 8. Horton. H.R, Moran. L.A, et al. 2002. Principles of Biochemistry. Edisi III. Pearson education International. 9. Champe. P.C, Harvey R.A, Ferrier D.R. 2005. Penerbit EGC, Jakarta. 10. Koolman. J, Heinrich Röhm. K. 1995. Atlas Berwarna dan Teks Biokimia. Penerbit Hipokrates 11. Allan. G, Murphy. M.I et al. 2012. Biokimia Klinis Teks Bergambar. Edisis IV. Penerbit EGC. Jakarta 12. Marks, Dawn B. , Allan D. M, Collen M.S. 2000. Biokimia Kedokteran Dasar. Penerbit EGB. Jakarta

Module designation	English Language
Semester(s) in which the module is taught	1/First year
Person responsible for the module	Tryana, M.A
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	Total workload : 8 hours 30 minutes per week 2 hours 30 minutes for contact study, 3 hours for structured academic assignment, 3 hours for self-study per week
Credit points	5 credits (3 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to make Introduction in English and distinguish English language skills 2. Students are able to identify answers to questions in the Listening section, especially based on the short conversation 3. Students are able to answer questions in Written Expression session in TOEFL based on the following topics : Subject and verb, object of preposition, the function of present and past participle in the sentence. 4. Students are able to make simple sentences that have one clause and are able to answer written questions expression in the TOEFL test with this structure 5. Students are able to explain about reading and answer correctly the questions in the Reading session on the TOEFL test based on questions about the main idea questions 6. Students are able to write an essay of five paragraphs It consists of an introductory paragraph, a body paragraph and a closing paragraph. They can also identify the right hooks, thesis statements and also transitions. 7. Students are able to construct sentences with many clauses using the right connectors. They are also able to identify TOEFL test answers in that structure. 8. Students are able to construct sentences with many clauses using the correct connectors. They are also able to identify the TOEFL test answers in that structure. 9. Students are able to understand the information given in long speeches and are able to conclude messages from the speech and retell it. 10. Students are able to answer reading questions based on the questions stated and not stated from the TOEFL test

Module designation	English Language
	11. Students are able to compose sentences with the correct and parallel structure. They are also able to identify the correct answer in the TOEFL test on the structure 12. Students are able to read and write academic papers 13. Students are able to make sentences using Modals 14. Students able to speak and present material in front of the class in English fluently and share ideas well
Content	This course prepares students to be able to answer the questions on the TOEFL test correctly. This course also aims to provide English language skills both orally and in writing as well as equip students with language and communication knowledge
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Azar, B.S. (2012). Understanding and Using English Grammar. New Jersey. Prentice Hall 2. Oshima, A. & Hogue, A. (2007). Introduction to Academic writing. New York. Pearson Education. 3. Philips, D. (2007). Preparation Co urse for the TOEFL Test (2nd edition). New York. Pearson Education 4. Modul

Module designation	Pharmaceutical Organic Chemistry
Semester(s) in which the module is taught	1/First year
Person responsible for the module	apt. Ismiarni Komala., M.Sc., Ph.D
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lecture, collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students can describe the theoretical concepts of organic chemistry, functional groups, physical properties, and chemical reactions of organic compounds. 2. Students can apply the physical and chemical properties of organic compounds belonging to the alkane and cycloalkane groups in the synthesis of compounds. 3. Students can apply the physical and chemical properties of organic compounds belonging to the alkene and alkyne groups in the synthesis of compounds. 4. Students can identify the stereochemical properties of chiral compounds. 5. Students can apply the physical and chemical properties of organic compounds belonging to the alcohol and thiol groups in the synthesis of compounds. 6. Students can apply the physical and chemical properties of organic compounds belonging to the alkyl halide group in the synthesis of compounds. 7. Students can apply the physical and chemical properties of organic compounds belonging to the aromatic group in the synthesis of compounds. 8. Students can apply the physical and chemical properties of organic compounds belonging to the ether and epoxide group in the synthesis of compounds. 9. Students can apply the physical and chemical properties of organic compounds belonging to the aliphatic amine group in the synthesis of compounds. 10. Students can apply the physical and chemical properties of organic compounds belonging to the carbonyl group in the synthesis of compounds.
Content	This course is a compulsory course for undergraduate students majoring in Pharmacy. In this course, students will learn about the physical and chemical properties of organic compounds and their

Module designation	Pharmaceutical Organic Chemistry
	applications in compound synthesis. The course covers various functional groups found in organic compounds, including alkanes, alkenes, alkynes, stereochemistry, alcohols and thiols, alkyl halides, aromatic compounds, ethers, epoxides, sulfides, aliphatic amines, aldehydes and ketones, carboxylic acids, carboxylic acid derivatives, condensation reactions, and alpha substitution of carbonyl compounds. In essence, this course provides students with a comprehensive understanding of organic chemistry, focusing on different types of organic compounds and their reactions, which is essential for their studies in the field of Pharmacy.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such us cheating or other acts of fraud
Reading list	1. McMurry, J. (2008). Organic Chemistry, 7th edition, Brook / Cole Publishing Company, Monterey, California 2. Solomons, T.W.G . (2007) Fundamentals of Organic Chemistry, John Wiley & Sons, Inc, New york 3. Fessendens, R.J. & Fessenden, J.S. (1999). Kimia Organik, Edisi kedua, alih bahasa A.H. Putjaamaka, Erlangga, Surabaya 4. Hardjono, S. (2011). Kimia Organik Dasar, Gadjah Mada University Press, Yogyakarta 5. Komala, Ismiarni, Supandi, and Muhammad Mirza Hardiansyah. 2018. “Direct Amidation of Ethyl p -Methoxycinnamate to Produce N , N -Bis- (2-Hydroxyethyl)-p -Methoxycinnamamide.” *Jurnal Kimia Valensi* 4 (1): 22–25.Komala, Ismiarni, Supandi, Nurhasni, Ofa Suzanti Betha, Yardi, Syarifatul Mufidah, Muhammad Reza, Muhammad Syahid Ali, Nova Sari Aulia, and Sutar. 2017. “Microwave Assisted Synthesis of P-Methoxycinnamamides and p-Methoxy-b-Nitrosytrenes from Ethyl p-Methoxycinnamate and Screening Their Anti-Inflammatory Activity.” *Natural Product Communications* 12 (8): 1265–1268. 6. Komala, Ismiarni, Supandi, Nurhasni, Betha Ofa Suzanti, Eka Putri, Syarifatul Mufidah, Muhammd fikry Awaludin, Mida Fahmi, Muhammad Reza, and Nurkhayati Putri Indriyani. 2018. “Structure-Activity Relationship Study on the Ethyl p-Methoxycinnamate as an Anti-Inflammatory Agent.” *Indonesian Journal of Chemistry* Article 7. Komala, Ismiarni, Supandi, and Muhammad Mirza Hardiansyah. 2018. “Direct Amidation of Ethyl p -Methoxycinnamate to Produce N , N -Bis- (2-Hydroxyethyl)-p-Methoxycinnamamide.” *Jurnal Kimia Valensi* 4 (1): 22–25.

Module designation	Pharmaceutical Organic Chemistry Practice
Semester(s) in which the module is taught	1/First year
Person responsible for the module	apt. Ismiarni Komala., M.Sc., Ph.D apt. Vivi Anggia., M.Farm Dr. Apt. Supandi., M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lab Works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Can understand practical rules and procedures for reporting 2. Can determine the melting point of organic compounds 3. Can distinguish the boiling point of organic compounds 4. Can distinguish the solubility of hydrocarbon compounds in water and ligroin 5. Can explain the typical reactions of alkane, alkene and aromatic hydrocarbon compounds 6. Can determine the solubility of alcohol and phenol compounds in water 7. Can determine the difference in acidity of alcohol and phenol 8. Can do a test to distinguish primary alcohol, secondary, tertiary and phenol 9. Can determine the characteristics of aldehydes and ketones 10. Can use chemical characters of aldehydes and ketones in carrying out aldehyde and ketone identification tests 11. Can determine the physical and chemical properties of carboxylic acids 12. Can determine the solubility and acidity and aroma of carboxylic acids 13. Can prepare various esters and note the smell 14. Can carry out the saponification process 15. Can distinguish the physical properties of amines and amides 16. Can carry out amide hydrolysis reactions 17. Can carry out the manufacture of acetic acid from ethanol 18. Students can understand the process reduction of benzophenone to diphenylmethanol 19. Can purify organic compounds through sublimation and crystallization processes

Module designation	Pharmaceutical Organic Chemistry Practice
Content	Pharmaceutical organic chemistry practicum course is a compulsory subject of the Pharmacy study program. In this practicum students are expected to be able to test the physical and chemical properties of various organic compounds, synthesize medicinal compounds derived from organic materials.
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such us cheating or other acts of fraud
Reading list	1. Padias., A.B (2007) Making the connection a how to Guide for Organic Chemistry Lab Technique. The University of Arizona 2. Frederick A. Bettelheim, Joseph M. Landesberg (2000) Laboratory Experiments for Introduction to General, Organic and Biochemistry. 4th Edition., Brooks Cole 3. Wong, Tsz-Wing (2020). Reduction of a Ketone by Sodium Tetrahydridoborate- A Comprehensive Experiment of Common Laboratory Techniques for Organic Chemistry ReactionJournal of Laboratory Chemical Education 8(1): 18-22 4. Feroz. M.Z, Khan, A.F., Ashraf, M.A, Qadeer M.U, Adnan, H.M. Production of ethanoic acid by oxidation of ethanol., International Journal of Chemical Studies 2016; 4(1): 46-47 5. Komala, I. et al. (2018) 'Structure-activity relationship study on the ethyl p- methoxycinnamate as an anti-inflammatory agent', Indonesian journal of chemistry, 18(1), pp. 60–65.

Module designation	Indonesian Language
Semester(s) in which the module is taught	2/Second year
Person responsible for the module	Varatisha Anjani, S.S, M.A
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture, collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 8 hours 30 minutes per week 2 hours 30 minutes for contact study, 3 hours for structured academic assignment, 3 hours for self-study per week
Credit points	5 credits (3 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students are able to speak in scientific presentations; 2. Students are able to understand the development of the Indonesian language; 3. Students are able to understand the use of letters and words; 4. Students able to understand absorption elements and punctuation; 5. Students are able to use diction correctly; 6. Students are able to make effective sentences; 7. Students are able to make paragraphs correctly;< /li> 8. Students are able to understand plagiarism; 9. Students are able to plan essays; 10. Students are able to reason correctly; 11. Students are able to use scientific notation quickly; 12. Students are able to produce short writing properly and correctly; 13. Students are able to produce written reproductions correctly;
Content	The Indonesian language course discusses scientific presentations, the development of the Indonesian language, the use of letters and words, elements of absorption and punctuation, correct diction, making effective sentences and making paragraphs correctly, understanding plagiarism, planning essays, doing reasoning with accurately, using scientific notation quickly, producing short writing properly and correctly and producing reproductions of writing correctly.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	**Compulsory**

	1. Arifin, E. Zainal dan S. Amran Tasai. Cermat Berbahasa Indonesia. Jakarta: Akademika Pressido, 2006 2. Akhadiah, Sabarti dan Sakura Ridwan. Pembinaan Kemampuan Menulis bahasa Indonesia. Jakarta: Airlangga, 1993 3. Finoza, Lamuddin. Komposisi Bahasa Indonesia. Jakarta : Diksi Insan Mulia, 2001. 4. Gani, Ramlan A dan Mahmudah Fitriyah Z.A. Disiplin Berbahasa Indonesia. Jakarta: PTIK Press, 2010. 5. Hs., Widjono. Bahasa Indonesia. Jakarta: Grasindo, 2007. 6. Keraf, Gorys. Komposisi. Ende: Nusa Indah, 1993. 7. Putra, R. Masri Sareb Putra. Kiat Menghindari Plagiat. How to Avoid Plagiarisme. Jakarta : Indeks, 2011. **Recommendation** 1. Badudu, Yus. Ejaan Bahasa Indonesia. Bandung: Pustaka Prima, 1994. 2. Pelik-pelik Bahasa Indonesia. Bandung: Pustaka Prima, 1985 3. Collin, James T. Bahasa Melayu Bahasa Dunia. Sejarah Singkat. Jakarta: Obor, 2005. 4. Kridalasakna, Harimurti. Kamus Linguistik. Jakarta: PT Gramedia Pustaka Utama, 2001. 5. Tim Penyusun. Kamus Besar Bahasa Indonesia. Jakarta: Pusat Bahasa, 2007 6. Suyatno dan Asep Jihad. Betapa Mudah Menulis Karya Ilmiah. Yogyakarta: Eduka, 2009.

Module designation	Arabic Language
Semester(s) in which the module is taught	2/First year
Person responsible for the module	Alfiah, S.Ag., M.Ag
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture, collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 8 hours 30 minutes per week 2 hours 30 minutes for contact study, 3 hours for structured academic assignment, 3 hours for self-study per week
Credit points	5 credits (3 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students are able to understand lecture contracts 2. Students are able to understand texts, observe and write with guidance regarding sentence structures that contain simple and plural, and are able to carry out simple dialogues li> 3. Students are able to understand the text, observe and write guided about sentence structures that contain dhamir, and are able to carry out simple dialogues 4. Students are able to understand text, examine and write guided about sentence structures containing al – fi'ilu al madli, and being able to carry out simple dialogues 5. Students are able to understand texts, observe and write guidedly regarding sentence structures containing al – fi'ilu al mudhori', as well as being able to carry out simple dialogues 6. Students are able to understand texts, observe and write guidedly about sentence structures containing fi'il amr, as well able to carry out simple dialogues 7. Students are able to understand texts, observe and write guidedly about sentence structures that contain nakirah and ma'rifah, and are able to carry out simple dialogues 8. Students are able to understand text, observe and write guided about sentence structure containing wazan tsulatsi mazid bi harfin, and are able to carry out simple dialogues 9. Students are able to understand text, observe and write guided about structure sentences containing wazan tsulatsi mazid bi harfain, and being able to carry out simple dialogues 10. Students are able to understand texts, observe and write guidedly regarding sentence structures containing wazan tsulatsi mazid bi tsalatsi ahruf, and able to carry out simple dialogues

Module designation	Arabic Language
	11. Students are able to understand texts, observe and write guidedly about sentence structures containing 'umdah al – amount, and are able to carry out simple dialogues 12. Students are able to understand the text, observe and write guidedly regarding sentence structures that contain khobar and its variants, and are able to carry out simple dialogues 13. Students are able to understand texts, observe and guided writing regarding sentence structures containing al – mafa'il, as well as being able to carry out simple dialogues 14. Students are able to understand texts, examine and write guidedly regarding sentence structures containing ma'ani al - adawa, as well as being able to perform simple dialogues
Content	Arabic language courses are mandatory courses that must be taken by students. The purpose of this course is designed to provide an understanding and training of students' abilities in Arabic and to develop students' ability to carry out simple conversations, read Arabic texts with a vowel and write simple sentences in Arabic with the theme of faith, worship and morals
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	-

Module designation	Islam and Health Sciences
Semester(s) in which the module is taught	2/First year
Person responsible for the module	Fajar Ariyanti, S.K.M., M.Kes., Ph.D Dr. M. Farid, M.Si Dr. Azrifitria, M.Si.Apt Dr. apt. M.yanis Musdja, M.Sc Dr. Ita Yuanita, MKep Ns. Mardiyanti, MKep., MDS
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture, Collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	Islamic studies
Module objectives/intended learning outcomes	1. Students are able to understand the relevance of courses to public health expertise and Islamic Public Health 2. Students are able to understand the meaning of science, its characteristics, and its relation to philosophy. 3. Students are able to understand the epistemology of Islamic Sciences. 4. Students are able to understand the sources of Knowledge (Ontology) in Islamic and Western Perspectives. 5. Students are able to understand the influence of Science, Culture and Civilization Developed by Muslims on European and Western Civilization.< /li> 6. Students are able to understand monotheism as the basis for the development of knowledge. 7. Students are able to understand the methodology of scientific development (Epistemology) in Islamic and Western perspectives 8. Students are able to understand the scientific clusters Nature in Islamic and Western Perspective. 9. Students are able to understand the Social Sciences family in Islamic and Western Perspective. 10. Students are able to understand the Religious Sciences/Humanities family in Islamic and Western Perspective 11. Students are able to understand the concept of Integration of Islamic Sciences with other Sciences (Islamization of Science).

Module designation	Islam and Health Sciences
	12. Students are able to understand the Integration of Science in Islam; Classical Islamic Medicine and Health Sciences (Study of Ar-Razy and Avicenna) 13. Students are able to understand the integration of Islamic sciences with modern medicine and health sciences. 14. Students are able to understand the integration of Islamic sciences with modern medical sciences. Public Health (Basic Concepts Islamic Public Health Practicum in the next semester)
Content	This course develops students' insights in the study of science and Islamic sciences through an integrative paradigm. Indicators of achievement for this course are students being able to explain the framework of scientific thinking in the perspective of ontology, epistemology, and axiology as well as impact and implementation in the scientific field, able to make scientific arguments on the presentation of the data provided, show knowledge about the basics of Islamic science in relation to the themes developed by each field of expertise and students are able to understand the model of integration of science, religion and Indonesianness in their respective scientific fields
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Bakhtiar, Amsal, Tema-tema Filsafat Islam, (Jakarta:UIN Jakarta Press, 2005), cet. I. 2. Husaini, Adian, (ed), Filsafat Ilmu Perspekrif Barat dan Islam, (Jakarta:Gema Insani, 2013), cet. I. 3. Kartanegara, Mulyadi, Integrasi Ilmu sebuah Rekonstruksi Holistik, (Bandung: Arasy Mizan dan UIN Jakarta Press, 1426 H./2005 M.) 4. Mujib, Abdul, Fithrah & Kepribadian Islam Sebuah Pendekatan Psikologis, (Jakarta:Darul Falah, 1423 H./2000 M.) 5. Nasution, Harun Islam Ditinjau dari Berbagai Aspeknya, Jilid , (Jakarta:UI Press, 1979), cet. I. 6. Nata, Abuddin, Studi Islam Komprehensif, (Jakarta:Prenada Media Group, 2011), cet. I. 7. Nata, Abuddin, dkk., Integrasi Ilmu Agama dan Ilmu Umum, (Jakarta:UIN Jakarta Press, 2003), cet. I. 8. Rasyidi, H.M. Filsafat Agama, (Jakarta:Bulan Bintang, 1965), cet. I.

Module designation	Islam and Health Sciences
	9. Rosyada, Dede, Islam dan Sains, (Jakarta:RM Book, 2016), cet. I. 10. Shihab, M. Quraish, Wawasan al-Qur'an, (Bandung: Mizan, 1996 H./1416 H.), cet. III. 11. "Membumikan" Al-Qur'an Fungsi Wahyu dalam Kehidupan, (Bandung:Mizan, 1413 H./1992 M.), cet. II.

Module designation	Pharmaceutical Microbiology
Semester(s) in which the module is taught	2/First year
Person responsible for the module	Dr. Isra Janatiningrum, M.Si apt. Puteri Amelia, M.Farm., Ph.D apt. Hendri Aldrat, M.Si., Ph.D
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lecture,Collaborative learning, presentation
Workload (incl. contact hours, self-study hours)	Total workload : 8 hours 30 minutes per week 2 hours 30 minutes for contact study, 3 hours for structured academic assignment, 3 hours for self-study per week
Credit points	5 credits (3 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to understand the history of microbiology, basic concepts in microbiology, and the role of microbes in life. 2. Be able to understand and use the systematics of microorganisms 3. Be able to explain the basic concepts of bacteriology 4. Be able to explain the basic concepts of mycology 5. Be able to explain the basic concepts of virology 6. Be able to explain the concepts of nutrition and microbial growth 7. Be able to explain the concepts of microbial growth control and analysis contamination 8. Be able to explain the basic concepts of kingdom protozoa 9. Be able to explain the role of archea, algae, and application of microbial enzymes in the pharmaceutical field 10. Be able to understand and apply antimicrobial test methods< /li> 11. Be able to explain the scope of immunology and the immune system in an Islamic perspective 12. Be able to understand disorders of the immune system, and how to boost the immune system according to the Koran and hadith. 13. Be able to explain how to do a serological test in detecting a disease 14. Be able to understand the interaction of humans - microorganisms
Content	This course teaches the basic concepts of microbiology in supporting the pharmaceutical field. Some of the topics that will be discussed in this course are the definition and history of microbiology, basic concepts of microbiology, systematics of microorganisms, bacteriology, mycology, virology, the role of microorganisms for the health sector, control of microorganisms,

Module designation	Pharmaceutical Microbiology
	nutrition and growth of microorganisms, UTS, protozoa, archea, algae, microbial enzymes, antimicrobial test methods, basic concepts of the immune system, pathogenicity, vaccines, and disorders of the immune system
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Madigan et al. (2019). Brock Biology of Microorganisms 15th edition. New York: Pearson 2. Wahyuni dan Ramadhani. (2020). Mikrobiologi dan Parasitologi. Banyumas: Pena Persada 3. Mohanty and Leela. (2014). Textbook of immunology. India: Jaypee Brothers Medical Publishers 4. Abbas et al. (2018). Cellular and Molecular Immunology 9th edition. Philadelphia: Elsevier 5. Amelia, P., et. al 6. Journal of Natural Medicinesthis link is disabled, 2021, 75(3), pp. 633–642

Module designation	Pharmaceutical Microbiology Practice
Semester(s) in which the module is taught	2/First year
Person responsible for the module	Dr. Isra Janatiningrum, M.Si apt. Puteri Amelia, M.Farm., Ph.D apt. Hendri Aldrat, M.Si., Ph.D
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lab works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to carry out rules and regulations of the pharmaceutical microbiology laboratory, and be able to recognize the tools to be used during practicum 2. Able to carry out technical sterilization and methods for making microbial media 3. Able to carry out aseptic transfer of pure cultures 4. Able to isolate microorganisms from nature 5. Able to enumerate isolated microbes 6. Able to carry out staining of bacteria and manufacture dry preparations< /li> 7. Able to carry out bacterial biochemical identification 8. Ability to carry out a method for measuring bacterial growth curves 9. Able to carry out a method for testing the sterility of pharmaceutical preparations 10. Able to carry out a method for know the environmental factors that affect the growth of microorganisms 11. Be able to carry out antimicrobial activity test methods with agar dilution and diffusion methods 12. Be able to carry out probiotic food production 13. Be able to carry out serological reaction tests in diagnosing diseases of the immune system 14. Able to carry out serological reaction tests in checking blood groups
Content	Microbiology practicum presents material on the introduction of laboratory equipment, sterilization and media preparation, transfer of pure cultures aseptically, isolation of microorganisms from nature, enumeration of microorganisms, manufacture of dry preparations and staining of bacterial cells, biochemical identification of microorganisms, making curves bacterial growth, the influence of environmental factors on the growth of microorganisms, the sterility test of pharmaceutical preparations,

Module designation	Pharmaceutical Microbiology Practice
	the antimicrobial activity test by the agar dilution and diffusion method, the manufacture of probiotic food, and immunoserology
Examination forms	Multiple choice, essay, practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Brown, A. 2012. Benson's microbiological applications: laboratory manual in general microbiology. New York : Mc Graww Hill. 2. Hadioetomo RS. 1993. Mikrobiologi dasar dalam praktek: teknik dan prosedur dasar laboratorium. Jakarta: Gramedia. 3. Maharani EA dan Noviar G. 2018. Imunohematologi dan Bank Darah. Jakarta: BPPSDMK KEMENKES 4. Pollack RA. et al. 2018. Laboratory exercise in microbiology 5th edition. New York: Wiley 5. Rich RR. 2019. Clinical Immunology: Principles and Practice 5th edition. New York: Elsevier Health Sciences 6. Yerhaegen YEJ, et al. 2011. Basic laboratory procedures in clinical bacteriology 2nd edition. Geneva: World Health Organization

Module designation	Pharmacognosy
Semester(s) in which the module is taught	2/First year
Person responsible for the module	Dr. apt. Eka Putri, M.Si apt. Puteri Amelia, M.Farm., Ph.D apt. Vivi Anggia, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lecture, collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to understand the definition, history, and scope of pharmacognosy as well as the classification of traditional medicines in Indonesia 2. Be able to understand cultivation, the differences between cultivated plants and wild plants, factors that affect the bioactive content of plants 3. Be able to explain how to process herbal medicines 4. Be able to understand the morphology and anatomy of several Indonesian medicinal plants 5. Be able to understand primary and secondary metabolites in plants 6. Be able to understand carbohydrate-producing plants 7. Be able to understand resin-producing plants 8. Be able to understand fat-producing plants 9. Be able to understand enzymes and protein-producing plants 10. Be able to understand plants that produce tannins and flavonoids 11. Be able to understand plants that produce essential oils 12. Be able to understand plants that produce alkaloids 13. Be able to understand plants that produce glycosides 14. Able to understand adulteration of medicinal plant simplicia
Content	This course is part of the field of Pharmaceutical Biology which is closely related to the use of Indonesian medicinal plants and their processing to produce traditional medicines that can support human health. This course will discuss: definition and history of pharmacognosy, cultivation, harvesting and processing of herbal medicines, how to make simplicia, anatomical morphology of several Indonesian medicinal plants and pharmacognosy analysis, adulteration, introduction of primary and secondary metabolites, Indonesian medicinal plants that produce carbohydrates, uts,

Module designation	Pharmacognosy
	resins/resins, fats and oils, proteins and enzymes, tannins, essential oils, alkaloids, glycosides, traditional medicine additives, and Indonesian traditional medicine regulations
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Biren Shah, Avinash Seth-Textbook of Pharmacognosy and Phytochemistry-Elsevier India (2012) 2. Depkes RI, “Materia Medika Indonesia” (MMI) Jilid I s/d VI 3. Trease & Evans, “Pharmacognosy Ed 13” 4. Egil/Ramstad, “modern Pharmacognosy” 5. E. Steinegger E. Hansel, "Lehrbuch der Pharmacognosy” 6. Karsten Weber Stahl, “Lehrbuch der Pharmacognosy”, 1962 7. Farmakope Herbal Indonesia II, 2017 8. Parameter Standar Umum Ekstrak Tumbuhan Obat, Departemen Kesehatan, 2000 (Keputusan Menteri Kesehatan R.I No: 55/MENKES/SK/I/2000 9. Monografi Ekstrak Tumbuhan Obat Indonesia (METOI), Badan POM 2006/ 10. Endang Hanani, Vivi Anggia, Ike Nurvita Amalina, Ochna kirkii Oliv: Pharmacognostical Evaluation, Phytochemical Screening, and Total Phenolic Content. Pharmacognosy Journal,2020,12,6,1317-1324.

Module designation	Pharmacognosy Practice
Semester(s) in which the module is taught	2/First year
Person responsible for the module	Dr. apt. Eka Putri, M.Si, apt. Hendri Aldrat, ph.D Dr. Isra Janatiningrum, M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lab works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand the scope of pharmacognosy and practicum techniques related to the field of pharmacognosy 2. Able to understand about simplicia manufacturing techniques: raw material collection, wet sorting, washing, slicing, drying 3. Be able to understand the technique of making simplicia (continued): dry sorting, packing and storage, quality inspection of simplicia 4. Be able to understand the technique of identifying counterfeit herbal medicine in the form of chopped mixtures 5. Be able to understand the technique identification of counterfeit herbal medicines in the form of simplicia mixtures (powders) 6. Ability to understand techniques Identification of plant chemicals containing carbohydrates, resins, fats and proteins, essential oils, alkaloids and glycosides 7. Ability to understand analytical techniques pharmacognosy of carbohydrate-producing plants 8. Be able to understand the pharmacognosy analysis techniques of resin-producing plants 9. Be able to understand the pharmacognosy analysis techniques of fat-producing plants 10. Be able to understand the pharmacognosy analysis techniques of enzyme-producing plants and protein 11. Able to understand the pharmacognosy analysis technique of plants producing tannins and flavonoids 12. Able to understand the pharmacognosy analysis technique of plants producing essential oils
Content	This course is part of the field of Pharmaceutical Biology which is closely related to the practice of using Indonesian medicinal plants and processing them to produce traditional medicines that

Module designation	Pharmacognosy Practice
	can support human health. This course will discuss: processing of herbal medicines, manufacturing simplicia, recognizing the anatomical morphology of several Indonesian medicinal plants, performing adulteration techniques, chemical identification of medicinal plant contents, microscopic analysis of plants containing carbohydrates, resins/resins, fats and oils, proteins and enzymes , alkaloids, and glycosides
Examination forms	Multiple choice, essay, practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Biren Shah, Avinash Seth-Textbook of Pharmacognosy and Phytochemistry-Elsevier India (2012) 2. Depkes RI, “Materia Medika Indonesia” (MMI) Jilid I s/d VI 3. Trease & Evans, “Pharmacognosy Ed 13” 4. Egil/Ramstad, “modern Pharmacognosy” 5. Varro E. Tyler, Liyan R. Brady, “Pharmacognosy” Ed 8, 1981 6. E. Steinegger E. Hansel, “Lehr buch der Pharmacognosy” 7. Karsten Weber Stahl, “Lehrbuch der Pharmacognosy”, 1962 8. Farmakope Herbal Indonesia, 2008 9. Parameter Standar Umum Ekstrak Tumbuhan Obat, Departemen Kesehatan, 2000 (Keputusan Menteri Kesehatan R.I No: 55/MENKES/SK/I/2000 10. Monografi Ekstrak Tumbuhan Obat Indonesia (METOI), Badan POM 2004 11. Endang Hanani, Vivi Anggia, Ike Nurvita Amalina, Ochna kirkii Oliv: Pharmacognostical Evaluation, Phytochemical Screening, and Total Phenolic Content. Pharmacognosy Journal,2020,12,6,1317-1324.

Module designation	Human Anatomy, Physiology and Pathophysiology
Semester(s) in which the module is taught	2/First year
Person responsible for the module	apt. Marvel, M.Farm Dr. dr. Ahmad Azwar Habibi, M.Biomed
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students study the understanding of human anatomy and physiology and study homeostasis, basic anatomical terminology, and human body tissues 2. Be able to explain the anatomy and physiology of the integumentary system, skeletal, and muscle 3. Be able to explain the anatomy and physiology of the nervous system and endocrine system 4. Be able to explain the anatomy and physiology of blood and the cardiac system 5. Be able to explain anatomy and physiology of the vascular system and lymphatic system 6. Be able to explain the anatomy and physiology of the respiratory and digestive systems 7. Be able to explain the anatomy and physiology of the excretory system and reproductive system 8. Be able to explain about integumentary, skeletal, and muscle system disorders 9. Be able to explain about disorders of the nervous and endocrine systems 10. Be able to explain about blood and heart disorders 11. Be able to explain about disorders vascular system and lymphatic system 12. Be able to explain about respiratory and digestive system disorders 13. Be able to explain about excretory system disorders, acid-base balance 14. Be able to explain about reproductive system disorders
Content	This course is a compulsory subject for undergraduate students of the Bachelor of Pharmacy Study Program. This course discusses Introduction to Anatomy and Physiology, the integumentary system, bones, muscles, nerves, endocrine, cardiovascular, blood vessels and circulation, respiration, digestion, reproduction and

Module designation	Human Anatomy, Physiology and Pathophysiology
	excretory system (C2). Students are able to explain disorders/abnormalities in the integumentary system, bones, muscles, nerves, endocrine, cardiovascular, blood vessels and circulation, respiration, digestion, reproduction and excretory systems (C2). The learning method is carried out using the blended-learning method (online and offline) in a flipped-learning manner, namely before face-to-face lectures, online students view videos explaining lecture materials and read material in Google Classroom, do pre-tests and view assignment instructions in Google Classroom for create presentation materials. Face-to-face lectures in class for presentation sessions, discussions, and post-tests. The language of instruction for this course is Indonesian.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Scanlon, VC., Sanders, T. 2007. 'Essentials of Anatomy and Physiology 5th edition'. Philadelphia : F.A. Davis Company 2. Price, S., 2005. 'Patofisiologi, Konsep klins-prose proses penyakit, ed 6, vol 1&2'. Jakarta : EGC. 3. Hartono, A., 1995. 'Patofisiologi (alih bahasa)'. Jakarta : Hipokrates 4. Underwood, 1999. 'Patologi umum & sistemik'. Jakarta : EGC

Module designation	Human Anatomy, Physiology and Pathophysiology Practice
Semester(s) in which the module is taught	2/First year
Person responsible for the module	apt. Marvel, M.Farm dr. Nurmila Sari, M.Kes Rr. Ayu Fitri Hapsari, S.Si., M.Biomed Auliyani Andam Suri, M.Biomed
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students learn the provisions of human anatomy and physiology practicum 2. Be able to explain body anatomy 3. Be able to observe the anatomy of the digestive system organs, histological descriptions of the digestive system organs and digestive glands. 4. observe their work salivary amylase enzyme and observing the effect of temperature on the work of the amylase enzyme. 5. cardiovascular, cardiac histology, and physiology of the cardiovascular system 6. Be able to observe anatomy in the endocrine system and histological features of the endocrine glands 7. Be able to observe the anatomy of the organs that make up the respiratory system 8. Able to observe the anatomy of the urinary organs, histological picture of the kidney and urinary tract 9. Able to observe the physiology of the skin 10. Able to observe the anatomical and histological description of organs and accessory glands of the male and female reproductive systems 11. Be able to observe the physiology of human vision
Content	This course is compulsory for undergraduate students of the Bachelor of Pharmacy Study Program. This course discusses an introduction to anatomy and physiology, the integumentary system, bones, muscles, nerves, endocrine, cardiovascular, blood vessels and circulation, respiration, digestion, reproduction and excretory systems (C2). The learning method is blended learning, namely flipped learning, in which students are assigned to watch learning videos, and it is carried out using face-to-face practicum methods in the anatomy laboratory, physiology laboratory, and

Module designation	Human Anatomy, Physiology and Pathophysiology Practice
	histology. Students take the pre-test before carrying out the practicum and post-test after the practicum is carried out. The language of instruction for this course is Indonesian.
Examination forms	Multiple choice, essay, practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Scanlon, VC., Sanders, T. 2007. 'Essentials of Anatomy and Physiology 5th edition'. Philadelphia : F.A. Davis Company 2. Zaki, A. 2013. 'Buku penuntun praktikum anatomi, histologi dan fisiologi manusia'. Jakarta : FKIK UIN Jakarta

Module designation	Physical Pharmacy
Semester(s) in which the module is taught	2/First year
Person responsible for the module	apt. Yuni Anggraeni, M.Farm., apt. Ofa Suzanti Betha, M.Farm., apt. Estu Mahanani Dhilasari, M.Si.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture, Case study, Collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand the rules and regulations that apply 2. Able to explain the physical characteristics of medicinal raw materials and medicinal preparations 3. Able to solve physical problems of medicinal raw materials and medicinal preparations 4. Able to identify the physical stability of suspension, coarse dispersion 5. Able to identify the physical stability of preparations 6. Able to explain the characteristics of each substance state 7. Able to explain the characteristics of the dispersion system 8. Able to solve the physical problems of the dispersion system 9. Able to solve the physical problems during drug storage
Content	This course discusses physical & chemical phenomena in the drug manufacturing process including micromeritic science, solubility systems, surface tension, dispersion systems and physical & chemical phenomena in drug storage including viscosity, rheology, drug shelf life as well as physical & chemical phenomena in drug use includes dissolution and diffusion processes.
Examination forms	Multiple choice, and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Martin, Farmasi Fisika dan Ilmu Farmasetik, edisi 5, EGC, 2011 2. Siregar, Ch. Teknologi Farmasi Sediaan Tablet. Edisi 10, EGC 2010 3. Shargel, L. Applied Biopharmaceutic and farmakokinetic

Module designation	Physical Pharmacy Practice
Semester(s) in which the module is taught	2/First year
Person responsible for the module	apt. Yuni Anggraeni, M.Farm apt. Estu Mahanani Dhilasari, M.Si.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab Works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to understand the rules and regulations that apply during lectures 2. Be able to determine the particle size distribution using sieving and microscopic methods 3. Be able to explain the influence of liquid type, temperature and surfactant on the surface tension of several kinds of liquids 4. Able to determine the viscosity of several types of Newtonian fluids using a falling ball viscometer and Ostwald 5. Able to determine the viscosity and rheology of several types of non-Newtonian fluids with a Brookfield viscometer 6. Be able to differentiate Newtonian and non-Newtonian liquids 7. Be able to determine the rate of dissolution of a substance, operate a dissolution tool, and explain the factors that affect the rate of dissolution of a substance 8. Be able to determine the solubility accurately quantitative, explaining the factors affecting solubility, and distinguishing saturated, unsaturated, and supersaturated solutions 9. Be able to explain flocculated and deflocculated suspensions, calculate sedimentation volume and degree of flocculation, and explain the influence of the viscosity of the dispersing medium on velocity sedimentation 10. Able to calculate the amount of surfactant used in making emulsions and make emulsions using surfactant class emulsifiers 11. Able to evaluate emulsion instability and determine the HLB needed oil in the emulsion 12. Able determine the order of the decomposition reaction 13. Able to determine the shelf life
Content	This course discusses micromeritic, surface tension, viscosity, rheology, dissolution, solution, suspension, emulsion and kinetics

Module designation	Physical Pharmacy Practice
Examination forms	Multiple choice, essay, and Practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Departemen Kesehatan Republik Indonesia, Farmakope Indonesia Edisi VI, Jakarta, 2020 2. Carstensen, T.J., Pharmaceutics of Solids and Solids – Dosage From, A Wiley Interscience Publication, John Wiley&Sons, New York, 3. Martin, A. N and Swarbrick, J.C.A., Physical Pharmacy, 3, ed. Lea & Febiger, Philadelphia, 2023 4. Michael E. Aulton dan Kevin M. G. Taylor. Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 2018 5. Sabrina, Yuni Anggraeni, Berti Puspitasari, LBS Kardono. Solubility Enhancement of Ethyl AcetateFraction of The Artocarpus altilis (Parkinson) Fosberg Leaves with Addition of βCyclodextrin-HPMC by Using Kneading Method. Jurnal Valensi Vol. 4: (1) Tahun 2014

Module designation	Phytochemistry 1
Semester(s) in which the module is taught	3/Second year
Person responsible for the module	apt. Ismiarni Komala, M.Sc., Ph.D apt. Puteri Amelia, M.Farm., Ph.D Dr. apt. Eka Puteri, M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lecture, collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain the role of plants in the field of medicine 2. Be able to explain the period of drug development and the process of finding drugs from plants 3. Be able to distinguish primary and secondary metabolites 4. Be able to explain the types of secondary metabolite building blocks 5. Be able to explain the metabolic pathways of secondary metabolites 6. Be able to explain the stages of the isolation procedure of secondary metabolites from plants 7. Be able to understand the process of pre-extraction of secondary metabolites from plants 8. Be able to understand the principles and various techniques of extracting secondary metabolites from plants 9. li>Be able to understand the principles and techniques of phytochemical screening 10. Be able to understand the principles and techniques of purification of secondary metabolites from plants 11. Be able to explain the benefits of standardization 12. Be able to distinguish between types specific parameter aspects of extract standardization 13. Be able to explain the types and procedures of non-specific parameter aspects of extract standardization 14. Be able to explain the definition, classification, method of identifying phenolic compounds 15. Be able to explain definition, characteristics of physicochemical properties, method of isolation, biosynthesis and use of phenolic compounds in general and phenolic acid compounds specifically in the pharmaceutical field

Module designation	Phytochemistry 1
	16. Be able to explain definitions, characteristics of physicochemical properties, methods of isolation, biosynthesis and use of flavonoid compounds in the field pharmacy 17. Be able to explain definition, characteristics of physicochemical properties, method of isolation, biosynthesis and use of benzophenone, xanthone and stilbene compounds in the pharmaceutical field 18. Able to explain, history, definition, classification, source, procedure names, precursors, reagents and methods of detection, physicochemical properties, isolation, benefits and functions of alkaloids for humans 19. Be able to explain about the definition, biosynthesis, physicochemical properties and benefits in the pharmaceutical field of alkaloid derivatives ornithine, lysine, anthranilic acid, phenylalanine and tyrosine, tryptophan, histidine, isoprenoid
Content	This course studies the role of plants as producers of medicinal compounds and the process of finding and developing new medicinal compounds from plants, methods of extracting and isolating compounds chemistry of plants, definition, structure, physico-chemical properties and benefits in the pharmaceutical field biosynthesis of secondary metabolites of compounds derived from phenol and alkaloids.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Sarker SJ, Nahar L. 2012. Natural product isolation. Human pres. New York 2. Fischer, N.H, isman, M.B., Stafford.H.A., Modern Phytochemical Methods. Plenum Press, New York. 3. Zubrick, J.W. .1998. The organic Chem Lab Survival Manual. John Wiley & Son. New York 4. Coskun, O. 2016. Separation techniques: Chromatography. North Clin Istanbul 3(2):156–60 5. Cordell, G.A. 1995.Changing strategies in natural product chemistry. Phytochemistry 40:1585-1612 6. Hamburger, M. and Hostettmann, K. 1991. Bioactivity in plants: the link between Phytochemistry and Medicine. Phytochemistry 30: 364-3874. 7. Paul M Dewick, " Medicinal Natural Products : A Biosynthetic Aproach", Jons wiley & sons, New York, 2009.

Module designation	Phytochemistry 1
	8. Vermerris W, 2009. Phenolic compound Biochemistry, Springer, USA 9. Poole, C.F 2003. The essence of Chromatography. Elsevier 10. Alvert-Via, M., Fabiano-Tixier, A.S., Struve, J., Uhlenbrock, L., Gunjevic, V., Cravotto.Green extraction of natural products. Origins, current status, and future challenges. TrAC Trends in Analytical Chemistry. 2019., 118, 248-263 11. Komala, Ismiarni, Takuya Ito, Fumihiro Nagashima, Yasuyuki Yagi, Masatoshi Kawahata, Kentaro Yamaguchi, and Yoshinori Asakawa. 2010. "Zierane Sesquiterpene Lactone, Cembrane and Fusicoccane Diterpenoids, from the Tahitian Liverwort Chandonanthus Hirtellus." *Phytochemistry* 71 (11–12). Elsevier Ltd: 1387–1394.

Module designation	Phytochemsitry 1 Practice
Semester(s) in which the module is taught	3/Second year
Person responsible for the module	apt. Puteri Amelia, M.Farm., Ph.D
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lab works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to carry out simplicia preparation process 2. Able to perform simplicia extraction with various methods 3. Able to determine specific and non-specific parameters including drying shrinkage and specific gravity, moisture content, ash content, residual solvent, residual pesticides, heavy metals, dissolved compounds in certain solvents, chromatograms, total content of chemical groups, chemical content levels 4. Be able to conclude practicum results compared to standard literature
Content	This course discusses methods for testing non-specific and specific parameters in standardizing extracts of natural medicinal ingredients. The parameter tests carried out in this practicum are determining the parameters of drying shrinkage and specific gravity, water content, ash content, residual solvent, residual pesticides, heavy metals, compounds dissolved in certain solvents, poly chromatograms, total levels of chemical group content, chemical content levels certain
Examination forms	Multiple choice, essay, practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Ashutosh, K. Pharmacognosy and Pharmacobiotechnology Revised Second Edition. New Age International Publisher. 2. Departemen Kesehatan, Republik Indonesia, 1985. Cara pembuatan simplisia. 3. Kementerian Kesehatan RI. 2017. Farmakope Herbal Indonesia Edisi II. 4. Shah, B and Seth, AK. 2010. Textbook of Pharmacognosy and Phytochemistry. ELSEVIER A division of Reed Elsevier India Private Limited 5. United Nations Industrial Development Organization and the International Centre

Module designation	Phytochemsitry 1 Practice
	6. for Science and High Technology. 2008. Extraction Technologies for Medicinal and Aromatic Plants. International Center for Science and Technology 7. Komala, Ismiarni, Takuya Ito, Fumihiro Nagashima, Yasuyuki Yagi, Masatoshi Kawahata, Kentaro Yamaguchi, and Yoshinori Asakawa. 2010. "Zierane Sesquiterpene Lactone, Cembrane and Fusicoccane Diterpenoids, from the Tahitian Liverwort Chandonanthus Hirtellus." *Phytochemistry* 71 (11–12). Elsevier Ltd: 1387–1394. doi:10.1016/j.phytochem.2010.04.023.

Module designation	Pharmacology and toxicology
Semester(s) in which the module is taught	3/Second year
Person responsible for the module	Dr.apt. Azrifitria, M.Si Dr. apt. Nurmeilis, M.Si Apt. Yardi, Ph.D
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lecture, Case study, Collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 8 hours 30 minutes per week 2 hours 30 minutes for contact study, 3 hours for structured academic assignment, 3 hours for self-study per week
Credit points	5 credits (3 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	Be able to explain basic concepts of pharmacokinetics, pharmacodynamics, mechanism of action of drugs, as well as drug toxic parameters in organs
Content	Pharmacology of Toxicology studies the Basic Principles pharmacokinetics and pharmacodynamics, ADME, mechanism of drug action, neurotransmitters affecting the CNS and ANS, dose and response relationships, therapeutic index, drug classification based on NLEM, toxicological parameters, teratogenicity, carcinogenicity, organ toxicity, and handling of emergency conditions
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Silbernagl S, Lang F. Color Atlas of Pathophysiology 2nd edition. 2010. USA: Georg Thieme Verlag KG. 2. Wells B.G, Dipiro JT, Schwinghammer TL, Dipirol CV. Pharmacotherapy Handbook 7th edition. 2000. USA: The McGraw-Hill Companies. 3. Bertram G. Katzung-Basic & Clinical Pharmacology9th Edition. 4. Heinz Lüllmann Klaus Mohr Albrecht Ziegler Detlef Bieger Jürgen Wirth. Color Atlas of Pharmacology Second Edition. 2000. Thieme New York, 333 Seventh Avenue, New York, NY 10001, USA 5. British National Formulary 6. Drugs.com. diakses melalui https://www.drugs.com/interactions-check.php?drug_list=2118-0,1433-0

Module designation	Pharmacology and toxicology
	7. Loomis, T.A. (1978). Essentials of Toxicology. 3rd Ed. Lea & Febiger: Philadelphia 8. Klaasen, C.D. & Watkins, J.B., 2003. Casarett and Doull's : Essentials Toxicology Mc Graw-Hill: New York 9. Glaister, JR. (1986). Principles of Toxicological Pathology, Taylor & Francis, London 10. Donatus, I.A. (2005), Toksikologi Dasar. Edisi II. Bagian Farmakologi dan Farmasi Klinik,Fakultas farmasi UGM, Yogyakarta

Module designation	Pharmacology and Toxicology Practice
Semester(s) in which the module is taught	3/Second year
Person responsible for the module	apt. Rurynta Ferly Shavira, M.Farm.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to perform basic experiments using experimental animals 2. Able to test the effects of analgesic-antipyretic, diuretic, mydriatic-miotic, CNS stimulant and anticonvulsant, antidiabetic, general anesthesia and anesthetic stages, in experimental animals 3. Able to screen pharmacological activity 4. in vitro and in vivo drug toxicity testing
Content	This course is the practice of theory pharmacology and toxicology so that students can directly study the effects of drugs through experimental animals, as well as learn methods of injecting various drug administration routes to experimental animals. This course discusses: the effects of analgesic-antipyretic, diuretic, mydriatic-miotic drugs, CNS stimulants and anticonvulsants, antidiabetics, general anesthesia and anesthetic stages, in experimental animals; pharmacological activity screening; in vitro and in vivo drug toxicity testing.
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Turner, R.A., Screening method in Pharmacology, Academic Press. New York. 2. Gerdern LS Gilmun., The Pharmacology Basic of therapeutica, 4 th ed. The Mac Millan Co. New york. 3. Domner, F.R et.al. Animal Experiment Inc. Pharmacodogical Analisis, Tomas Sprigfield, USA. 4. Goodman & Gilmans, The Pharmacological Basic of Therapeutics, 9 th edition, MC Millan Pusblishing Compani, 1994 5. Mutshler Ernst, Dinamika Obat, edisi 5, penerbit ITB, Bandung

Module designation	Pharmacology and Toxicology Practice
	6. Bagian farmakologi FK UI, Farmakologi & Terapi, edisi 5, Jakarta, 2012

Module designation	Medicinal Chemistry
Semester(s) in which the module is taught	3/Second year
Person responsible for the module	Dr. apt. Zilhadia, M.Si apt Ismiarni Komala, Ph.D apt. Ofa Suzanti Betha, M.Si apt. Lina Elfita, M.Si apt. Hendri Aldrat, M.Si Andzar Fikranus Shofa, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lecture, Collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand the definition, scope, application of medicinal chemistry. 2. Able to understand the concept of drug development and guide compound optimization method 3. Able to understand the relationship between structure, physical chemical properties and the absorption, distribution and excretion of drugs. 4. Able to understand the relationship between structure and drug metabolism. 5. Able to understand the relationship between structure, metabolism and drug development. 6. Able to understand the relationship between structure, solubility and biological activity of drugs. 7. Able to understand the relationship between structure, stereochemistry and biological activity of drugs. 8. Able to understand the relationship between structure, physical chemical properties and biological activity of drugs. 9. Able to understand the relationship between structure, chemical bonding and biological activity of drugs. 10. Able to understand the relationship between structure and drug-receptor interactions. 11. Ability to understand the relationship between structure and development of agonist and antagonist compounds. 12. Able to understand the qualitative relationship of activity structure 13. Able to understand the method of determining the parameter value of lipophilic properties

Module designation	Medicinal Chemistry
	14. Able to understand the method of modifying the molecular structure of drugs
Content	The Medicinal Chemistry course discusses drug development, the relationship between structure, physical and chemical properties of drugs, absorption, distribution and excretion processes, and metabolic processes. Relationship of structure, solubility, stereochemistry, physical chemical properties, chemical bonding with the biological activity of drugs. Structural relationships and drug-receptor interactions, development of agonist and antagonist compounds. Qualitative and quantitative relationship between structure and activity. Description of the method for determining the parameter values of the lipophilic properties of drug compounds, methods for modifying drug molecular structures and methods for optimizing lead compounds.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such us cheating or other acts of fraud
Reading list	1. Kimia Medisinal I. Editor Dr. Siswandono Apt. Prof. Dr. H. Bambang Soekardjo. Airlangga University. 2002. 2. Medicinal Chemistry: A Molecular and Biochemical Approach. Thomas Nogrady, Donald F. Weaver. Oxford University Press 2005. 3. Fundamental of Medicinal Chemistry. Gareth Thomas. John Wiley & Sons Ltd. 200

Module designation	Physico-chemical Analysis
Semester(s) in which the module is taught	3/Second year
Person responsible for the module	Dr. apt. Supandi, M.Si.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lecture, Collaborative learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to apply basic concepts of analysis using instrumentation 2. Able to apply uv-vis spectrophotometer instrumentation in material analysis pharmaceutical raw materials and preparations 3. Able to apply spectrofluorometer instrumentation in the analysis of pharmaceutical raw materials and preparations 4. Able to apply FTIR spectrophotometer instrumentation in the analysis of pharmaceutical raw materials and preparations 5. Be able to apply Mass spectrophotometer instrumentation in the analysis of pharmaceutical raw materials and preparations 6. Able to apply Atomic Absorption spectrophotometer instrumentation in the analysis of pharmaceutical raw materials and preparations 7. Able to apply Gas Chromatography instrumentation in the analysis of pharmaceutical raw materials and preparations 8. Able to apply MS tandem gas chromatography instrumentation in the analysis of raw materials and pharmaceutical preparations 9. Able to apply instrumentation High Performance Liquid Chromatography in the analysis of pharmaceutical raw materials and preparations 10. Able to apply tandem MS Liquid Chromatography instrumentation in the analysis of pharmaceutical raw materials and preparations 11. Able to interpret NMR data in compound identification
Content	This course discusses chemical analysis carried out using the instrumental method of uv-vis spectrophotometer, light emission and atomic absorption (AAS), Infrared (IR) spectrophotometer, Mass spectrometer (MS)), gas chromatography (GC), high performance liquid chromatography (HPLC), gas chromatography

Module designation	Physico-chemical Analysis
	mass spectroscopy (GCMS), mass spectroscopy liquid chromatography (LCMS), Nuclear Magnetic Resonance (RMI)
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such us cheating or other acts of fraud
Reading list	1. Karl, A (2005) Pharmaceutical Drug Analysis, New Age International (P) Limited Publisher, New Delhi 2. Grob, RL, Barry EF (2004) Modern Practice of Gas Chromatography. Wiley Interscience, USA 3. McMaster, MC (2007) HPLC a practical user's guide. John Wiley & Son, Inc, New Jersey 4. Ardrey RE (2003) Liquid chromatography-Mass spectrometry: an introduction, John Wiley & Son, Ltd, Eengland 5. McMaster, MC (2005) LC/MS: A practical user guide. John Wiley & Son,Inc, New Jersey. 6. Santos FJ, Galceran MT (2003) Modern Development in Gas Chromatography-Mass Spectrometry Based Enviromental Analysis. Journal of Chromatography A 1000, 125-151 7. Pavia, Dl., Lampman, GM., Kriz, GS., Vyvyan JR., 2009. Introduction to Spectroscopy. 4th Ed.Brooks/cole. USA 8. Tashdiq Anwarullah, Supandi, Almawati Situmorang. Optimasi dan Validasi Metode Analisis Identifikasi Orto, Meta dan Para Fenilendiamin dalam Sediaan Pewarna Rambut Secara KCKT. Pharmacy Jurnal Farmasi Indonesia. 2014; 11(1) 9. azrifitria, Supandi, Muhardi Ritongga. Optimasi Uji Difusi Kombinasi Testosteron Undekanoat (TU) dan Medroksi Progesteron Asetat (MPA) dalam Sediaan Mikroemulsi. Media Pharmaceutica Indonesiana. 2016; 1(2) 10. Yahdiana Harahap, Nurul Azizah, Rizka Andalusia, Supandi. Simultaneous Analytical Method Development of 6-Mercaptopurine and 6-Methylmercaptopurine in Plasma by High Performance Liquid Chromatography-Photodiode Array. Journal of Young Pharmacists. 2017; 9(1-suppl) 11. Supandi, Yahdiana Harahap, Harmita, Rizka Andalusia. Quantification of 6-Mercaptopurine and Its Metabolites in Patients with Acute lymphoblastic Leukemia Using Dried Blood Spots and UPLC-MS/MS. Scientia Pharmaceutica. 2018; 86(2).

Module designation	Physico-chemical Analysis
	12. Ismianrni Komala, Supandi, Muhammad Mirza Hardiansyah. Direct Amidation of Ethyl-p-Methoxynnamate to Produce N, N-bis-(2-hydroxyethyl)-p-methoxycinnamate. Jurnal Kima Valensi. 2018; 4(1)

Module designation	Basic Pharmaceutics
Semester(s) in which the module is taught	3/Second year
Person responsible for the module	apt. Ofa Suzanti Betha, M.Si apt Sabrina, M.Farm.,Ph.D apt Estu Mahanani Dillasari, M.Si.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to describe the principles, guidelines for the application of technology in compounding non-sterile pharmaceutical preparations 2. Be able to describe the stability of non-sterile formulations 3. Be able to describe the principles and procedures for making compound preparations non-sterile (powder and granule) in accordance with the principles of quality assurance based on applicable regulations 4. Be able to describe the principles and procedures for making non-sterile formulations (capsules) in accordance with the principles of quality assurance based on applicable regulations 5. Able to describe the principles and procedures for making non-sterile formulations (liquid preparations of solutions, syrups and elixirs of similar systems) according to the principles of quality assurance based on applicable regulations topical) in accordance with the principles of quality assurance based on applicable regulations 6. Be able to describe the principles and procedures for making non-sterile formulations (oral and topical liquid emulsions) in accordance with the principles of quality assurance based on applicable regulations 7. Able describe the principles and procedures for the manufacture of non-sterile formulations (ointments and pastes) according to the principles of quality assurance based on applicable regulations 8. Be able to describe the principles and procedures for the manufacture of non-sterile formulations (creams and gels) according to the principles of quality assurance based on regulations

Module designation	Basic Pharmaceutics
	9. Be able to describe the principles and procedures for making non-sterile formulations (suppositories) in accordance with the principles of quality assurance based on applicable regulations 10. Be able to describe the principles and procedures for making non-sterile formulations (cosmetics for special population, patches etc.) in accordance with quality assurance principles based on applicable regulations 11. Able to identify problems in the compounding process 12. Able to identify problems in the compounding process
Content	This course discusses theories and principles in compounding to packaging and storage of quality non-sterile pharmaceutical preparations, as well as being able to solve problems in compounding, quality assurance and quality inspection of pharmaceutical preparations.
Examination forms	Multiple choice,and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Allen, L V. 2015. Ilmu dan Teknologi Peracikan Sediaan Farmasi. EGC 2. Allen, L V. 2011. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. 3. Marriot, J F. 2010. Pharmaceutical Compounding and Dispensing 2nd edition. Pharmaceutical Press 4. FI VI

Module designation	Basic Pharmaceutics Practice
Semester(s) in which the module is taught	3/Second year
Person responsible for the module	apt. Ofa Suzanti Betha, M.Si apt. Nelly Suryani, M.Si, Ph.D apt Sabrina, M.Farm., Ph.D apt Estu Mahanani Dillasari, M.Si.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab Works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to prepare PPE, compounding tools and facilities 2. Able to compile compounding documents and worksheets 3. Able to complete calculations in compounding documents 4. Able to mix powder preparations, (pulveres and pulvis) 5. Able to mix capsule preparations 6. Able to mix syrup, elixir and topical solutions 7. Able to mix oral and topical suspension preparations 8. Able to prepare oral and topical liquid emulsion preparations 9. Able to mix ointment and paste preparations 10. Able to mix cream and gel preparations 11. Able to mix preparations suppositories 12. Able to mix special cosmetic preparations 13. Able to mix large quantities 14. Able to solve problems in compounding
Content	Be able to prepare this course to discuss theories and principles in compounding to packaging and storage of quality non-sterile pharmaceutical preparations, and be able to solve problems in compounding, quality assurance and quality inspection of pharmaceutical preparations
Examination forms	Multiple choice, essay, and Practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Allen, L V. 2015. Ilmu dan Teknologi Peracikan Sediaan Farmasi. EGC 2. Allen, L V. 2011. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. 3. Marriot, J F. 2010. Pharmaceutical Compounding and Dispensing 2nd edition. Pharmaceutical Press

Module designation	Basic Pharmaceutics Practice
	4. FI VI

Module designation	Analysis of Raw Material
Semester(s) in which the module is taught	3/ Second year
Person responsible for the module	Dr. apt. Lina Elfita, M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain definitions, requirements, references for testing and comparisons as well as sources of medicinal raw materials 2. Be able to explain application of raw material testing and QC of drugs, sampling methods and flow of receiving and dispensing medicinal raw materials in the pharmaceutical industry 3. Able to explain the physico-chemical properties of drugs 4. Be able to explain the analysis of analgesic-antipyretic drugs 5. Be able to explain the analysis of anti-inflammatory drugs 6. Able to explain the analysis of sulfonamide class drugs 7. Able to explain the analysis of beta-lactam antibiotics 8. Be able to explain the analysis of quinolone antibiotics 9. Be able to explain the analysis of macrolide antibiotics 10. Be able to explain the analysis of tetracycline antibiotics 11. Be able to explain the analysis of antibiotic aminoglycosides 12. Be able to explain the analysis of derivatives barbituric acid 13. Be able to explain the analysis of xanthine alkaloids 14. Be able to explain the analysis of opium alkaloids
Content	The course on drug raw material analysis is one of the courses in the pharmaceutical chemistry discipline which is involved in the analysis and identification of synthetic drug raw materials used as pharmaceutical drugs that can be used for therapy. The analysis of medicinal raw materials conducts a study of existing drugs, in the form of chemical and physical properties, requirements for medicinal raw materials, references for comparison, application of raw material tests, analysis of antipyretic analgesic drugs, analysis of anti-inflammatory drugs, analysis of antibiotics, analysis of sulfonamides, and analysis of alkaloids
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment

Module designation	Analysis of Raw Material
	3. not commit acts of fraud such us cheating or other acts of fraud
Reading list	1. Kementerian Kesehatan RI. 2020. Farmakope Indonesia. Edisi VI. Jakarta 2. Sudjadi, Rohman A. 2012. Analisis Farmasi. Edisi 1. Penerbit Pustaka Pelajar. Yogyakarta 3. Auterhoff & Kovar. 2002. Identifikasi Obat. Edisi 5. Institut Teknologi Bandung. Bandung 4. Gandjar IG. 2012. Analisis Obat. Edisi 1. Penerbit Pustaka Pelajar. Yogyakarta

Module designation	Analysis of Raw Material Practice
Semester(s) in which the module is taught	3/Second year
Person responsible for the module	Dr. apt. Lina Elfita, M.Si.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lab Works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand rules, procedures and practicum study of analysis of medicinal raw materials 2. Able to explain and perform Determination of the physical properties of medicinal raw materials 3. Able to explain and carry out qualitative analysis of functional groups of medicinal compounds 4. Able to explain and perform qualitative and quantitative analysis of analgesic-antipyretic drugs 5. Able to explain and perform qualitative and quantitative analysis of anti-inflammatory drugs 6. Able to explain and perform qualitative and quantitative analysis of sulfonamide class drugs 7. Able to explain and perform qualitative and quantitative analysis of beta-antibiotics lactam 8. Able to explain and perform qualitative and quantitative analysis of quinolone class antibiotics 9. Able to explain and perform qualitative and quantitative analysis of macrolide antibiotics 10. Able to explain and perform qualitative and quantitative analysis of tetracycline antibiotics 11. Able to explain and perform qualitative and quantitative analysis of compounds belonging to the antibiotic aminoglycoside group 12. Able to explain and perform qualitative and quantitative analysis of compounds derived from barbituric acid 13. Able to explain and carry out qualitative and quantitative analysis of compounds belonging to the xanthine alkaloid group 14. Able to explain and carry out qualitative and quantitative analysis of compounds of vitamin compounds
Content	The practicum course for the analysis of medicinal raw materials is one of the courses in the pharmaceutical chemistry discipline which is involved in the analysis and identification of synthetic drug raw materials used as pharmaceutical drugs that can be used

Module designation	Analysis of Raw Material Practice
	for therapy. In this practical analysis of medicinal raw materials, qualitative and quantitative analysis of medicinal raw materials is carried out based on the physical, chemical and physicochemical properties of these compounds through color reactions, volumetric methods, UV-Vis spectrophotometry, thin layer chromatography and high performance liquid chromatography. The raw materials for the drugs being analyzed include analgesic antipyretic drugs, anti-inflammatory drugs, antibiotics, sulfonamides and alkaloids.
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such us cheating or other acts of fraud
Reading list	1. Kementerian Kesehatan RI. 2020. Farmakope Indonesia. Edisi VI. Jakarta 2. Sudjadi, Rohman A. 2012. Analisis Farmasi. Edisi 1. Penerbit Pustaka Pelajar. Yogyakarta 3. Auterhoff & Kovar. 2002. Identifikasi Obat. Edisi 5. Institut Teknologi Bandung. Bandung 4. Gandjar IG. 2012. Analisis Obat. Edisi 1. Penerbit Pustaka Pelajar. Yogyakarta

Module designation	Pharmaceutical Biotechnology
Semester(s) in which the module is taught	3/Second year
Person responsible for the module	Dr. apt. Lina Elfita, M.Si Andzar Fikranus Shofa, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to understand and explain the definition, scope and role of biotechnology in the pharmaceutical field and Islamic integration 2. Be able to explain the basic principles and concepts in biotechnology 3. Be able to explain about recombinant DNA technology 4. Be able to explain about gene multiplication techniques and their insertion into plasmids 5. Be able to explain about recombinant therapeutic proteins 6. Be able to explain about nucleic acid-based therapies and cells 7. Be able to explain the meaning of genomic and proteomic and their uses 8. Be able to explain about antibodies, vaccines and adjuvants 9. Be able to explain about fermentation technology and its applications 10. Be able to explain about tissue culture and plant cells 11. Be able to explain the concept of bioinformatics 12. Be able to explain about biosafety and bioethics
Content	Pharmaceutical biotechnology is a relatively new and growing field in which biotechnological principles are applied to the development of drugs. The majority of therapeutic drugs on the market today are bioformulations such as antibodies, nucleic acid products and vaccines. These bioformulations are developed through several stages which include: understanding the principles underlying health and disease, the fundamental molecular mechanisms governing the functions of related biomolecules, synthesis and purification of molecules. Biotechnology principles such as recombinant DNA technology are used to design more effective protein-based drugs such as erythropoietin and fast-acting insulin. The first chapters offer a broad introduction to the principles of biotechnology such as

Module designation	Pharmaceutical Biotechnology
	recombinant DNA technology – a field underpinning the whole subject of cloning, production and purification of protein molecules. The following chapters focus on the analysis of gene therapy, stem cell-based therapy, vaccines, monoclonal antibodies. This pharmaceutical biotechnology course also discusses plant tissue and cell cultures, fermentation technology, bioinformatics and biosafety & bioethics. Finally, this pharmaceutical biotechnology course is expected to be able to explore science, biotechnology and medical applications of certain biotech product categories. These are not only protein-based compounds but also nucleic acid and cell-based products
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Alberts B, Johnson A, Lewis J, Raff M, Roberts K, Walter P. 2008. Molecular Biology of The Cell. Edisi 5. Garland Science, UK 2. Marshall WJ, Lapsley M, Day AP, Ayling RM. 2014. Clinical Biochemistry: Metabolic and Clinical Aspects. Edisi 3. Churchill Livingstone. UK 3. Felix Franks. 1993. Protein Biotechnology: Isolation, Characterization, and Stabilization. The Humana Press. Totowa, New Jersey 4. Schmauder HP, Schweizer M, Schweizer LM. 1997. Methods in Biotechnology. Taylor & Francis, London 5. Goldstein LSB, Schneider M. 2010. Stem Cells For Dummies. Wiley Publishing. Inc. USA 6. Halim D, Murti H, Sandra F, Boediono A, Djuwantono T, Setiawan B. 2010. Stem Cell: Dasar Teori & Aplikasi Klinis. Penerbit Erlangga. Jakarta 7. Thangadurai D, Sangeetha J. 2015. Genomics and Proteomics: Principles, Technologies, and Applications. Apple Academic Press 1st edition, India 8. Peter Stanbury, Allan Whitaker, Stephen J. Hall. 2016. Principles of Fermentation Technology 3rd Edition. Butterworth-Heinemann, Elsevier 9. Jafargholi Imani, Ashwani Kumar, Karl-Hermann Neumann. 2009. Plant Cell and Tissue Culture - A Tool in Biotechnology - Basics and Application. Springer Berlin, Heidelberg 10. Navneet Sharma, Himanshu Ojha, Pawan Raghav, Ramesh Goyal. 2021. Chemoinformatics and Bioinformatics in the Pharmaceutical Sciences. Academic Press, Elsevier

Module designation	Pharmacotherapy 1
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	Dr. apt. AzrifitriaM.Si Dr. apt. Nurmeilis, M.Si apt. Rurynta Ferly Shavira, M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning, case study
Workload (incl. contact hours, self-study hours)	Total workload : 11 hours 20 minutes per week 3 hours 20 minutes for contact study, 4 hours for structured academic assignment, 4 hours for self-study per week
Credit points	7 credits (4 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Understanding and knowing the meaning of pharmacotherapy, the scope of pharmacotherapy, basic concepts in pharmacotherapy, and the concept of treatment in an Islamic perspective 2. Understanding and knowing rational therapy management in pediatric patients 3. Understand and know rational therapy management in geriatric patients 4. Understand and know rational therapy management in cardiovascular disease 5. Understand and know rational therapy management in kidney disease 6. Understanding and knowing rational therapy management in respiratory disorders 7. Understanding and knowing rational therapy management in immune system disorders
Content	In general the subject of pharmacotherapy I discusses the management of rational therapy in various cases of organ system diseases, including; pharmacotherapy for cardiovascular disease, pharmacotherapy for kidney disease, pharmacotherapy for respiratory and blood disorders.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. DiPiro, J.T., Talbert, R.L., Yee, G.C., Matzke, G.R., Wells, A.G., Posey, L.M. (Eds), 2005, Pharmacotherapy a Pathophysiological Approach, 4rd ed, Appleton & Lange, Stamford

Module designation	Pharmacotherapy 1
	2. Dipiro, L. and Michael, L., 2002, Pharmacotherapy : A Pathophysiologic Approach, Appleton & Lange, Stamford 3. Herfindal, E.T., Gourley, D.R (Eds), 2001, Textbook of T.herapeutics Drug and Disease Management, 7th Ed, Lippincot Williams and Wilkins, Philadelphia McPhee, S., Lingappa, V.R., Ganong, W.F., Lange, J.D., 2000 4. Pathophysiology of disease: An introduction to Clinical Medicine, 3rd ed, The McGraw-Hill Companies Inc, New York Scwinghammer TL., 2002, Pharmacotherapy Casebook : A Patient Focused Approach, 5th Ed., McGraw-Hill Companies, New York 5. A Pathophysiologic Approach, 3rd. ed., Appleton & Lange, Stamford. Herfindal, E.T., and Gourley, D.R., 2000 6. Textbook of Therapeutics, Drug and Disease Management 7th ed., Lippincot & Williams, Philadelphia. Graddy, F., Lambert, H.P., Finch, R.G., and Greenwood, D., 1997 7. Pharmacotherapy Casebook: A Patient Focused Approach, 5th. Ed., McGraw-Hill Companies, New York. McPhee, S., Lingappa, V.R., Ganong, W.F., Lange J

Module designation	Analysis of Pharmaceutical Preparation
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	-
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand the definition, scope, and importance of qualitative and quantitative analysis of pharmaceutical preparations 2. Able to understand sample preparation by distillation, soxhletation, extraction, and deproteinization. 3. Be able to understand the validation of analytical methods according to the International Conference on Harmonization (ICH) and determination of substance levels using standard. 4. Able to understand the analysis of pharmaceutical preparations using titrimetric/volumetric methods including acid-base titration, water-free titration, nitrimetry, iodometry. 5. Ability to understand the analysis of pharmaceutical preparations using the UV-Vis spectrophotometry method. 6. Be able to understand the analysis of pharmaceutical preparations using the AAS spectroscopy method. 7. Able to understand the analysis of pharmaceutical preparations using the TLC method. 8. Able to understand the analysis of pharmaceutical preparations using TLC- densitometry. 9. Able to understand the analysis of pharmaceutical preparations using the HPLC method. 10. Able to understand the analysis of pharmaceutical preparations using the KG method. 11. Able to understand the application of analysis of pharmaceutical preparations in the research field.
Content	The subject of Pharmaceutical Preparation Analysis discusses the definition, scope and importance of qualitative and quantitative pharmaceutical analysis, sample preparation, validation of analytical methods according to ICH, and understanding various methods of analyzing pharmaceutical preparations with volumetric methods, spectrophotometry (UV-VIS and AAS), chromatography (Thin Layer Chromatography, KLT densitometri,

Module designation	Analysis of Pharmaceutical Preparation
	high performance liquid chromatography, gas chromatography) as well as the results of lecturer research in the field of analysis of pharmaceutical preparations.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such us cheating or other acts of fraud
Reading list	1. Connors, K.A., 1982, A Textbook of Pharmaceutical Analysis, Jhon Wiley and Sons, New York. 2. Watson, D.G., 2003, Pharmaceutical Analysis, A TextBook for Pharmacy Student and Pharmaceutical Chemists, Churcill Livingstone, Edinburg 3. Sudjadi & Rahman, A., 2012, Analisis Farmasi, Pustaka Pelajar, Yogyakarta. 4. Adamovics, J.A., 1997, Chromatography Analysis of Pharmaceutical, Second Edition, Revise and Expand, Marcel Dekker Inc., New York.

Module designation	Analysis of Pharmaceutical Preparation Practice
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	apt. Supandi M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lab Works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand practicum analysis of pharmaceutical preparations, rules, general instructions, weighing, measurement, statement of final results, analytical techniques for all practicum subjects 2. Be able to qualitatively analyze compounds belonging to the alcohol group 3. Be able to analyze qualitatively compounds belonging to the alkaloid and analgesic group 4. Able to qualitatively analyze compounds belonging to the class of antihistamines and antibiotics 5. Be able to analyze qualitatively compounds belonging to the sulfonamide group 6. Able to qualitatively analyze vitamin group compounds 7. Able to quantitatively analyze hydroxy benzoic acid compounds and their derivatives using UV-VIS spectrophotometry method 8. Able to quantitatively analyze hydroxy benzoic acid compounds and their derivatives using the HPLC method 9. Able to analyze quantitatively analgesic-antipyretic compounds using UV-VIS spectrophotometry method 10. Able to quantitatively analyze analgesic-antipyretic compounds using HPLC methods 11. Able to quantitatively analyze antibiotic compounds using the UV-VIS spectrophotometric method 12. Able to quantitatively analyze antibiotic compounds using the HPLC method
Content	The Pharmaceutical Preparations Analysis Practicum subject discusses the definition, scope and importance of qualitative and quantitative pharmaceutical analysis, sample preparation, validation of analytical methods according to ICH, and understanding various analytical methods of pharmaceutical preparations using volumetric methods, spectrophotometry (UV-VIS and AAS), chromatography (Thin Layer Chromatography, TLC densitometry, high performance liquid chromatography, gas

Module designation	Analysis of Pharmaceutical Preparation Practice
	chromatography) as well as the results of lecturer research in the field of analysis of pharmaceutical preparations.
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such us cheating or other acts of fraud
Reading list	1. Connors, K.A., 1982, A Textbook of Pharmaceutical Analysis, Jhon Wiley and Sons, New York. 2. Watson, D.G., 2003, Pharmaceutical Analysis, A TextBook for Pharmacy Student and Pharmaceutical Chemists, Churcill Livingstone, Edinburg. 3. Sudjadi & Rahman, A., 2012, Analisis Farmasi, Pustaka Pelajar, Yogyakarta. 4. Adamovics, J.A., 1997, Chromatography Analysis of Pharmaceutical, Second Edition, Revise and Expand, Marcel Dekker Inc., New York. 5. Auterhoff & Kovar. 2002. Identifikasi Obat. Edisi 5. Institut Teknologi Bandung. Bandung. 6. Anonim, 1979, Farmakope Indonesia Edisi III, Departemen Kesehatan Republik Indonesia, Jakarta . 7. Anonim, 1995, Farmakope Indonesia Edisi IV, Departemen Kesehatan Republik Indonesia, Jakarta. 8. Gholib. 2009. Analisis Farmasi Metode Modern. UGM Press. Jogjakarta. 9. Hartanto. 2005. Identifikasi Obat. Erlangga. Surabaya 10. Mursyidi, A., & Rohman, A., 2006, Pengantar Kimia Farmasi Analitik: Volumetri dan Gravimetri, Yayasan Farmasi Indonesia, Pustaka Pelajar, Yogyakarta. 11. Underwood. 2007. Drug Analysis with Quantitative. Learning Publisher, New York. 12. Vogel. 1999. Analisis Kuantitatif Senyawa Anorganik. EGC Press. Jakarta.

Module designation	Formulation and Technology of Solid Dosage Forms
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	apt. Nelly Suryani, Ph.D
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain the scope of solid preparations (powder, granules, tablets, suppositories) 2. Be able to explain principles and explain solid dosage preformulation, 3. Be able to describe the principles of solid dosage formulation (powder, granule, tablet) 4. Be able to design, develop formulas and evaluate powder and granule preparations. 5. Be able to design, manufacture and develop formulas as well as evaluate soft capsule and hard capsule preparations 6. Be able to explain the scope and characteristics of tablet preparations. 7. Be able to explain methods making tablets. 8. Being able to explain the types of machines and technology for making tablets 9. Being able to guarantee a quality assurance system and identify and provide solutions to problems in making tablets 10. Be able to guarantee quality assurance system and identify and provide solutions to problems in tablet manufacturing (GMP) 11. Be able to evaluate tablet preparations 12. Be able to Design, manufacture and develop formulas and evaluate insert preparations 13. Be able to design formulas and evaluate special solid preparations (controlled release tablets, microencapsulation and patch preparations). 14. Be able to design, manufacture and develop formulas as well as evaluate insert preparations 15. Be able to design formulas and evaluate special solid preparations (controlled release tablets, microencapsulation and patch preparations)
Content	This course is a compulsory subject for Bachelor of Pharmacy undergraduate students. This course discusses the analysis of bulk

Module designation	Formulation and Technology of Solid Dosage Forms
	properties of active ingredients, granulation formulations with wet granulation, evaluation of granules, tablet formulations with the granulation method, evaluation of tablets and suppository formulations.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Marriot,J.F., Wilson,K.A., Langley, C.A., Belcher, D. 2010. Pharmaceutical Compounding and Dispensing. Pharmaceutical Press. 2. Ansel, H.C., Allen, L.V., Popovich, N.G. 2011. Ansel's Pharmaceutical Dosage Forms and Drug Delivery System, 9th ed. Lippincotts William & Wilkins. 3. Aulton M. E. Pharmaceutics, The Science of Dosage Form Design. 4. Anonim. 1995. Farmakope Indonesia, Edisi IV. Departemen Kesehatan RI. Jakarta. 5. Quinn etc.2009. Handbook of Pharmaceutical Excipients, 6th. Pharmaceutical Press. 6. Syamsuni, 2002. Farmasetika Dasar dan Hitungan Farmasi. Penerbit EGC

Module designation	Formulation and Technology of Solid Dosage Forms Practice
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	apt. Nelly Suryani, Ph.D apt. Sabrina, M.Farm, Ph.D apt. Ofa Suzanti Betha, MSi. apt. Yuni Angraini, M.Farm apt. Estu Mahanani Dillasari, M.Farm.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab Works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	Able to identify and solve drug problems using an evidence-based approach in the design, manufacture/preparation, distribution, management and/or service of pharmaceutical preparations to optimize therapeutic success
Module objectives/intended learning outcomes	1. Students are able to analyze the bulk properties of active ingredients, search preformulation data from the library. For this reason, students need to master two things, namely what data must be traced and what literature can be accessed to obtain this data 2. Compile and study pre-formulation of active ingredients to be used in the manufacture of tablet preparations, explain principles and explain preformulation of solid dosage forms 3. Students can identify the function of each excipient in the formula 4. Students can prepare formulas for making tablets by granulation based on preformulation studies 5. Students can determine the method of making tablets 6. Students can develop tablet production procedures by wet granulation. 7. Students can develop tablet production procedures by dry granulation. making one batch 8. Students can determine the type of tool used in each stage of the procedure. 9. Students can explain how the tools work in the process of making tablets 10. Students can determine the kinds of granule evaluation examinations 11. Students can conclude the results of granule evaluation examinations 12. Students can conclude the results of the evaluation of granules

Module designation	Formulation and Technology of Solid Dosage Forms Practice
	13. Students can determine the various types of tablet quality inspection and their procedures 14. Students can conclude the results of the tablet quality inspection.
Content	This course is a compulsory subject for undergraduate students of the Bachelor of Pharmacy Study Program. This course discusses preliminary knowledge of solid preparations, preformulation in solid dosage forms, powders and granules, capsules, tablets, methods of making tablets, machine technology in tablet manufacturing, GMP and problems in the process of making tablets, evaluation of tablet preparations, insert preparations (suppositories , ovules), and special solid preparations (controlled release tablets, microencapsulation, and patches).
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Marriot,J.F., Wilson,K.A., Langley, C.A., Belcher, D. 2010. Pharmaceutical Compounding and Dispensing. Pharmaceutical Press. 2. Ansel, H.C., Allen, L.V., Popovich, N.G. 2011. Ansel's Pharmaceutical Dosage Forms and Drug Delivery System, 9th ed. Lippincotts William & Wilkins. 3. Aulton M. E. Pharmaceutics, The Science of Dosage Form Design. 4. Anonim. 1995. Farmakope Indonesia, Edisi IV. Departemen Kesehatan RI. Jakarta. 5. Quinn etc.2009. Handbook of Pharmaceutical Excipients, 6th. Pharmaceutical Press. 6. Syamsuni, 2002. Farmasetika Dasar dan Hitungan Farmasi. Penerbit EGC

Module designation	Phytochemistry 2
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	apt. Ismiarni Komala, M.Sc., Ph.D apt. Puteri Amelia, M.Farm., Ph.D apt. Vivi Anggia, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Contextual Learning, cooperative Learning, presentation
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain the biosynthesis of terpenoids, essential oils, glycosides, carbohydrates, peptides, polyketides, fatty acids and proteins 2. Be able to explain the process of biosynthesis of terpenoids, essential oils, glycosides, carbohydrates, peptides, polyketides , fatty acids and proteins 3. Be able to explain the classification of terpenoids, essential oils, glycosides, carbohydrates, peptides, polyketides , fatty acids and proteins based on their structure 4. Be able to explain the physical and chemical properties of terpenoids , essential oils, glycosides, carbohydrates, peptides, polyketides , fatty acids and proteins 5. Able to detect and isolate terpenoids, essential oils, glycosides, carbohydrates, peptides, polyketides , fatty acids and proteins 6. Be able to explain the role of terpenoid compounds terpenoids, essential oils, glycosides, carbohydrates, peptides, polyketides, fatty acids and proteins in nature 7. Be able to explain the uses of terpenoid compounds, essential oils, glycosides, carbohydrates, peptides, polyketides, fatty acids and proteins in the pharmaceutical field 8. Be able to explain the history/application/ utilization of terpenoids, essential oils, glycosides, carbohydrates, peptides, polyketides, fatty acids and their protein derivatives in the Islamic field.
Content	This course explains structure, biosynthesis, physical and chemical properties, application in pharmacy, and integration with Islam of terpenoid secondary metabolites, essential oils, glycosides, carbohydrates, peptides, polyketides, fatty acids and proteins:

Module designation	Phytochemistry 2
	structure , biosynthesis, physical and chemical properties, applications in pharmaceuticals.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Breitmer, E. (2008) Breitmaier. Terpenes. Wiley-VCH, Germany 2. Paul M Dewick, " Medicinal Natural Products : A Biosynthetic Aproach", 3th edition Jons wiley & sons, New York, 2009. 3. Li, Ying, Fabiano-Tixier, A, Chemat, F. Essential oils as a reagent, Springer 2014. 4. Sell, C. S. (2003) A Fragrant Introduction to Terpenoid Chemistry. United Kingdom: The Royal Society of Chemistry. 5. Cheng, A.-X. et al. (2007) 'Plant Terpenoids:Biosynthesis and ecological functions', Journal of Integrative Plant Biology, 49(2), pp. 179–186. doi: 10.1111/j.1672-9072.2006.00395.x. 6. Yang, W. et al. (2020) 'Advances in Pharmacological Activities of Terpenoids', Natural Product Communications, 15(3). doi: 10.1177/1934578X20903555. 7. Koziol, A. et al. (2014) 'An Overview of the Pharmacological Properties and Potential Applications of Natural Monoterpenes', Mini-Reviews in Medicinal Chemistry, 14(14), pp. 1156–1168. doi: 10.2174/1389557514666141127145820. 8. Komala, I. et al. (2010) 'Zierane sesquiterpene lactone, cembrane and fusicoccane diterpenoids, from the Tahitian liverwort Chandonanthus hirtellus', Phytochemistry, 71(11–12), pp. 1387–1394. doi: 10.1016/j.phytochem.2010.04.023. 9. Komala, I., Ito, T., Nagashima, F., Yagi, Y. and Asakawa, Y. (2010) 'Cytotoxic, radical scavenging and antimicrobial activities of sesquiterpenoids from the Tahitian liverwort Mastigophora diclados (Brid.) Nees (Mastigophoraceae)', Journal of Natural Medicines, 64(4), pp. 417–422. doi: 10.1007/s11418-010-0423-8. 10. Elshafie, H. S. and Camele, I. (2017) 'An overview of the biological effects of some mediterranean essential oils on human health', BioMed Research International, 2017. doi: 10.1155/2017/9268468. 11. Aziz, Z. A. A. et al. (2018) 'Essential Oils: Extraction Techniques, Pharmaceutical And Therapeutic Potential - A Review', Current Drug Metabolism, 19(13), pp. 1100–1110. doi: 10.2174/1389200219666180723144850.

Module designation	Phytochemistry 2
	12. AIRASE, T. A. for the I. R. of A. S. and E. (2015) 'Extraction Methods of Essential Oils', Airase, (February), pp. 1–13. doi: 10.13140/RG.2.2.18744.34564. 13. Handa, SS, Khanuja, SPS, Longo, G, Rakesh, DD. Extraction technologies for Medicinal& aromatic plants 14. Turek, C. and Stintzing, F. C. (2013) 'Stability of essential oils: A review', Comprehensive Reviews in Food Science and Food Safety, 12(1), pp. 40–53. doi: 10.1111/1541-4337.12006. 15. Li, Y. and Chemat, F. (no date) SPRINGER BRIEFS IN MOLECULAR SCIENCE Essential Oils as Reagents in Green Chemistry.

Module designation	Phytochemistry 2 Practice
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	apt. Ismiarni Komala, M.Sc., Ph.D Dr. apt. Eka Puteri, M.Si apt. Puteri Amelia, M.Farm., Ph.D apt. Vivi Anggia, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lab works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand the principles and techniques of pre-extraction. 2. Able to understand the principles and techniques of solid-liquid extraction 3. Able to understand the principles and procedures of phytochemical screening 4. Able to understand the principles and techniques of liquid-liquid 5. Able to understand the principles and techniques of using column chromatography 6. Able to understand the principles and techniques of making and using preparative TLC 7. Able to carry out sample collection techniques, identification collection identification sorting, drying and refinement of plant samples 8. Able to perform solid-liquid extraction and liquid-liquid extraction 9. Able to screen chemical content of extracts 10. Able to carry out purification of secondary metabolites from plants using column chromatography techniques, preparative TLC and recrystallization 11. Able to carry out reports on the results of the process of isolating secondary metabolites from plants
Content	This course explains the process of isolating secondary metabolites from plants starting from the process of sample collection, pre-extraction, extraction (solid-liquid extraction), phytochemical screening, liquid-liquid extraction (partitioning), column chromatography, Preparative TLC
Examination forms	Multiple choice, essay, practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment

Module designation	Phytochemistry 2 Practice
	3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Sarker SJ, Nahar L. 2012. Natural product isolastion. Human pres. New York 2. Hostettman,K. Marston A., Hostettmann, M. 1997. Preparative chromatography Techniques. Springer, Switzerland 3. Fischer, N.H, isman, M.B., Stafford.H.A., Modern Phytochemical Methods. Plenum Press, New York. 4. Zubrick, J.W. .1998. The organic Chem Lab Survival Manual. John Wiley & Son. New York 5. Coskun, O. 2016. Separation techniques: Chromatography. North Clin Istanbul 3(2):156–60

Module designation	Pharmacokinetics
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	apt. Mita Restinia, M. Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	lecture, group discussion, case study
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to understand theory, methods and applications of pharmaceutical science and technology (pharmaceuticals, pharmaceutical chemistry, pharmacognosy, pharmacology). 2. Be able to understand the concepts of pharmacotherapy, pharmaceutical care and pharmacy practice. 3. Be able to understand the concept of drug travel, 4. Be able to understand the pathophysiology of asthma; pharmacology, drug interactions, drug side effects, contraindications related to drugs used in asthma, and management of asthma. 5. Be able to understand the pathophysiology of Gastroesophageal Reflux Disease (GERD); pharmacology, drug interactions, drug side effects, contraindications related to drugs used in GERD, and management of GERD. 6. Be able to understand the pathophysiology of peptic ulcer disease; pharmacology, drug interactions, drug side effects, contraindications related to drugs used in peptic ulcers, and management of peptic ulcers. 7. Be able to understand the pathophysiology of gastritis; pharmacology, drug interactions, drug side effects, related contraindications to drugs used in gastritis, and management of gastritis. 8. Be able to understand the pathophysiology of nausea, vomiting; pharmacology, drug interactions, drug side effects, contraindications related to drugs used for nausea and vomiting, and management of nausea and vomiting. 9. Be able to understand the pathophysiology of constipation; pharmacology, drug interactions, drug side effects, contraindications related to drugs used for constipation, and management of constipation. 10. Be able to understand the pathophysiology of diarrheal disease; pharmacology, drug interactions, drug side effects,

Module designation	Pharmacokinetics
	contraindications related to drugs used for diarrhea, and management of diarrhea. 11. Be able to understand changes in drug pharmacokinetics, calculation, and application of clinical data for geriatric drugs. 12. Be able to understand changes in drug pharmacokinetics, calculate, and apply clinical data on drugs in pediatrics. 13. Be able to understand changes in drug pharmacokinetics, calculate, and apply clinical data on drugs in kidney disorders and hemodialysis . 14. Be able to understand changes in drug pharmacokinetics, calculate, and apply clinical data for drugs in liver disorders. 15. Be able to understand changes in drug pharmacokinetics, calculate, and apply clinical data for drugs in pregnant women 16. Be able to understand changes in drug pharmacokinetics, calculations, and application of clinical data medicine for breastfeeding mothers
Content	Subject Pharmacokinetics studies the application of pharmacokinetics in pharmaceutical service activities both in hospitals and pharmacies or other health care settings. Subjects taught include: drug pharmacokinetics (absorption, distribution, metabolism, and elimination), changes in drug pharmacokinetics, calculations, and the application of clinical data in drug use in special populations such as geriatrics, pediatrics, kidney disorders, liver disorders, pregnant women and breastfeeding.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Shargel L. Susanna Wu, Andrew B C Yu, Applied Biopharmaceutics and Pharmacokinetics, 5th ed. New York, Mc Graw- Hill,2005 2. Djo wahyono, Farmakokinetika Klinik Konsep Dasar dan Terapan dalam Farmasi Klinik, Gajah Mada University, 2016 3. Katzung, Bertram G. 2004. Basic & clinical pharmacology. New York: Lange Medical Books/McGraw Hill. 4. Suryaningrat D, Abubakar A, Haddade H. 2023. Pandangan AL-Quran terhadap Penggunaan Obat dalam Pengobatan Penyakit. Jurnal Kesehatan Masyarakat Vol 7(1).

Module designation	Biopharmaceutics
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	apt. Yuni Anggraeni, M.Farm. apt. Ofa Suzanti Betha, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to distinguish the general characteristics of intravascular and extravascular (P1) biopharmaceuticals; 2. Be able to explain the physiological factors of the gastrointestinal tract that affect the bioavailability of oral route drugs (P1); 3. Be able to explain the effect of physico-chemical properties on drug bioavailability (P1); 4. Be able to explain the effect of dosage forms, formulations, additives, and manufacturing methods on the bioavailability of oral route drugs (P1); 5. Be able to mention the tests used to assess the biopharmaceutical properties of drugs (P1); 6. Be able to define methods and procedures for drug bioequivalence tests (P1); 7. Be able to explain the mechanisms and characteristics of drug transport through membranes and related to the rate of absorption (P1); 8. Be able to explain the factors that influence the bioavailability of buccal/sublingual route drugs and how to get optimum bioavailability (P1); 9. Be able to explain the factors that affect rectal route drug bioavailability and how to get optimum bioavailability (P1); 10. Be able to explain the factors that affect the transdermal/dermal route drug bioavailability and how to get optimum bioavailability (P1); 11. Be able to explain the factors that affect the bioavailability of pulmonary and intranasal route drugs and how to obtain optimum bioavailability (P1); 12. Be able to explain the factors that influence the bioavailability of subcutaneous and intramuscular injection drugs and how to get optimum bioavailability (P1);

Module designation	Biopharmaceutics
	13. Be able to explain the factors that affect the bioavailability of drugs by the ophthalmic route and how to get the best bioavailability optimum (P1);
Content	This course is a compulsory subject for undergraduate students of the Bachelor of Pharmacy Study Program. This course discusses the general overview and process of biopharmaceuticals; The influence of gastrointestinal physiological factors on drug bioavailability (dissolution and absorption) and its relation to the method of drug administration and the delivery system used; Effect of drug physicochemical factors on bioavailability; Effect of dosage form factors and oral dosage formulations on drug bioavailability; Assessment of the biopharmaceutical properties of drugs; Bioavailability and bioequivalence; Mechanism of drug transport through the membrane; Biopharmaceutical preparations for the buccal/sublingual route; Biopharmaceuticals for rectal route preparations; Biopharmaceutical preparations for transdermal/dermal routes; Biopharmaceuticals for pulmonary and intranasal drug preparations; Biopharmaceuticals for subcutaneous and intramuscular injection; Biopharmaceuticals for ophthalmic route drug preparations
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Peraturan BPOM Nomor 11 Tahun 2022 Tentang Tata Laksana Uji Bioekivalensi 2. Michael E. Aulton dan Kevin M. G. Taylor. Aulton's Pharmaceutics: The Design and Manufacture of Medicines, 2018 3. Sabrina, Yuni Anggraeni, Berti Puspitasari, LBS Kardono. Solubility Enhancement of Ethyl AcetateFraction of The Artocarpus altilis (Parkinson) Fosberg Leaves with Addition of βCyclodextrin-HPMC by Using Kneading Method. Jurnal Valensi Vol. 4: (1) Tahun 2014 4. Devia Permata Sari, T.N. Saifullah Sulaiman dan Okti Ratna Mafruhah. Uji disolusi terbanding tablet metformin hidroklorida generik berlogo dan bermerek. Majalah Farmasuetik, Vol. 9 No. 1 Tahun 2013 5. Sunil S Jambhekar, Philip J Breen. Basic Pharmacokinetics, 2009 6. Leon Shargel, Susana Wu-Pong, Andrew B.C Yu. Applied Biopharmaceutics & Pharmacokinetics 5th ed, 2004 7. Anya M Hileery et al. Drug Delivery and Targeting.

Module designation	Biopharmaceutics
	8. T. Tanner and R. Marks. Review Delivering drugs by the transdermal route: review and comment. Skin Research and Technology Vol 14, 2008 9. Aswani Dutt Vadlapudi et al. Ocular Drug Delivery.

Module designation	Biopharmaceuticals and Pharmacokinetics Practice
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	apt. Azrifitria, M.Si, apt. Suci Ahda Novitri, M.Si., apt. Marvel, M.Farm., apt. Mita Restinia, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to understand the stages in making a calibration curve 2. Be able to explain the factors that affect drug diffusion through the skin 3. Testing the bioadhesive ability of drug preparations containing a certain polymer 4. Being able to explain the differences in the dissolution test between sustained release and immediate release tablets and the effect of their administration on the kinetics of the drug in the body 5. Be able to explain the steps for drug analysis in biological fluids 6. Be able to explain the process of drug pharmacokinetics in the body after intravenous bolus administration by simulating in vitro models of drug pharmacokinetics following the one compartment open model, able to plot drug level data in a function of time on a semilogarithmic scale, able to determine various pharmacokinetic parameters 7. Be able to explain the process of drug pharmacokinetics in the body after intravenous bolus administration by simulating in vitro models of drug pharmacokinetics following the two-compartment open model, able to distinguish the principle of the one-compartment model open and two open compartments in intravenous bolus administration, able to plot drug level data in a function of time on a semilogarithmic scale, able to determine various pharmacokinetic parameters in an open 2 compartment model 8. Be able to explain the pharmacokinetic process of drugs in the body after continuous administration intravenous bolus

Module designation	Biopharmaceuticals and Pharmacokinetics Practice
	with in vitro pharmacokinetic model simulation of oral drugs, distinguishes the principle of the two-compartment model in i.v bolus administration with orally, determines various pharmacokinetic parameters in perola models, plots drug level data in a function of time on a semilogarithmic scale 9. Be able to explain drug pharmacokinetic processes in the body after intravenous administration by stimulation of in vitro pharmacokinetic models of drugs, plotting data on drug levels vs time on a semilogarithmic scale and comparing them with theoretical calculations, predicting various drug levels at various times both during i.v infusion and afterward 10. Be able to explain the process of drug pharmacokinetics in the body after double bolus intravenous administration by simulating in vitro drug pharmacokinetic models, plotting data on drug levels vs time on a semilogarithmic scale and comparing them with theoretical calculations, predicting various drug levels at various times during i.v administration double bolus 11. Be able to analyze paracetamol in the urine, know the chemical reaction to identify paracetamol 12. Be able to determine the bioequivalence status of a test product, design a research study on the bioavailability and bioequivalence of one drug product.
Content	This course discusses topics, including: Making Calibration Curves, Diffusion Tests, Bioadhesive Tests, Dissolution Tests for sustained release and immediate release tablets, Analysis of Paracetamol in Bioliquids, Simulation of in vitro pharmacokinetic models of drugs after intravenous administration of 1 and 2 open compartments, intravenous infusion, peroral, double IV, analysis of total paracetamol in urine samples, BABE.
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Shargel L. Susanna Wu, Andrew B C Yu, Applied Biopharmaceutics and Pharmacokinetics, 5th ed. New York, Mc Graw-Hill,2005 2. Barry, W. B., 1988, Topical Preparation, in **The Science of Dosage Form**, Aulton, M. E. (Ed.), Churchill Livingstone, New York, 382 – 410.

Module designation	Biopharmaceuticals and Pharmacokinetics Practice
	3. Bronaugh, R. L., 2002, Determination of Percutaneous Absorption by In Vitro Techniques, in **Topical Absorption of Dermatological Products**, A. T. Florence (Ed.), Marcel Dekker, Inc., New York, 157 – 158. 4. Chien, Y. W., 1982, **Novel Drug Delivery System**, 2nd ed., Marcel Dekker Inc., New York, 149 – 213. 5. Departemen Kesehatan RI, 2014. Farmakope Indonesia Edisi V, Jakarta : Departemen Kesehatan RI. 6. Brettscheider dan Glocke, M (1983). The Quality f Experimental results dalam Bergmeyer, H.U dkk (eds) methods of Enzymatic Analysis, Verlag Chemie. Weinheim, 3 rd ed. Vo II pp 459-477 7. Pachla, L.A, Wright. DS dan Reynolds, Dl : (1986) Bioanalytics Consideration for Pharmacokinetic and Biopharmaceutic Studies, J.Clin Pharmacol 26 : 332-335. 8. Westgard, J.O,de Vos, DJ, Hunt, MR Quam, E.F. Carey, RN dan Garber, CC. (1978) Conceppts and Practices in Evaluation of Clinical Chemistry methods, Am.J.Med.Technol.44 : 290-571. 9. Wagner J.G., Fundamental of Clinical Pharmacokinetics, 1st ed. 10. Wagner J.G., Pharmacokinetics for The Pharmaceutical Scientist, Technomic Publishing Co., Inc., Lancaster, 1993. 11. Wagner J.G., Fundamental of Clinical Pharmacokinetics, 1st ed. 12. Wagner J.G., Pharmacokinetics for The Pharmaceutical Scientist, Technomic Publishing Co., Inc., Lancaster, 1993. 13. Abdou, HM. Dissolution, Bioavailability & Bioequivalence, Pennsylvania : Mack Publishing Company

Module designation	Halal Product Guarantee System
Semester(s) in which the module is taught	4/Second year
Person responsible for the module	Dr. apt. Zilhadia, M.Si Drs. M. Yanis Musdja, M.Sc apt. Barita Juliano Siregar, S.Si., M.M
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain the importance of halal medicinal and cosmetic food products for a Muslim and how to meet the needs of Muslims for halal products 2. Be able to explain the role of the Halal Assurance System and how the Halal Assurance System is implemented by manufacturers of halal food and cosmetic drugs 3. Be able to explain the critical point of animal ingredients for the production of halal products 4. Able to explain the critical points of vegetable ingredients for the production of halal products 5. Able to explain the critical points of microbial ingredients for the production of halal products 6. Be able to explain the critical points of mining materials for the production of halal products 7. Be able to explain material methods are not critical and examples of materials are not critical and able to apply them to the halal product guarantee system 8. Be able to explain the rules regarding material documents and able to apply them to the halal product guarantee system 9. Be able to explain the rules regarding aspects of production facilities, HR, process, packaging and be able to apply them to the halal product guarantee system 10. Be able to explain MUI fatwas related to the field of medicine and health, namely vasectomy/tubectomy, IVF, cloning sex change operations, use of certain organs (placenta, urine) for cosmetics, use of certain organs for life (heart, kidney), use of corpses for research 11. Be able to explain about MUI fatwas related to medicine, food and cosmetics

Module designation	Halal Product Guarantee System
Content	The Halal Product Assurance System course explains the basic principles and rules medicine, food and cosmetic products get halal certificates and how the halal status of drug, food and cosmetic products lasts continuously for the validity period of the halal certificate.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such us cheating or other acts of fraud
Reading list	1. Riaz, M.N. Chaudry, M.M. 2004. Halal Food Production. CRC Press. 2. Sun, D.W. 2008. Modern Techniques for Food Authentication.Academic Press. 3. Rosenberg, I.M. 2005. Protein Analysis and Purification Benchtop Techniques 2nd. Birkhausser Boston. 4. Barlett, J.M.S., Stirling, D. Methods in Molecular Biology, PCR Protocols 2nd Vol 226. Humana Press. 5. Min, D.B. 2008. Food Lipids Chemistry, Nutrition, and Biotechnology. CRC Press. 6. Victoria Hamerton. 2008. Essential Guide To Food Additives. Leatherhead Publishing Ece JB. (2016). Campbell Biology 11th edition. New York: Pearson. 7. Fatwa-Fatwa Kontemporer MUI, 2020. 8. Halal Assurance System 23000, LPPOM MUI 9. Zilhadia, Chris Adhiyanto, Ayu Gustida Fajrin & Nadiah Khairunnisa. 2020. Analisis Cemaran Daging Babi pada Bakso Sapi yang Dijual di Tanjung Priok Menggunakan Real-Time Polymerase Chain Reaction (RT-PCR). Jurnal Sains Farmasi & Klinis. 10. Zilhadia, Yahdiana. H, Irwandi. J and Effionora. 2018. Characterization and Functional properties of gelatin extracted from goatskin. International Food Research Journal. 11. Zilhadia, Arifah Nurul Izzah, Ofa Suzanti Betha. 2017. Perbandingan Metode SYBR Green dan Hydrolysis Probe dalam Analisis DNA Gelatin Sapi dan Babi Menggunakan Real Time PCR. 12. Zilhadia, Farida Kusumaningrum, Ofa Suzanti Betha, Supandi. 2018. Diferensiasi Gelatin Sapi dan Gelatin Babi pada Gummy Vitamin C Menggunakan Metode Kombinasi Spektroskopi Fourier Transform Infrared (FTIR) dan Principal Component Analysis (PCA). Pharmaceutical Sciences and Research (PSR). 13. Zilhadia, Yahdiana Haraphap, Irwandi Jaswir, dan Effionora Anwar. 2022. Evaluation and Characterization of Hard-Shell

Module designation	Halal Product Guarantee System
	Capsules Formulated by Using Goatskin Gelatin. Polymers, 4(20).

Module designation	Pharmacotherapy 2
Semester(s) in which the module is taught	5/Third year
Person responsible for the module	Dr. apt. Mita Restinia, M.Farm Dr. apt. Eka Puteri, M.Si Dr. apt. Lina Elfita, M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	lecture, group discussion, case study
Workload (incl. contact hours, self-study hours)	Total workload : 11 hours 20 minutes per week 3 hours 20 minutes for contact study, 4 hours for structured academic assignment, 4 hours for self-study per week
Credit points	7 credits (4 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to understand the pathophysiology of Chronic Obstructive Pulmonary Disease (COPD); pharmacology, drug interactions, drug side effects, contraindications related to drugs used in COPD, COPD management. 2. Be able to understand the pathophysiology of asthma; pharmacology, drug interactions, drug side effects, contraindications related to drugs used in asthma, and management of asthma. 3. Be able to understand the pathophysiology of Gastroesophageal Reflux Disease (GERD); pharmacology, drug interactions, drug side effects, related contraindications to drugs used in GERD, and management of GERD. 4. Be able to understand the pathophysiology of peptic ulcer disease; pharmacology, drug interactions, drug side effects, contraindications related to drugs used in peptic ulcers, and management of peptic ulcers. 5. Be able to understand the pathophysiology of gastritis; pharmacology, drug interactions, drug side effects, related contraindications drugs used in gastritis, and management of gastritis. 6. Be able to understand the pathophysiology of nausea and vomiting; pharmacology, drug interactions, drug side effects, contraindications related to drugs used for nausea and vomiting, and management of nausea and vomiting. 7. Be able to understand the pathophysiology of constipation; pharmacology, drug interactions, drug side effects, contraindications related to drugs used for constipation, and management of constipation. 8. Be able to understand the pathophysiology of diarrheal disease; pharmacology, drug interactions, drug side effects,

Module designation	Pharmacotherapy 2
	contraindications related to drugs used in diarrhea, and management of diarrhea. 9. Be able to understand the pathophysiology of osteoarthritis; pharmacology, drug interactions, drug side effects, contraindications related to drugs used in osteoarthritis, management of osteoarthritis. 10. Be able to understand the pathophysiology of osteoporosis; pharmacology, drug interactions, drug side effects, contraindications related to drugs used in osteoporosis, and osteoporosis management. 11. Be able to understand the pathophysiology of rheumatoid arthritis; pharmacology, drug interactions, drug side effects, contraindications related to drugs used in rheumatoid arthritis, and management of rheumatoid arthritis. 12. Be able to understand the pathophysiology of gout; pharmacology, drug interactions, drug side effects, contraindications related to drugs used in gout, and management of gout. 13. Be able to understand the pathophysiology of Systemic Lupus Erythematosu (SLE); pharmacology, drug interactions, drug side effects, contraindications related to drugs used in SLE, and management of SLE. 14. Be able to understand the pathophysiology of allergic rhinitis; pharmacology, drug interactions, drug side effects, contraindications related to drugs used in allergic rhinitis, management of allergic rhinitis.
Content	Pharmacotherapy 2 course contains the subject of pharmacotherapy in the respiratory, gastrointestinal, autoimmune and bone and joint systems. Each system discussed in this course includes pathophysiology, pharmacodynamics, pharmacokinetics, drug interactions, MESO, contraindications, drug management according to guidelines, case analysis, and dose calculations.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Silbernagl S, Lang F. Color Atlas of Pathophysiology 2nd edition. 2010. USA: Georg Thieme Verlag KG. 2. Wells B.G, Dipiro JT, Schwinghammer TL, Dipirol CV. Pharmacotherapy Handbook 11th edition. 2020. USA: The McGraw-Hill Companies.

Module designation	Pharmacotherapy 2
	3. Bertram G. Katzung-Basic & Clinical Pharmacology9th Edition. 4. Heinz Lüllmann Klaus Mohr Albrecht Ziegler Detlef Bieger Jürgen Wirth. Color Atlas of Pharmacology Second Edition. 2000. Thieme New York, 333 Seventh Avenue, New York, NY 10001, USA 5. British National Formulary 6. Drugs.com. diakses melalui https://www.drugs.com/interactions-check.php?drug_list=2118-0,1433-0

Module designation	Entrepreneur and Digital Pharmacy
Semester(s) in which the module is taught	5/Third year
Person responsible for the module	apt. Barita Juliano S, M.M., Apt. Supriyatna, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to explain the basic concepts, goals and benefits of entrepreneurship Able to know important factors and entrepreneurial strategies, as well as entrepreneurial opportunities 2. Able to explain important factors and entrepreneurial strategies 3. Able to see entrepreneurial opportunities and conduct SWOT Analysis 4. Able to explain marketing strategies and tactics and create an entrepreneurial business plan 5. Able to Explain Important Factors and Entrepreneurial Strategies 6. Able to Explain the Concept of Business Heroes in an Islamic View 7. Able to Explain Sharia Business Culture 8. Able to Explain Sharia Business Culture 9. Able to explain Consumer Behavior: Definition, Types, Characteristics and Influencing Factors 10. Able to Explain Sharia Business Strategy Sharia Business Strategy 11. Able to explain Muslim Social Entrepreneurship &; Technology-Based Entrepreneurship and able to Make Feasibility Proposals for a Productive Waqf 12. Able to explain e-prescribing 13. Able to explain Telemedicine 14. Able to explain about E-dispensing 15. Able to explain remote patient monitoring
Content	This course is a compulsory course for S-1 students of the Undergraduate Study Program which discusses the basic concepts, goals and benefits of entrepreneurship Marketing strategies and tactics and making entrepreneurial business plans, important factors and entrepreneurial strategies, entrepreneurial

Module designation	Entrepreneur and Digital Pharmacy
	opportunities and conducting SWOT analysis, the concept of business heroes in the Islamic View, Sharia Business culture, sharia business strategies, waqf and Muslim entrepreneur profiles, Pharmaceutical Value Chain, pharmaceutical business (manufacturing, PBF, Pharmacy, Insurance, clinic, clinical laboratory), Feasibility study of pharmaceutical business in Indonesia, digitalization of Pharmaceutical business, Telemedicine and telemarketing, e-prescribing and E dispensing, remote patient monitoring
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Hendro, 2011 Dasar-dasar Kewirausahaan, Panduan bagi mahasiswa untuk Mengenal, memahami dan memasuki Dunia Bisnis. 2. Geoffrey G. Meredith dkk. (1996) Kewirausahaan, Teori dan Praktek. Edisi kelima. Jakarta: PT Pustaka Binaman Pressindo. 3. Hisrich, R. D., Peters, M. P., & Shepherd, D. A. (2008), Entrepreneurship, Singapore: McGraw-Hill International 4. Lazear, E.P (2005). Leaders and Entrepreneurs: Where they produce most value. Hoover Insitution and Graduate School of Business -Stanford University. 5. McKeever, M.P (2015). How to Write a Business Plan. Nolo Publishers. United States of America. 6. Wibowo, U.B (2011). Teori Kepemimpinan. Universitas Negeri Yogyakarta b. Nawawi, H.H (2010). Kepemimpinan Mengefektifkan Organisasi. Gadjah Mada University Press, Yogyakarta. 7. Jamil, M., Khairan, A. and Fuad, A. (2015) 'The implementation of social network based telemedicine application with the use of Cloud Computing technology', Jurnal Edukasi dan Penelitian Informatika (JEPIN), 1(1), pp. 1–5. Available at: https://jurnal.untan.ac.id/index.php/jepin/article/view/9930.

Module designation	Research Methodology and Biostatistics
Semester(s) in which the module is taught	5/Third year
Person responsible for the module	apt. Ismiarni Komala, Ph.D Dr. Yuli Amran., M.Kes Dr. Isra Janatiningrum., M.Si apt. Mita Restinia., M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 8 hours 30 minutes per week 2 hours 30 minutes for contact study, 3 hours for structured academic assignment, 3 hours for self-study per week
Credit points	5 credits (3 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain the importance of science, research and the scope of the scientific method 2. Be able to understand the flow and stages of research (research topics and research problems, and study of literature, articulation of hypotheses and determination of research variables, research design, data collection, validity and reliability, data types and data analysis) 3. Be able to explain ethics in research 4. Be able to carry out experimental research designs 5. Be able to conduct clinical research design 6. Be able to perform data processing using statistical methods 7. Be able to write proposals and research results 8. Be able to present research results
Content	The Research Methods and Scientific Writing course is a compulsory subject for the Pharmacy Study Program in semester VI. Research Methods and Scientific Writing courses are needed by pharmacy students who will do research as their final project. This course will discuss research topics as follows: introduction to science and research, research flow, research ethics, experimental research design, clinical research design, data processing using statistical methods, making proposals, reporting research results, and scientific articles.
Examination forms	Multiple choice, essay, and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Marczyk, G. Demaateo, D., Festinger., D. 2005. Essentials of Research Design & Methodology. John Willey & son

	2. Laake, P., Benestad, H.B., Olsen, B.R. 2007. Research Methodology in the medical & Biological Science. Elsevier. 3. Kothari, CR, 2004,Research Methodology, New Age International Publication 4. Awaisu, A. Mukhalalati, B. Ibrahim, M.I.M, Research Designs and Methodologies Related to Pharmacy Practice 5. Campbell, D.T and Stanley, J.C, 1966, Experiment and Quasi-Experimetal Designs For Research, USA 6. Kerlinger, F.N, 1985, Foundations Of Behavioral Research 7. Notoatmodjo. S. 2018. Metodologi penelitian kesehatan. Rineka Cipta. 8. Syahza, A. 2021. Metodologi penelitian 9. Dahlan S. (2021)Statistik untuk kedokteran dan kesehatan 10. Sastroamojo S & Ismael S. 2019. Dasar-dasar Metodologi Penelotian Klinis ed.5.

Module designation	Analysis of Drug, Food and Cosmetic Halal
Semester(s) in which the module is taught	5/Third year
Person responsible for the module	Dr. apt. Zilhadia, M.Si Drs. M. Yanis Musdja, M.Sc.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain critical points of materials and scope of halal analysis in drugs, food and cosmetics 2. Be able to explain the role of instrumentation in halal analysis 3. Be able to explain how to identify pork in a mixture of beef, chicken meat by PCR and RT-PCR methods 4. Be able to explain how to identify pork oil in cream preparations using the FTIR method 5. Be able to explain how to identify pork protein in preparations containing bovine protein and other proteins using the SDS-PAGE method 6. Able to explain how to analyze porcine gelatin in preparations containing halal gelatin based on the amino acid profile using the HPLC method 7. Be able to explain how to analyze alcohol content using the GCMS method 8. Be able to explain the role of chemometrics in halal analysis 9. Able to explain and use MINITAB software for halal analysis 10. Able to explain how to analyze damage to materials that cause drugs , food and cosmetics are not toyyib 11. Be able to explain microbiological methods for halal and tayyib analysis
Content	The Halal Analysis course for Drugs, Food and Cosmetics discusses analytical techniques used to identify ingredients based on critical points and is able to explain how to analyze the presence of non-halal components in drugs, food and cosmetics
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such us cheating or other acts of fraud

Module designation	Analysis of Drug, Food and Cosmetic Halal
Reading list	1. Riaz, M.N. Chaudry, M.M. 2004. Halal Food Production. CRC Press. 2. Sun, D.W. 2008. Modern Techniques for Food Authentication.Academic Press. 3. Rosenberg, I.M. 2005. Protein Analysis and Purification Benchtop Techniques 2nd. Birkhausser Boston. 4. Barlett, J.M.S., Stirling, D. Methods in Molecular Biology, PCR Protocols 2nd Vol 226. Humana Press. 5. Min, D.B. 2008. Food Lipids Chemistry, Nutrition, and Biotechnology. CRC Press. 6. Victoria Hamerton. 2008. Essential Guide To Food Additives. Leatherhead Publishing Ece JB. (2016). Campbell Biology 11th edition. New York: Pearson 7. Fatwa-Fatwa Kontemporer MUI, 2020 8. Halal Assurance System 23000, LPPOM MUI 9. Zilhadia, Chris Adhiyanto, Ayu Gustida Fajrin & Nadiah Khairunnisa. 2020. Analisis Cemaran Daging Babi pada Baso Sapi yang Dijual di Tanjung Priok Menggunakan Real-Time Polymerase Chain Reaction (RT-PCR). Jurnal Sains Farmasi & Klinis, 9 10. Zilhadia, Yahdiana. H, Irwandi. J and Effionora. 2018. Characterization and Functional properties of gelatin extracted from goatskin. International Food Research Journal, 7 11. Zilhadia, Arifah Nurul Izzah, Ofa Suzanti Betha. 2017. Perbandingan Metode SYBR Green dan Hydrolysis Probe dalam Analisis DNA Gelatin Sapi dan Babi Menggunakan Real Time PCR. 8 12. Zilhadia, Farida Kusumaningrum, Ofa Suzanti Betha, Supandi. 2018. Diferensiasi Gelatin Sapi dan Gelatin Babi pada Gummy Vitamin C Menggunakan Metode Kombinasi Spektroskopi Fourier Transform Infrared (FTIR) dan Principal Component Analysis (PCA). Pharmaceutical Sciences and Research (PSR). 13. Zilhadia, Yahdiana Haraphap, Irwandi Jaswir, dan Effionora Anwar. 2022. Evaluation and Characterization of Hard-Shell Capsules Formulated by Using Goatskin Gelatin. Polymers, 4(20). 14. Apriyantono. A. 2010. Analisis Pangan. IPB Press, Bogor. 15. Pomeranz, Y and Meloan,C.F. 1994. Food Analysis Theory and Practice. Chapman and hall, New York. 16. Lukitaningsih. E, Saadah. M, Purwanto, and Rohman, A. 2012. Quantitative analysis of lard in cosmetic lotion formulation using FTIR spectroscopy and Partial Least Square Calibration. Journal of the American Oil Chemists Society. 89:1537-1543.

Module designation	Analysis of Drug, Food and Cosmetic Halal
	17. Rohman,A. and Che Man, Y.B. 2011. Analysis of lard in Cream Cosmetics Formulations Using FTIR Spectroscopy and Chemometrics, Middle-East Journal of Scientific Research. 7(5);726-732. 18. Marikkar. J.M.N, Ghazali, H.M, Che Man, Y.B, Peiris, T.S.C. and Lai.O.M. 2015. Distinguishing lard from other animal fats in admixtures of some vegetable oils using liquid chromatographic data coupled with multivariate data analysis. Food Chem. 91:5-14. 19. Nur Azira.T, Amin.I, Che Man, Y.B. 2012. Differentiation of bovine and porcine gelatins in processed products via Sodium Dodecyl Sulphate-Polyacrylamide Gel Electrophoresis (SDS-PAGE) and principal component analysis (PCA) techniques. International Food Research Journal 19 (3): 1175-1180. 20. Nur Azira T, Che Man YB, Raja Mohd Hafidz RN, Aina MA, Amin I. 2014. Use of principal component analysis for differentiation of gelatine sources based on polypeptide molecular weights. Food Chemistry. 15;151:286-92. 21. Indah Noviyanti Ruhmana Pulungan, Sugijanto Kartosentono, Amirudin Prawita. 2018. Validation Gas Chromatography-Fid Method for Analysis of Ethanol Content In Vinegar. Journal of Halal Product and Research (JHPR).1(20)

Module designation	Analysis of Drug, Food and Cosmetic Halal Practice
Semester(s) in which the module is taught	5/Third year
Person responsible for the module	Dr. apt. Zilhadia, M.Si Dr. apt. Supandi, M.Si apt. Rosa Adelina, M.Sc apt. Mabrurotul Mustafidah, M.Pharm,Sci
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialization~~
Teaching methods	Lab Works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Know the practicum activities that will be carried out in the Halal Food and Drug Analysis practicum course for 1 semester 2. Be able to identify animal fat profiles in bovine and pork gelatin by FTIR analysis 3. Able to carry out the process of DNA extraction of pork and beef samples and PCR analysis 4. Able to test the level of fat breakdown through analysis of peroxide value 5. Able to analyze the level of preservative sodium benzoate in food products 6. Can analyze the level of preservative sodium benzoate in food products 7. Can test the levels of formalin and borax found in food 8. Can test the levels of saccharin found in food 9. Can test the activity of the diastase enzyme in honey which is one of the parameters for the quality of honey 10. Can test the alcohol content in food
Content	This course practices the analysis of drugs, food and cosmetics in terms of halal and toyyiban analysis.
Examination forms	Multiple choice essay, and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Apriyantono, A, ”Analisis Pangan” Penerbit IPB Press, Bogor. 2. Pomeranz, Y and Meloan,C.F., 1994, Food Analysis Theory and Practice, Chapman and hall, New York. 3. Riaz, M.N. Chaudry, M.M. 2004. Halal Food Production. CRC Press.

Module designation	Analysis of Drug, Food and Cosmetic Halal Practice
	4. Sun, D.W. 2008. Modern Techniques for Food Authentication.Academic Press. 5. Rosenberg, I.M. 2005. Protein Analysis and Purification Benchtop Techniques 2nd. Birkhausser Boston. 6. Barlett, J.M.S., Stirling, D. Methods in Molecular Biology, PCR Protocols 2nd Vol 226. Humana Press. 7. Min, D.B. 2008. Food Lipids Chemistry, Nutrition, and Biotechnology. CRC Press. 8. Victoria Hamerton. 2008. Essential Guide To Food Additives. Leatherhead Publishing. 9. Lukitaningsih,E., Saadah, M., Purwanto., and Rohman, A. 2012. Quantitative analysis of lard in cosmetic lotion formulation using FTIR spectroscopy and Partial Least Square Calibration. Journal of the American Oil Chemists Society. 89:1537-1543. 10. Rohman,A. and Che Man, Y.B. 2011. Analysis of lard in Cream Cosmetics Formulations Using FTIR Spectroscopy and Chemometrics, Middle-East Journal of Scientific Research. 7(5);726-732. 11. Marikkar, J.M.N., Ghazali, H.M., Che Man, Y.B., Peiris, T.S.C. and Lai.O.M. Distinguishing lard from other animal fats in admixtures of some vegetable oils using liquid chromatographic data coupled with multivariate data analysis. Food Chem. 91:5-14. 12. Margaret Vickery and Brian Vickery, “Secondary Plant Metabolism” , The Macmillan Press LTD, London, 1981. 13. Paul M Dewick, “ Medicinal Natural Products : A Biosynthetic Approach”, Jons wiley & sons, New York, 1997

Module designation	Formulation and Technology of Liquid and Semi-Solid Dosage Forms
Semester(s) in which the module is taught	5/Third year
Person responsible for the module	apt. Yuni Anggraeni., M. Farm apt. Sabrina., S. Si., M. Farm., Ph. D
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain important considerations in designing pharmaceutical preparations 2. Be able to preformulate liquid and semi-solid preparations 3. Be able to determine the right packaging, be able to design labels and secondary packaging according to regulations as well as being able to determine how to test packaging 4. Being able to determine standard formulas, additives, stability, and evaluation methods for solution preparations (procedures, quality requirements) 5. Able to design formulas and evaluate formulas for solution preparations taking into account the halal aspects 6. Able to determine standard formulas, suspending agents, additives, stability, and evaluation methods for suspension preparations (procedures, quality requirements) 7. Able to design formulas and evaluate suspension dosage formulas taking into account the halal aspects 8. Able to determine standard formulas, emulsifiers, additives, stability, and evaluation methods for emulsion preparations (procedures, quality requirements) 9. Screening Formulas 10. Able to design production procedures and evaluate the quality of liquid preparations 11. Able to choose semi-solid dosage bases based on therapeutic targets and their characteristics 12. Able to determine standard formulas, additives, stability, and evaluation methods for semi-solid preparations (procedures, quality requirements) 13. Able to design formulas and evaluate semi-solid preparation formulas by considering the halal aspect 14. Able to design production procedures and evaluate the quality of semi-solid preparations

Module designation	Formulation and Technology of Liquid and Semi-Solid Dosage Forms
Content	This course is a compulsory subject for students of the Undergraduate Pharmacy Study Program. This course discusses the design of pharmaceutical preparations, preformulation, formulations, additives, production processes, evaluation, and packaging of liquid preparations (solutions, suspensions and emulsions) and semi-solids (ointments, creams, gels, pastes).
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Farmakope Indonesia Edisi VI, Departemen Kesehatan RI, Jakarta 2. Lachman, L., 1986, The Theory and Practice of Industrial Pharmacy, Lea & febiger, Philadelphia 3. Martin AN, Swarbrick, J and Cammarata, A, 1983, Physical Pharmacy : Physical Chemical Principles in Pharmaceutical Science, 3rd, Ed, Lea & febiger, Philadelphia 4. Marriot J.F. et al., 2010, Pharmaceutical Compounding and Dispensing, second ed., Pharmaceutical Press, London 5. Pharmaceutics the Science of dosage form design by M. E. Aulton 2nd Ed. Churchill Livingstone. 6. Gennaro, RA. Remington: The Science and Practice of Pharmacy, 19th ed. 1995. Mack publishing Company 7. Rowe, R.C., Sheskey, P.J. & Quinn, M.E. (2009). Handbook of Pharmaceutical Excipient (ed. 6). London: Pharmaceutical Press 8. Banker, S.G. & Rhodes, C. T., 2002, Modern Pharmaceutics 4th ed Revised and Expanded, Marcel Dekker, Inc., New York. 9. Smith, E.W. & Maibach, H.I., 2006, Percutaneous Penetration Enhancers 2nd ed, Taylor & Francis Group, Boca Raton 10. Nicole Krilla,Debanjan Das, and John G. Augustine. Semisolid Formulation Development: The CRO Approach 11. Handbook of Pharmaceutical Manufacturing Formulations

Module designation	Formulation and Technology of Liquid and Semi-Solid Dosage Forms Practice
Semester(s) in which the module is taught	5/Third year
Person responsible for the module	apt. Yuni Anggraeni, M.Farm apt. Sabrina, Ph.D apt. Nelly Suryani, Ph.D apt. Ofa Suzanti Betha, M.Farm apt. Estu Mahanani Dhilasari, M.Si.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab Works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to apply (C3) basic theory of semi-solid technology formula design (ointments, creams, gels, pastes). 2. Able to develop (C3, P3) liquid formulation production formulas (solutions, suspensions, and emulsions) 3. Able to develop (C3, P3) semi-solid production formulas (ointments, creams, gels, pastes). 4. Able to evaluate (C4, P4) liquid preparations (solutions, suspensions, and emulsions). 5. Able to evaluate (C4, P4) semi-solid (ointments, creams, gels, pastes).
Content	This course discusses the effects of preservatives, sweeteners, and mixed solvents on the stability and physical appearance of solution preparations, formulation, preparation, and evaluation of solution preparations, the effect of wetting agents, surfactants and suspending agents on the stability and physical appearance of suspension preparations , formulation, manufacture, and evaluation of suspension and dry suspension preparations, the effect of different types of emulsifiers on the physical stability of emulsion preparations, formulation, manufacture, and evaluation of emulsion preparations, preparation and characterization of several semi-solid preparations from several types of base-forming materials, formulation, manufacture, and evaluation of semi-solid preparations..
Examination forms	Multiple choice, essay, and Practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud

Module designation	Formulation and Technology of Liquid and Semi-Solid Dosage Forms Practice
Reading list	1. Farmakope Indonesia Edisi III dan IV, Departemen Kesehatan RI, Jakarta. 2. Lachman, L., 1986, The Theory and Practice of Industrial Pharmacy, Lea & febiger, Philadelphia. 3. Martin AN, Swarbrick, J and Cammarata, A, 1983, Physical Pharmacy : Physical Chemical Principles in Pharmaceutical Science, 3 rd, Ed, Lea & febiger, Philadelphia. 4. Marriot J.F. et al., 2010, Pharmaceutical Compounding and Dispensing, second ed., Pharmaceutical Press, London. 5. Pharmaceutics the Science of dosage form design by M. E. Aulton 2nd Ed. Churchill Livingstone. 6. Gennaro, RA. Remington: The Science and Practice of Pharmacy, 19th ed. 1995. Mack publishing Company. 7. Rowe, R.C., Sheskey, P.J. & Quinn, M.E. (2009). Handbook of Pharmaceutical Excipient (ed. 6). London: Pharmaceutical Press. 8. Banker, S.G. & Rhodes, C. T., 2002, Modern Pharmaceutics 4th ed Revised and Expanded, Marcel Dekker, Inc., New York. 9. Smith, E.W. & Maibach, H.I., 2006, Percutaneous Penetration Enhancers 2nd ed, Taylor & Francis Group, Boca Raton. 10. Nicole Krilla,Debanjan Das, and John G. Augustine. Semisolid Formulation Development: The CRO Approach.

Module designation	Information Education and Communication
Semester(s) in which the module is taught	5/Third year
Person responsible for the module	apt. Rurynta Ferly Shavira, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	lecture, group discussion, case study, simulation
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students are able to know the basic theory of communication 2. Students are able to know the background, pharmaceutical stakeholders, process communication and the role of pharmacists in IEC 3. Students are able to know the types of communication, communication barriers with doctors, patients, and pharmacists, as well as preparation of attitudes and communication skills 4. Students are able to find out things they want to know by communicating with: children, the elderly, patients with disabilities, patients with terminal illnesses, patients with mental disorders, patients who are unfamiliar with health, patients with chronic diseases 5. Students are able to know the media used in communication 6. Students are able to make drug information media 7. Students are able to know the background, definitions, methods, strategies, development steps and indicators of success of PKRS 8. Students are able to understand the goals, objectives, and strategies of counseling 9. Students are able to determine the topic and target of counseling 10. Students know about how to deliver drug and treatment information 11. Students are able to search, prepare, and provide drug and treatment information 12. Students know and are able to perform self-medication services that are responsible and wise 13. Students know the definition of counseling, counseling preparation, counseling procedures 14. Students are able to do counseling

Module designation	Information Education and Communication
Content	Information and Education Communication course contains topics on the basics of communication, ways of communicating, providing information, counselling, counseling, and education about drugs to pharmaceutical stakeholders
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Hafied Cangara, Pengantar Ilmu Komunikasi, Raja Grafindo Persada, edisi 4, 2003 2. Jalaluddin Rakhmat, Psikologi Komunikasi, Remaja Rosdakarya, edisi 15, 2000 3. Judith Taylor, Communication at Work, Elex Media Komputindo, edisi 1, 2004 4. Deddy Mulyana, Ilmu Komunikasi Suatu Pengantar, Remaja Rosdakarya, edisi 4, 2004 5. LN.R. Pendit, Tata Sudarta, Psychology Of Service sebuah pengantar dalam memberikan pelayanan secara paripurna, Graha Ilmu,ed l, 2004 6. Standar Pelayanan Kefarmasian di Rumah Sakit, Peraturan Menteri Kesehatan Republik Indonesia nomor 72 tahun 2016 7. Pedoman Pelayanan Informasi Obat di Rumah Sakit, Departemen Kesehatan RI, 2004 8. Patrick M Malone, et all, Drug Information, A Guide for Pharmacists, second edition, The McGraw Hill Companies, 2001 9. Kimberly A Galt, et all, Preparing A Drug Information Response, ASHP, 1995 10. Pedoman Konseling Pelayanan Kefarmasian di Sarana Kesehatan, Departemen Kesehatan RI, 2006 11. Melanie J Rantucci, Pharmacists Talking with Patients, A Guide to Patient Counseling, William & Wilkins, 1997 12. Larry E Boh, Pharmacy Practice Manual, A Guide to the Clinical Experience, Lippincott William & Wilkins, 2001 13. Handbook For Patient Medication Counselling, Third edition, Pharmaceutical Society of Australia,1982 14. Medication Teaching Manual: The Guide to Patient Drug Information, ASHP, 6th edition. 15. Badan POM, Pedoman Penatalaksanaan Keracunan Untuk Rumah Sakit, 2001 16. Basic Life Support (Bantuan Hidup Dasar) Non Medis, RSUP Fatmawati, 2012

Module designation	Information Education and Communication
	17. Berger, B.A., Communication Skills for Pharmacists: Building Relationships, Improving Patient Care, 2nd Edition, 2005, APhA, Washington, D.C. 18. Rantucci, M.J., Pharmacists Talking with Patients a Guide to Patient Counseling, Williams & Wilkins,1997, Baltimore. 19. Meldrum, H., 1994 Interpersonal Communication in Pharmaceutical Care How to be A (Really) Professional Pharmacist, Pharmaceutical Product Press, New York. 20. Tindall, W.N., Beardsley, R.S., and Kimberlin, C.L., 1994, Communication Skills in Pharmacy Practice: A Practical Guide for Students and Practitioners, 3rd Edition, Williams & Wilkins, Baltimore. 21. Gardner, M.E., Herrier, R.N., and Meldrum, H., 2000, Patient Communication in Clinical Pharmacy Practice, in Textbook of Therapeutics Drug and Disease Management, Herfindal, E.T. and Gourley, D.R. Eds, Lippincott Williams &Wilkins, Philadelphhia. 22. Kepmenkes RI No. 347/Menkes/SK/VII/1990 tentang Obat Wajib Apotek 1. 23. Permenkes RI No. 924/Menkes/Per/X/1993 tentang Daftar Obat Wajib Apotik 2. 24. Kepmenkes RI Np. 1176/Menkes/SK/X/1999 tentang Daftar Obat Wajib Apotik 3. 25. Permenkes RI No. 919 / Menkes / Per / X / 1993 tentang kriteria Obat yang dapat diserahkan tanpa Resep. 26. Permenkes RI Nomor 3 Tahun 2021 Tentang Perubahan Penggolongan, Pembatasan, Dan Kategori Obat

Module designation	National Health System
Semester(s) in which the module is taught	5/Third year
Person responsible for the module	apt. Marvel, M.Farm.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students are able to explain about the National Health System 2. Students are able to explain public health service efforts 3. Students are able to explain Health Insurance, BPJS Health and BPJS Health service procedures< /li> 4. Students are able to explain the implementation of BPJS Health financing in the form of a capitation system and Ina-CBGs 5. Students are able to explain the national formulary, e-catalogue, and procedures e-purchasing based on e-catalogue 6. Students are able to explain the concepts of pharmacoepidemiology, pharmacoeconomics, and pharmacovigilance
Content	This course is a compulsory subject for Bachelor of Pharmacy undergraduate students. This course discusses the National Health System, Community Health Service Efforts, Health Insurance and BPJS Health, Implementation of BPJS Health financing with the capitation system and understanding of Ina-CBGs (Indonesian-Case Based Groups), National Formularies, E-Catalogue and Procurement of Medicines with e-purchasing procedures based on e-catalogue, Pharmacoepidemiology, Pharmacoeconomics, and Pharmacovigilance. The learning method is carried out using the blended-learning method (online and offline) in a flipped-learning manner, namely before face-to-face lectures, students read online lecture materials and materials on Google. classroom. Face to face lectures in class for pre-test, discussions, and post-test. The language of instruction for this course is Indonesian.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment

Module designation	National Health System
	3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Peraturan Presiden Republik Indonesia Nomor 72 Tahun 2012 tentang Sistem Kesehatan Nasional (beserta lampirannya) 2. Undang-Undang Republik Indonesia Nomor 36 Tahun 2009 tentang Kesehatan 3. Peraturan Menteri Kesehatan nomor 43 Tahun 2019 tentang Pusat Kesehatan Masyarakat (Puskesmas) 4. Undang-Undag Republik Indonesia nomor 44 Tahun 2009 tentang Rumah Sakit 5. Peraturan Menteri Kesehatan Nomor 3 Tahun 2020 tentang Klasifikasi dan Perizinan Rumah Sakit. 6. Undang-Undang Nomor 40 Tahun 2004 tentang Sistem Jaminan Sosial Nasional (SJSN) 7. Peraturan Presiden (perpres) nomor 64 Tahun 2020 tentang perubahan kedua atas peraturan presiden nomor 82 Tahun 2018 tentang Jaminan Kesehatan 8. Peraturan Menteri Kesehatan nomor 7 Tahun 2021 tentang Perubahan Keempat atas Peraturan Menteri Kesehatan Nomor 71 Tahun 2013 tentang Pelayanan Kesehatan pada Jaminan Kesehatan Nasional 9. Undang-Undang nomor 24 Tahun 2011 tentang Badan Penyelenggaran Jaminan Sosial (BPJS) 10. Peraturan Menteri Kesehatan Republik Indonesia nomor 71 Tahun 2013 tentang Pelayanan Kesehatan pada Jaminan Kesehatan Nasional 11. Panduan Praktis Pelayanan Kesehatan oleh BPJS Kesehatan 12. Peraturan Bersama Sekretariat Jenderal Kemenkes Republik Indonesia dan Direktur Utama BPJS Kesehatan nomor HK.01.08/III/980/2017 Tahun 2017. Nomor 2 Tahun 2017 tentang Petunjuk Teknis Pelaksanaan Pembayaran Kapitasi Berbasis Pemenuhan Komitmen Pelayanan Pada Fasilitas Kesehatan Tingkat Pertama 13. Peraturan Menteri Kesehatan Republik Indonesia nomor 6 Tahun 2022 tentang Penggunaan Jasa Pelayanan Kesehatan dan Dukungan Biaya Operasional Pelayanan Kesehatan Dalam Pemanfaatan Dana Kapitasi JKN pada Fasilitas Kesehatan Tingkat Pertama Milik Pemerintah Daerah 14. Peraturan Menteri Kesehatan Republik Indonesia Nomor 3 Tahun 2023 Tentang Standar Tarif Pelayanan Kesehatan Dalam Penyelenggaraan Program Jaminan Kesehatan 15. Keputusan Menteri Kesehatan Republik Indonesia Nomor HK.01.07/Menkes/1970/2022 Tentang Perubahan Atas Keputusan Menteri Kesehatan Nomor HK.01.07/Menkes/6485/2021 Tentang Formularium Nasional

Module designation	National Health System
	16. Pengadaan Obat Dengan Prosedur E-Purchasing Berdasarkan E-Catalogue. https://kalteng.bpk.go.id/wp-content/uploads/2018/09/Pengadaan-Obat-Dengan-Prosedur-ePurchasing-Berdasarkan-eCatalogue.pdf 17. Perwitasari, Dyah A. 2010. Dasar-Dasar Farmakoepidemiologi. Yogyakarta : Imperium. 18. Sinuhaji, Oryza S., Alfian, Sofa D. 2016. Artikel Review : Sumber Data Dalam Farmakoepidemiologi. Farmaka. Vol 14, No 2. 19. Afdhal, Ahmad Fuad. 2011. Farmakoekonomi. Pisau Analisis Terbaru Dunia Farmasi. Samitra Media Utama. 20. Kementerian Kesehatan Republik Indonesia. 2013. Pedoman Penerapan Kajian Farmakoekonomi. 21. Badan Pengawas Obat dan Makanan Republik Indonesia. 2020. Modul Farmakovigilans Dasar. 22. Widjaja, P., Firmansyah, Y. Pharmacovigilance. Cross-Border. Vol. 4 No. 2 Juli-Desember 2021, page 347 – 358

Module designation	Phytotherapy
Semester(s) in which the module is taught	5/Third year
Person responsible for the module	Dr .apt. Azrifitria, M.Si apt. Ismiarni Komala Sari, Ph.D Dr. apt. Eka Putri, M.Si apt. Suci Ahda Novitri, M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand the role of herbal medicines in conventional medicine systems, the role of guaranteeing the quality of herbal medicinal raw materials & non-medicinal sources, the prospects for preventive and curative herbal medicines, 2. Be able to explain the role of herbal medicines in the respiratory system 3. Explain the role of herbal medicines in treating disorders of the gastrointestinal system 4. Explaining the role of herbal medicines in treating infectious diseases (antibacterial, antiviral, antifungal) 5. Explaining the role of herbal medicines in treating diseases of the central nervous system 6. Explaining the role of herbal medicines in overcoming disorders of the cardiovascular system 7. Explaining the role of herbal medicines in the endocrine system 8. Explains the development of phytotherapy formulas which have anti-inflammatory pharmacological effects (Osteo Arthritis and Rheumatoid Arthritis) 9. Explains the role of herbal medicines in the hormonal system 10. Explains the development of phytotherapy formulas which have immunomodulatory pharmacological effects 11. Explains the development of phytotherapy formulas which have antioxidant, antitumor, anticancer pharmacological effects
Content	This course discusses plants that have medicinal properties, the chemical content of plant drugs, pharmacological effects,

Module designation	Phytotherapy
	toxicology, preparation quality, development of phytotherapy preparations and licensing.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Evans, W.C., 2002. Pharmacognosy, English Language Book Society, Bailliere Tindall, London, 2. 2. W.C., 2002. Pharmacognosy, English Language Book Society, Bailliere Tindall, London 3. 3. Ebadi, M., 2007, Pharmacodynamic Basis of Herbal Medicine, Second Edition, Taylor n Francis group, New York. 4. 4. Heinrich, M., et al, 2010, Farmakognosi dan Fitoterapi, alih bahasa oleh Syarief, W., R., et al, EGC, Jakarta

Module designation	Pharmacotherapy 3
Semester(s) in which the module is taught	6/Third year
Person responsible for the module	Dr. apt. Azrifitria, M.Si apt. Yardi, Ph.D apt. Rurynta Ferly Shavira, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	lecture, group discussion, case study
Workload (incl. contact hours, self-study hours)	Total workload : 11 hours 20 minutes per week 3 hours 20 minutes for contact study, 4 hours for structured academic assignment, 4 hours for self-study per week
Credit points	7 credits (4 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Mastering the concept of pharmacotherapy, pharmaceutical care and pharmacy practice 2. Understanding and knowing rational therapy management in psychiatric patients 3. Understand and know the management of rational therapy in obstetrics and gynecology 4. Understand and know the management of rational therapy in urological disorders 5. Understand and know the management of rational therapy in skin disorders 6. Understand and know the management of rational therapy in infectious diseases 7. Understand and know the management of rational therapy in cancer
Content	Overall, the pharmacotherapy course on rational therapy management in various cases of systemic diseases organs including; pharmacotherapy psychiatry, pharmacotherapy obstetrics and gynecology, infection pharmacotherapy, cancer pharmacotherapy.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. DiPiro, J.T., Talbert, R.L., Yee, G.C., Matzke, G.R., Wells, A.G., Posey, L.M. (Eds), 2020, Pharmacotherapy a Pathophysiological Approach, 11 th ed, Appleton & Lange, Stamford 2. Herfindal, E.T., Gourley, D.R (Eds), 2001, Textbook of T.herapeutics Drug and Disease Management, 7th Ed,

Module designation	Pharmacotherapy 3
	Lippincot Williams and Wilkins, Philadelphia McPhee, S., Lingappa, V.R., Ganong, W.F., Lange, J.D., 2000 3. Pathophysiology of disease: An introduction to Clinical Medicine, 3rd ed, The McGraw-Hill Companies Inc, New York Scwinghammer TL., 2002, Pharmacotherapy Casebook : A Patient Focused Approach, 5th Ed., McGraw-Hill Companies, New York 4. Textbook of Therapeutics, Drug and Disease Management 7th ed., Lippincot & Williams, Philadelphia. Graddy, F., Lambert, H.P., Finch, R.G., and Greenwood, D., 1997 5. Pharmacotherapy Casebook: A Patient Focused Approach, 5th. Ed., McGraw-Hill Companies, New York. McPhee, S., Lingappa, V.R., Ganong, W.F., Lange J

Module designation	Formulation and Technology of Sterile Dosage Forms
Semester(s) in which the module is taught	6/Third year
Person responsible for the module	apt. Sabrina., S. Si., M. Farm., Ph. D apt. Ofa Suzanti Betha, M.Si. apt. Estu Mahanani Dillasari, M.Farm. apt. Yuni Anggraeni., M. Farm apt. Nelly Suryani, M. Si., Ph. D
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain the scope of sterile preparations 2. Be able to explain the principles and methods of sterilizing drugs and medicinal substances 3. Be able to describe the principles of formulation of parenteral preparations 4. Be able to designing large and small volume parenteral formulation formulations. 5. Able to develop formulas and other sterile preparations (eye, ear, nasal, vaccine preparations). 6. Be able to explain the packaging materials for sterile preparations 7. Be able to explain the quality control of parenteral preparations and other sterile preparations 8. Be able to explain the facilities and means in the production of sterile preparations 9. Be able to explain the principles of manufacturing sterile preparations (GMP) 10. Be able to identify problems in the formulation and production of sterile preparations 11. Be able to determine solutions to problems in sterile preparation formulations
Content	This course discusses theories and principles in designing, producing, solving problems in designing sterile preparations, quality assurance and quality inspection of sterile preparations
Examination forms	Multiple choice and essay
Study and examination requirements	Minimum lecture attendance of 80% Completed 80% structured academic assignment not commit acts of fraud such as cheating or other acts of fraud

Module designation	Formulation and Technology of Sterile Dosage Forms
Reading list	1. Gibson, M. 2004. Pharmaceutical Preformulastion and Formulation; A Practical Guide from Candidate Drug Selection to Commercial Dosage Form. 2. Niazi SK. 2020. Handbook of Pharmaceutical manufacturing Formulations, 3rd edition. Raylor and Francis. 3. Akers, M. 2010. Sterile Drug Products Formulation, Packaging, Manufacturing and Quality. Baxter Biopharma Solutions. Indiana 4. FI VI

Module designation	Formulation and technology of Sterile Dosage Forms Practice
Semester(s) in which the module is taught	6/Third year
Person responsible for the module	apt. Sabrina., S. Si., M. Farm., Ph. D apt. Ofa Suzanti Betha, M.Si. apt. Estu Mahanani Dillasari, M.Farm. apt. Yuni Anggraeni., M. Farm apt. Nelly Suryani, M. Si., Ph. D
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab Works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to perform aseptic work techniques (room disinfection, gowning) 2. Able to operate sterilizers and perform sterilization of tools and materials 3. Able to compile dosage preformulation data Single dose small volume injection, multiple dose small volume injection both with water and non-aqueous solvents, large volume injection (infusion), ophthalmic preparations, as well as sterile semi solid preparations other. 4. Able to compile journals for the preparation of small volume injections of single doses, small volume injections of multiple doses with both aqueous and non-aqueous solvents, large volume injections (infusions), ophthalmic preparations, and other sterile semi-solid preparations. 5. Able to make sterile preparations Single dose small volume injections, multiple dose small volume injections both with aqueous and non-aqueous solvents, large volume injections (infusions), ophthalmic preparations, and other sterile semi solid preparations. 6. Able to evaluate the quality of sterile preparations made 7. Able to perform sterile compounding
Content	The Pharmaceutical Preparation Technology III (Sterile) Practicum course discusses pre-formulation of active ingredients and preparation of preparation formulations which include small volume parenteral preparations with aqueous and non-aqueous solvents, large volume parenteral preparations, eye drop preparations, and sterile semi-solid preparations, considerations in designing these preparations, evaluation and principles of quality assurance of preparations and mixing of sterile preparations in drug services

Module designation	Formulation and technology of Sterile Dosage Forms Practice
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Allen, L V. 2015. Ilmu dan Teknologi Peracikan Sediaan Farmasi. EGC 2. Allen, L V. 2011. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. 3. Marriot, J F. 2010. Pharmaceutical Compounding and Dispensing 2nd edition. Pharmaceutical Press 4. FI VI 5. Avis, K.E., Sterile Product in The Theory and Practice of Industrial Pharmacy, 1986 6. Badan Pengawas Obat dan makanan, 2001. Pedoman Cara Pembuatan Obat yang Baik 7. Logawa, B dan Soewandhi, S.N., 1985. Penutun Praktikum Teknologi Farmasi Sediaan Steril. Laboratorium Teknologi Farmasi Sediaan Steril, Jurusan FMIPA , ITB, Bandung

Module designation	Pharmaceutical Industry
Semester(s) in which the module is taught	6/Third year
Person responsible for the module	apt. Yuni Anggraeni, M.Farm., apt. Lindy Ridyawati, S.Si., MM.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to use basic mathematical concepts in pharmaceutical calculations 2. Able to convert units of weight, length, and volume using the international system of units 3. Able to calculate the concentration of solutions with various units / quantities 4. Able to use the concept of definite numbers in stating measurement results 5. Able to explain how to determine the right measuring instrument 6. Able to explain the concept of organization of living things 7. Able to explain the principles of reproduction of living things 8. Able to explain the characteristics of each form of substance 9. Able to adjust the tonicity of the solution 10. Able to explain the structure of atoms and molecules 11. Able to explain the mechanism of formation of chemical bonds and the polarity of a molecule 12. Able to explain the nature of the solution 13. Able to explain acid-base solutions and Chemical equilibrium 14. Able to explain and calculate the dapar capacity and dapar composition to determine the pH of the solution
Content	The Industrial Pharmacy course presents material containing product development; production process of medicinal preparations; quality control; quality assurance; production facilities, buildings and equipment; calibration, qualification and validation; self-inspection, audit, and CAPA; Handling of product complaints and product recalls; hygienic and personnel
Examination forms	Multiple choice and essay
Study and examination requirements	Minimum lecture attendance of 80% Completed 80% structured academic assignment not commit acts of fraud such as cheating or other acts of fraud

Module designation	Pharmaceutical Industry
Reading list	1. Khan, M.A. and Reddy, I.K. (2000). Pharmaceutical and Clinical Calculation 2nd ed. CRC press 2. Sinko, P.J. (2015). Martin Farmasi Fisika dan Ilmu Farmasetika. ed. 5. Alih bahasa, Joshita Djajadisastra dan Amalia H. Hadinata. Jakarta: EGC. 3. Jambhekar, S.S. and Breen, P.J. (2009). Basic Pharmacokinetics. London: Pharmaceutical Press. 4. Bettelheim, F.A. and Landesberg, J.M. (2013). Laboratory Experiments for Introduction to General, Organic, and Biochemistry. ed. 8. Belmont: Brooks/cole 5. Campbell NA, Urry LA, Cain ML, Wasserman SA, Minorsky PV, Reece JB. (2016). Campbell Biology 11th edition. New York: Pearson

Module designation	Pharmaceutical Service
Semester(s) in which the module is taught	6/Third year
Person responsible for the module	apt. Yardi, Ph.D apt. Mita Restinia, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	lecture, group discussion, case study
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain the duties of a pharmacist: in hospitals, pharmacies, and other professional places 2. Be able to explain the role of pharmacists in carrying out clinical pharmacy services in prescription screening 3. Be able to explain the rationality of prescriptions 4. Be able to explain the role of the pharmacist in minor ailments 5. Be able to explain the role of the pharmacist in dispensing , patient compliance 6. Be able to explain and understand the role of pharmacy to various community groups 7. Be able to explain the role of pharmacists in conducting clinical pharmacy services in tracing drug use history and drug reconciliation 8. Be able to explain the role of pharmacists in conducting clinical pharmacy services in monitoring drug therapy (PTO); Drug Side Effect Monitoring (MESO); Evaluation of Drug Use (EPO) 9. Be able to explain the role of the pharmacist in carrying out clinical pharmacy services Dispensing of sterile preparations; and Monitoring of Drug Levels in Blood (PKOD) 10. Be able to understand on research methods in pharmaceutical services 11. Be able to differentiate drugs based on their groups and the rules that accompany them 12. Be able to explain LASA and High alert medicines
Content	The subject of pharmaceutical services is a compulsory subject in the sixth semester. After completing this course, students are expected to be able to understand the duties of a pharmacist in the field of pharmaceutical services at pharmacies, health centers and hospitals. The materials discussed include: scope of work of pharmacists, prescriptions and prescription screening; rational

Module designation	Pharmaceutical Service
	drug use, self-medication; the role of pharmacists in various community groups; tracing the history of drug use and drug reconciliation; Evaluation of Drug Use (EPO).
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. American Society of Health-System Pharmacist (2011) 'ASHP guidelines on pharmacist-conducted patient education and counseling', American Journal of Health-System Pharmacy, 54, pp. 431–434. doi: 10.1093/ajhp/54.4.431. 2. Institute for Safe Medication Practices (2016) FDA and ISMP Lists of Look-Alike Drug Names with Recommended Tall Man Letters, Social Science & Medicine. Available at: http://www.ismp.org/tools/tallmanletters.pdf. 3. Kemenkes RI (2009) Peraturan Pemerintah Republik Indonesia Nomor 51 Tahun 2009 Tentang Pekerjaan Kefarmasian. doi: 10.7202/1016404ar. 4. kementerian Kesehatan RI (2016) Peraturan Menteri Kesehatan Republik Indonesia Nomor 74 Tahun 2016 Tentang Standar Pelayanan Kefarmasian Di Puskesmas. indonesia: Berita Negara Republik Indonesia Tahun 2017 Nomor 206. 5. Kementerian Kesehatan RI (2016a) Peraturan Menteri Kesehatan Republik Indonesia Nomor 72 Tahun 2016 Tentang Standar Pelayanan Kefarmasian Di Rumah Sakit. Indonesia: Berita Negara Republik Indonesia Tahun 2017 Nomor 49. 6. Kementerian Kesehatan RI (2016b) Peraturan Menteri Kesehatan Republik Indonesia Nomor 73 Tahun 2016 Tentang Standar Pelayanan Kefarmasian Di Apotek. Indonesia: Berita Negara Republik Indonesia Tahun 2017 Nomor 50. doi: 10.1007/s11187-017-9901-7. 7. Kementerian Kesehatan RI (2017) Peraturan Menteri Kesehatan Republik Indonesia Nomor 9 Tahun 2017 Tentang Apotek. Indonesia: Berita Negara Republik Indonesia Tahun 2017 Nomor 276. 8. Pharmaceutical care network Europe foundation (2017) Classification for Drug related problems V 8.01, PCNE Classification. Available at: https://www.pcne.org/upload/files/215_PCNE_classification_V8-01.pdf. 9. Pharmaceutical Services Division Ministry of Health Malaysia (2012) Guide on Handling Look Alike Sound Alike Medication.

Module designation	Pharmaceutical Service
	first, Pharmaceutical Services Division Ministry of Health Malaysia. first. doi: 10.1017/CBO9781107415324.004. 10. Rusli (2018) Bahan Ajar Farmasi Klinis. Jakarta: Kementrian Kesehatan RI. 11. World Health Organization (2000) Guide to Good Prescribing. World Health Organization. 12. World Health Organization (2003) Adherence to Long-Term Therapies, Applied Mechanics and Materials. Edited by World Health Organization. Switzerland: World Health Organization. doi: 10.4028/www.scientific.net/AMM.321-324.1779. 13. World Health Organization (2004) Management of Drugs at Health Centre Level ■, World Health Organization. Available at: http://apps.who.int/medicinedocs/pdf/s7919e/s7919e.pdf. 14. World Health Organization (2016) Medication errors, World Health Organisation. World Health Organization. doi: 10.7748/ns.30.35.61.s49.

Module designation	Pharmacy Management
Semester(s) in which the module is taught	6/Third year
Person responsible for the module	apt. Supandi M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 2 hours 50 minutes per week 50 minutes for contact study, 1 hours for structured academic assignment, 1 hours for self-study per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain the definition of management, management science concepts, requirements for establishing a pharmacy 2. Be able to understand pharmacy marketing 3. Be able to describe drug planning using VEN and pareto analysis, procurement and distribution methods drugs in pharmacies 4. Able to explain the management of narcotics, psychotropic drugs, damaged and expired drugs, and procedures for establishing a pharmacy 5. Able to calculate drug pricing, taxes, cost of goods sold and profit and loss 6. Able to make profit and loss balance, Pharmacy feasibility study
Content	Pharmacy management courses discuss pharmaceutical management in pharmacies including human resource management, understanding the procedures for establishing a pharmacy, pharmacy management (purchasing, selling, and reporting of narcotics and psychotropics), calculating pharmacy taxes, preparing a profit and loss balance.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Anief, M., 2001, Manajemen Apotek, Gadjah Mada Press, Yogyakarta 2. Standar pelayanan kefarmasian di apotek menurut Peraturan Menteri Kesehatan No. 73 Thn 2016 3. Sampurno,2009. Manajemen Pemasaran Farmasi, UGM Press, Yogyakarta 4. Hartono, 2003, Manajemen Apotek, Depot Informasi Obat, Jakarta

Module designation	Pharmacy Management
	5. Seto, S., 2001, Manajemen Apoteker, Airlangga University Press, 2001 6. Djuanda, G., Lubis, I., 2002, Pelaporan Pajak Penghasilan, Gramedia, Jakarta 7. Umar, H., 2003, Studi Kelayakan Bisnis, Gramedia, Jakarta 8. Ibrahim Yacob,2003. Studi Kelayakan Bisnis, Penerbit Rineka Cipta, Jakarta

Module designation	Interprofesional Education 1 (IPE 1)
Semester(s) in which the module is taught	6/Third year
Person responsible for the module	Dr. apt. Azrifitria, M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 2 hours 50 minutes per week 50 minutes for contact study, 1 hours for structured academic assignment, 1 hours for self-study per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to provide services to patients as part of a collaborative team that focuses on increasing the success of therapy and patient safety. 2. Ability to understand interprofessional concepts in the health sector 3. Be able to explain teamwork and conflict management 4. Be able to explain interprofessional communication and leadership 5. Be able to explain the role of each health profession
Content	The Health Workforce Professional Integration 1 (IPE 1) course contains subjects on health worker communication, teamwork and conflict management, interprofessional communication and leadership, and the role of each health profession in a case study or treatment problem.
Examination forms	Multiple choice, essay, and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Andrew Teodorczuk, Tien Kheng Khoo, Shirley Morrissey and Gary Rogers. Developing interprofessional education: putting theory into practice. 2016. John Wiley & Sons Ltd. The Clinical Teacher. 2. Laura K. Sjoquist, PharmD, Antonio A. Bush, PhD, Macary Weck Marciniak, PharmD, Nicole R. Pinelli, PharmD, MS. 3. WHO. Framework for Action on Interprofessional Education & Collaborative Practice.2010.

Module designation	Health Regulations and Laws
Semester(s) in which the module is taught	6/Third year
Person responsible for the module	apt. Marvel, M.Farm., apt. Barita Juliano S, MM
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain the hierarchy of laws and regulations that apply in Indonesia. 2. Be able to classify laws and regulations on health and pharmaceuticals. 3. Able to analyze laws and regulations in carrying out pharmaceutical work in pharmacies. 4. Able to analyze laws and regulations in carrying out pharmaceutical work in Pharmaceutical Wholesalers (PBF). 5. Able to analyze laws and regulations in carrying out pharmaceutical work in Hospitals. 6. Able to analyze laws and regulations in carrying out pharmaceutical work in the Pharmaceutical Industry.
Content	This course is a compulsory subject for Bachelor of Pharmacy undergraduate students. This course discusses the hierarchy of laws and regulations that apply in Indonesia, laws and regulations regarding health, the code of ethics for the pharmacist profession, and laws and regulations regarding pharmacy. The learning method is carried out using the blended-learning method (online and offline) in a flipped-learning manner, namely before face-to-face lectures, students read online lecture material and do pre-test and view assignment/case instructions on google classroom to make presentation material. Face-to-face lectures in class for presentation sessions, discussions, and post-test. The language of instruction for this course is Indonesian.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Ikatan Apoteker Indonesia. (2015). Kode Etik dan Pedoman Disiplin Apoteker Indonesia.

Module designation	Health Regulations and Laws
	2. Undang-Undang Nomor 12 Tahun 2011 tentang Pembentukan Peraturan Perundang-Undangan 3. Putra. R.K, Rahman, A. 2014. Pokok-pokok peraturan perundangan kefarmasian. Penerbit Buku Kedokteran : EGC. 4. Bertens, K. (2020). Etika Profesi. Gramedia Pustaka Utama. 5. Undang-Undang Republik Indonesia nomor 36 Tahun 2009 tentang Kesehatan 6. Undang-Undang Republik Indonesia nomor 35 Tahun 2009 tentang Narkotika 7. Undang-Undang Republik Indonesia nomor 5 Tahun 1997 tentang Psikotropika 8. Undang-Undang Republik Indonesia nomor 44 Tahun 2009 tentang Rumah Sakit 9. Undang-Undang Republik Indonesia nomor 36 Tahun 2014 tentang Tenaga Kesehatan 10. Peraturan Pemerintah Nomor 51 Tahun 2009 tentang Pekerjaan Kefarmasian 11. Permenkes nomor 73 tahun 2016 tentang Standar Pelayanan Kefarmasian di Apotek 12. Permenkes nomor 72 tahun 2016 tentang Standar Pelayanan Kefarmasian di Rumah Sakit 13. Peraturan Kepala Badan Pengawas Obat dan Makanan Republik Indonesia Nomor HK.03.1.33.12.12.8195 Tahun 2012 tentang Penerapan Pedoman Cara Pembuatan Obat Yang Baik 14. Peraturan Menteri Kesehatan Nomor 1799/Menkes/Per/XII/2010 tentang Industri Farmasi 15. Peraturan Badan Pengawas Obat dan Makanan Nomor 6 Tahun 2020 tentang Perubahan atas Peraturan Badan Pengawas Obat dan Makanan Nomor 9 Tahun 2019 Penerapan Tentang Pedoman Teknis Cara Distribusi Obat Yang Baik 16. Keputusan Kepala Badan Pengawas Obat dan Makanan Nomor HK.00.05.3.02706 Tahun 2002 Tentang Promosi Obat 17. Peraturan Badan Pengawas Obat dan Makanan Nomor 2 Tahun 2021 Tentang Pedoman Pengawasan Periklanan Obat

Module designation	Method of Islamic Medicine
Semester(s) in which the module is taught	6/Third year
Person responsible for the module	apt. Ofa Suzanti Betha, M.Si.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to describe human nature and Islamic view of humans. 2. Be able to describe Islamic views on Health and Medicine 3. Be able to describe the history and development of Islamic medicine and scientists regarding Islamic medicine 4. Students can explain the general concept of Islamic medicine. 5. Students can explain the Prophet's method of treatment for certain diseases 6. Students can explain the Prophet's instructions for maintaining health 7. Able to decipher the traces of Ibn Sina's life history 8. Able to describe human physiology according to Ibn Sina. 9. Be able to describe the types of disease according to Ibnu Sina 10. Be able to describe the principles of treatment according to Ibn Sina
Content	This course discusses the concept of health, the method of treatment in Islam and which was exemplified by the Prophet Muhammad S.A.W.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Ibn Qoyyim. Ath tibb Annabawy 2. Ibnu Qoyyim Kitab Adda Addawa 3. Al Qanun fil Tibb 1 4. Al Qa un fill Tibb 2 5. Al Qanun fil Tibb 3 6. Al Qanun fil Tibb 4 7. Al Qanun fil Tibb 5

Module designation	Drug Stability
Semester(s) in which the module is taught	6/Third year
Person responsible for the module	apt. Yuni Anggraeni, M.Farm apt. Ofa Suzanti Betha, M.Farm apt. Estu Mahanani Dhilasari, M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to understand the rules and regulations that apply during lectures 2. Be able to explain the importance of drug stability in quality assurance of preparations and its scope 3. Be able to explain chemical degradation pathways and for example 4. Being able to determine the order of the reaction and rate of reaction 5. Being able to interpret the kinetics of the reaction data correctly 6. Being able to explain efforts to stabilize drug compounds from chemical degradation 7. li>Be able to explain the physical stability of drug substances and pharmaceutical preparations as well as how to analyze them 8. Be able to explain the stability of protein and peptide drug substances 9. Be able to explain methods of stability test of drug preparations. 10. Be able to calculate drug expiration date
Content	This course discusses the role and scope of drug stability, chemical degradation pathways, reaction kinetics, factors affecting chemical stability, stabilization of drug compounds from chemical degradation, physical stability of drug compounds, stability of preparations (solutions, suspensions, emulsions) , semi-solid, tablet, capsule, etc.), stability test program (preformulation, formulation, clinical trial, and final product) according to ICH, protein stability.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment

Module designation	Drug Stability
	3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Cartensen J.T, 1990,.Drug Stability,. Marcel Dekker, New York 2. Sumie Y. and Valentino J.S., 2002, Stability of Drugs and Dosage Forms, Kluwer Academics Publishers, New York 3. Sinko,. P.J,. 2006,. Martin 'S Phisical Pharmacy and Pharmaceutical Science, fifth editions lippicott Williams and Wilkins

Module designation	Pharmacotherapy 4
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	apt. Rurynta Ferly Shavira, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	lecture, group discussion, case study
Workload (incl. contact hours, self-study hours)	Total workload : 8 hours 30 minutes per week 2 hours 30 minutes for contact study, 3 hours for structured academic assignment, 3 hours for self-study per week
Credit points	5 credits (3 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Mastering the concept of pharmacotherapy, pharmaceutical care and pharmacy practice. 2. Able to understand the pathophysiology of male and female hormonal disorders; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used and their management. 3. Able to understand the pathophysiology of menstrual disorders and endometriosis; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management. 4. Able to understand the use of contraception; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management. 5. Able to understand the use of drugs in pregnant and lactating women; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management. 6. Able to understand the pathophysiology of epilepsy; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management 7. Able to understand the pathophysiology of Parkinson's disease; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used and their management. 8. Be able to understand the pathophysiology of migraine; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management. 9. Able to understand the pathophysiology of vertigo; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management.

Module designation	Pharmacotherapy 4
	10. Able to understand the pathophysiology of Alzheimer's disease; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management. 11. Able to understand the pathophysiology of anxiety disorders; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management. 12. Able to understand the pathophysiology of depression; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management. 13. Able to understand the pathophysiology of bipolar disorder; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management. 14. Able to understand the pathophysiology of schizophrenia; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management. 15. Able to understand the use of anesthetic drugs; pharmacology, drug interactions, drug side effects, contraindications related to the drugs used, and their management.
Content	Pharmacotherapy 4 course contains the subject of pharmacotherapy in hormonal disorders, diseases of the nervous system, and mental disorders. Each system discussed in this course includes pathophysiology, pharmacodynamics, pharmacokinetics, drug interactions, MESO, contraindications, drug management according to guidelines, case analysis, and dosage calculations.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Silbernagl S, Lang F. Color Atlas of Pathophysiology 2nd edition. 2010. USA: Georg Thieme Verlag KG. 2. Wells B.G, Dipiro JT, Schwinghammer TL, Dipirol CV. Pharmacotherapy Handbook 11th edition. 2020. USA: The McGraw-Hill Companies. 3. Bertram G. Katzung-Basic & Clinical Pharmacology9th Edition.

Module designation	Pharmacotherapy 4
	4. Heinz Lüllmann Klaus Mohr Albrecht Ziegler Detlef Bieger Jürgen Wirth. Color Atlas of Pharmacology Second Edition. 2000. Thieme New York, 333 Seventh Avenue, New York, NY 10001, USA 5. British National Formulary 6. Drugs.com. diakses melalui https://www.drugs.com/interactions-check.php?drug_list=2118-0,1433-0

Module designation	Pharmacotherapy Practice
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	apt. Mita Restinia, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to understand the concept of DRP according to Cipolle and PCNE. 2. Be able to know and choose Evidence Based Medicine in DRP analysis. 3. Be able to analyze and complete case studies related to DRP drug use in cardiovascular system diseases (hypertension, hyperlipidemia and ischemic stroke). 4. Be able to analyze and complete case studies related to DRP drug use in infectious diseases (tuberculosis, urinary tract infection, pneumonia). 5. Be able to analyze and complete case studies related to drug use DRP on the endocrine system (diabetes mellitus, thyroid, and osteoporosis). 6. Be able to analyze and complete case studies related to drug use DRP on the respiratory system (Asthma, COPD, Cough and Flu). 7. Be able to analyze and complete case studies related to DRP drug use in the gastrointestinal system (Gastroesophageal reflux disease, Diarrhea and Constipation, Nausea and Vomiting) 8. Be able to analyze and complete case studies related to DRP drug use in the renal system (acute renal failure, chronic renal failure). 9. Be able to analyze and complete case studies related to DRP drug use on the nervous system (depression, epilepsy, parkinson's) 10. Be able to analyze and complete case studies related to DRP drug use on the bone and joint system (gout, osteoarthritis, rheumatoid arthritis). 11. Be ble to analyze and complete case studies related to DRP drug use on the skin (dermatitis, acne). 12. Be able to analyze and complete case studies related to DRP drug use in oncology (cancer).

Module designation	Pharmacotherapy Practice
Content	Pharmacotherapy practicum courses study the analysis of drug related problem (DRP) case studies which are designed according to cases that are commonly found in health care facilities and based on the UKAI CBT blueprint. Case studies related to DRP on the cardiovascular system, infections, endocrine system, respiratory system, gastrointestinal system, renal and urinary system, bones and joints, skin, oncology. Case studies are discussed based on Cipolle and PCNE.
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Shargel L. Susanna Wu, Andrew B C Yu, Applied Biopharmaceutics and Pharmacokinetics, 5th ed. New York, Mc Graw- Hill,2005. 2. Djo wahyono, Farmakokinetika Klinik Konsep Dasar dan Terapan dalam Farmasi Klinik, Gajah Mada University, 2016. 3. Katzung, Bertram G. 2004. Basic & clinical pharmacology. New York: Lange Medical Books/McGraw Hill. 4. Anggriani Y, Restinia M. 2022. Panduan Penerapan Pharmaceutical Care. Jakarta Utara: EGC.

Module designation	Research proposal seminar.
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	Head / Secretary of Pharmacy Study Program
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	lecture, group discussion, case study,
Workload (incl. contact hours, self-study hours)	-
Credit points	3 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	1. Fill out the proposal seminar registration Google Form. 2. Enroll in the proposal seminar course in your Study Plan (KRS). (Proven by attaching the KRS, signed by the Academic Advisor.)
Module objectives/intended learning outcomes	1. Students can make research proposals based on scientific research principles 2. Students can disseminate research proposals
Content	The research proposal seminar is a mandatory course for Pharmacy students. The research proposal seminar examines the thesis proposal which includes selecting the title, preparing the background, problem formulation, theoretical study, and research methods, so that students can produce a research proposal. The research proposal is then disseminated in the form of a research proposal seminar.
Examination forms	Presenttion
Study and examination requirements	1. Have completed a minimum of 135 credit hours. (Proven by attaching an official transcript, initialed by the Academic Advisor.) 2. Obtain approval from Advisor I and Advisor II. (Proven by attaching a statement of approval from the advisors.)
Reading list	1. Guide to Preparing a Thesis for the Pharmacy Study Program, UIN Syarif Hidayatullah Jakarta, 2021 2. Laake, P., Benestad, H.B., Olsen, B.R. 2007. Research Methodology in the medical & Biological Science. Elsevier 3. 3Alexandrov, A. V. (2004). How to write a research paper. *Cerebrovascular Diseases*, *18*(2), 135–138. https://doi.org/10.1159/000079266

Module designation	Interprofessional Eduction 2
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	Dr. apt. Azrifitria, M.Si
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	lecture, group discussion, case study,
Workload (incl. contact hours, self-study hours)	Total workload : 2 hours 50 minutes per week 50 minutes for contact study, 1 hours for structured academic assignment, 1 hours for self-study per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Mastering the concept of pharmacology 2. Mastering the concept of pharmacotherapy, pharmaceutical care and pharmacy practice 3. Able to explain an integrated disaster management system that is integrated into the health care system in a comprehensive and systematic manner 4. Able to explain the concept of disaster in Islam 5. Able to carry out simulations of assessments quickly, precisely, and systematically on conditions before, during, and after a disaster 6. Be able to carry out health education simulations about prevention and disaster mitigation (disaster mitigation) by integrating the principles and theories of adult learning 7. Being able to demonstrate disaster victim assistance and management disasters by paying attention to the safety of victims and officers, environmental safety and security, and an interdisciplinary approach.
Content	Integration of Health Professionals 2 (IPE 2) course contains the subject matter of concepts, types, classifications, and characteristics of disasters, the impact of disasters on health, principles of disaster emergency management, disaster preparation, interprofessional communication, implementing interprofessional roles and responsibilities in disaster management.
Examination forms	Multiple choice, essay, and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Adelman, D.S, and Legg, T.J. (2008). Disaster Nursing: A Handbook for Practice. New 2. York: Jones & Bartlett Learning

Module designation	Interprofessional Eduction 2
	3. Badan Nasional Penanggulangan Bencana Indonesia (www.bnpb.go.id) 4. Howard, PK., and Steinman RA. (2013). Sheehy's Manual of Emergency Nursing: 5. Principles and Practice. 7th ed. St Louis: Elsevier Inc 6. Jordan, KS. (2000). Emergency Nursing Core Curriculum (5 Eds). Philadelphia: WB Saunders Company 7. Veenema, T.G. (2013). Disaster Nursing and Emergency Preparedness For Chemical, Biological, and Radiological Terrorism and Other Hazards 3 ed. New York: Springer Publishing Company, LLC 8. WHO western pacific region & International council of nurses. (2009). ICN framework on disaster nursing competencies. Geneva: ICN.

Module designation	Compounding and Dispensing
Semester(s) in which the module is taught	7/ Fourth year
Person responsible for the module	apt. Ofa Suzanti Betha, M.Si. apt. Sabrina, M.Farm, Ph.D . apt. Estu Mahanani Dillasari, M.Farm. apt. Nelly Suryani, Ph.D. apt Yuni Anggraeni, M.Farm.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to complete case examples in planning the preparation of facilities and infrastructure in compounding and delivery of pharmaceutical preparations and medical devices); 2. Able to complete sample cases of preparation and delivery of non-sterile pharmaceutical preparations of solid dosage forms (powders, tablets, granules, suppositories) in accordance with the principles of quality assurance of compound preparations and pharmaceutical service standards. quality assurance for formulations and pharmaceutical service standards 3. Able to complete sample cases of preparation and delivery of non-sterile pharmaceutical preparations for semi-solid preparations (creams, ointments, gels, pastes) according to the principles of quality assurance for pharmaceutical service standards 4. Able to complete sample cases for the preparation and delivery of sterile pharmaceutical preparations for liquid preparations (injection preparations, eye preparations, irrigation fluids) according to the principles of quality assurance of pharmaceutical service standards 5. Able to complete sample cases for the preparation and delivery of tools health according to regulations and standards of pharmaceutical services
Content	This course discusses theories and principles in compounding and delivering pharmaceutical preparations and medical devices.
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment

Module designation	Compounding and Dispensing
	3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Lyod V Allen Jr. PhD. 2012. The Art, Science and Technology of Pharmaceutical Comounding, 4th. American Pharmcists Association, Washington, DC, USA 2. John F Marriott. Keith A Wilson 2010. Pharmaceutical Compounding and Dispensing 3. KemenKes 2019. Pedoman Penyusunan Rencana Kebutuhan Obat Dan Pengendalian Persediaan Obat di Rumah Sakit. 4. KemenKes 2009. Pedoman Dasar Dispensing Sediaan Steril. 5. KemenKes 2019. Petunjuk Teknis Standar Pelayanan Kefarmasian di Apotek. 6. Permenkes 73 tahun 2016 Standar Pelayanan Kefarmasian di Apotek. 7. USP1163_Quality Assurance in Compounding

Module designation	Compounding and Dispensing Practice
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	apt. Ofa Suzanti Betha, M.Si. apt. Sabrina, M.Farm, Ph.D . apt. Estu Mahanani Dillasari, M.Farm. apt. Nelly Suryani, Ph.D. apt Yuni Anggraeni, M.Farm.
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab works
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Preparing personal, SOP, facilities and pre-facilities in CnD 2. Performing compounding and dispensing of solid preparations 3. Performing compounding and dispensing of liquid preparations 4. Carry out compounding and dispensing of semi-solid preparations 5. Perform compounding and dispensing of sterile preparations and medical devices 6. Able to solve problems in compounding and dispensing
Content	This course discusses theories and principles in compounding to packaging and storage of quality non-sterile pharmaceutical preparations, as well as being able to solve problems in compounding, quality assurance and quality inspection of pharmaceutical preparations.
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Allen, L V. 2015. Ilmu dan Teknologi Peracikan Sediaan Farmasi. EGC 2. Allen, L V. 2011. Ansel's Pharmaceutical Dosage Forms and Drug Delivery Systems. 3. Marriot, J F. 2010. Pharmaceutical Compounding and Dispensing 2nd edition. Pharmaceutical Press 4. FI VI

Module designation	Hospital Pharmacy Practice
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	Dr. apt. Nurmeilis, M.Si, apt. Azrifitria, M.Si, apt. Yardi, Ph.D, apt. Suci Ahda Novitri, M.Si., apt. Marvel, M.Farm., apt. Mita Restinia, M.Farm, apt. Rurynta Ferly Shavira, M.Farm
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	Lab work
Workload (incl. contact hours, self-study hours)	2 Hours and 50 minutes of total workload per week
Credit points	2 credits (1 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Students can understand and explain the symptoms of disease and disease diagnosis 2. Students can understand and explain choosing the right drug indication, as well as the appropriate dosage 3. Students can know and explain the rules of use and drug pharmacokinetics 4. Students can find out the pharmacodynamic effects of drug use 5. Students can find out and explain unwanted drug reactions from drug use 6. Students can find out how to provide drug information to patients/families so as to increase adherence to drug use 7. Students can understand and explain drug dispensing, distribution medicine in the Hospital and how to store medicine properly 8. Students can understand, understand and interpret laboratory data 9. Students can explain the relationship between laboratory data and drug use
Content	This course discusses topics, including: symptoms of disease and disease diagnosis, selection and drug therapy regimens, monitoring drug use, drug information services, dispensing drugs drug distribution and storage medicine in hospital, interpretation of laboratory data.
Examination forms	Multiple choice, essay and practice exam
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment

Module designation	Hospital Pharmacy Practice
	3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Mayer., Welsh dan Kowalak, 2011. Buku Ajar Patofisiologi. Jakarta: EGC. 2. DiPiro, Joseph T., Gary C. Yee, L. Michael Posey, Stuart T. Haines, Thomas D. Nolin, Vicki Ellingrod. 2019. Pharmacotherapy: A Pathophysiologic Approach, 11e. New York: McGraw-Hill Education. 3. Aberg, J.A., Lacy, C., Amstrong, L., Goldman, M. and Lance, L.L., 2009, Drug Information Handbook 17th Edition, American PharmacistAssociation. 4. Baxter K., 2008, Stockley's Drug Interactions 8th Edition, London. 5. BNF, 2009, British National Formulary, Edisi 57, British MedicalAssociation Royal Pharmacetical of Great Britain, England 6. American Society of Health System Pharmacists. 2021. AHFS Drug Information. United States of America. 7. Sweetman SC.2009. **Martindale**. 36th Ed. London: Pharmaceutical Press 8. Anief M., 2007, Ilmu Meracik Obat, Gadjah Mada University Press, Yogyakarta. 9. Kemenkes RI. 2016. Permenkes No 72 tahun 2016 Standar Pelayanan Kefarmasian di Rumah Sakit. Jakarta 10. Kemenkes RI. 2011. Pedoman Interpretasi Data Klinik. Kementerian Kesehatan RI

Module designation	Undergraduate Thesis and Comprehensive Examination
Semester(s) in which the module is taught	8/Fourth year
Person responsible for the module	Head / Secretary of Pharmacy Study Program
Language	Bahasa
Relation to curriculum	Compulsory ~~/ elective / specialisation~~
Teaching methods	lecture, group discussion, case study,
Workload (incl. contact hours, self-study hours)	-
Credit points	8 credits (5 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	3. Fill out the seminar registration Google Form. 4. Enroll in the proposal seminar course in your Study Plan (KRS). (Proven by attaching the KRS, signed by the Academic Advisor.)

Module designation	Undergraduate Thesis and Comprehensive Examination
Module objectives/intended learning outcomes	1. Studns can create a bachelor's thesis based on the principles of scientific research. 2. Students can disseminate the results of their research and defend their findings. 3. Students can master and address general issues related to pharmaceutical science through comprehensive exams.
Content	Thesis and Comprehensive Exams are mandatory courses for pharmacy students. This thesis is a scientific work based on the results of research that systematically and comprehensively discusses a presented issue or topic, equipped with a literature review, and contains elements of analysis and synthesis under the guidance of the advisor. A comprehensive exam is a comprehensive assessment of students' mastery of pharmaceutical science. The questions in the comprehensive exam are directed towards assessing the overall knowledge acquisition of all courses taken by the student. The examination was completed.
Examination forms	Presenttion
Study and examination requirements	1. Create a letter of request to the Program Coordinator (using the provided form) and fill out the thesis seminar registration Google Form. 2. Obtain approval from your advisors to conduct the Final Examination (the approval sheet in the thesis should be signed by both Advisor 1 and Advisor 2). 3. Have passed all courses with a minimum grade of C. (Proven by an official transcript, with a total of 151 credit hours, initialed by the Academic Advisor.) 4. Enroll in the Thesis course (4 credit hours) and Comprehensive Seminar (1 credit hour) in your Study Plan (KRS). (Proven by attaching the KRS.) 5. Have completed all administrative requirements at the faculty (such as tuition payment, etc.), proven by official letters or receipts. 6. Submit six thesis bundles approved by the advisors and the program coordinator. 7. Engage in the thesis advisory process with your advisors (proven by a thesis advisory book with a minimum of 10 meetings with both advisors during the thesis process). 8. Have a minimum TOEFL score of 450 (proven by the original certificate and a photocopy, legalized by an authorized official). 9. Have a minimum TOAFL score of 375 (proven by the original certificate and a photocopy, legalized by an authorized official).
Reading list	1. Guide to Preparing a Thesis for the Pharmacy Study Program, UIN Syarif Hidayatullah Jakarta, 2021 2. Laake, P., Benestad, H.B., Olsen, B.R. 2007. Research Methodology in the medical & Biological Science. Elsevier 3. 3Alexandrov, A. V. (2004). How to write a research paper. *Cerebrovascular Diseases*, *18*(2), 135–138. https://doi.org/10.1159/000079266

Module designation	Analysis of Biomedicine and Forensic
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	Dr. apt. Supandi, M.Si.
Language	Bahasa
Relation to curriculum	~~Compulsory /~~ elective ~~/ specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand the scope of Forensic Pharmacy, forensic pharmaceutical laboratory, forensic toxicology 2. Able to understand the health laws of medical and pharmaceutical personnel 3. Able to study forensic pharmacy, 4. Able to define criteria for Forensic Laboratory category 5. Able to study Forensic Toxicology 6. Able to study Illocit trafficking 7. Able to study illicit field 8. Able to Assess Narcotic Plants
Content	This course discusses Applying pharmaceutical knowledge in the field of law (handling forensic samples, drug abuse, alcohol abuse, chemical poisons, food toxins, DNA)
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Farmasi Forensik dan Toksikologi, Penerapannya dalam menyidik tindak pidana kasus kejahatan, UI Press (2009). 2. Toksikologi Narkoba dan alkohol, Pengaruhnya terhadap sistem saraf pusat, UI Press (2006). 3. Lingkungan hidup dan pencemaran. Hubungannya dengan toksisitas senyawa logam, UI Press (2001). 4. Logam dalam sistem biologi makhluk hidup, UI Press (1995).

Module designation	Radiopharmaceutical
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	apt. Rosa Adelina, M.Sc
Language	Bahasa
Relation to curriculum	~~Compulsory /~~ elective ~~/ specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand the meaning of radiopharmaceuticals 2. Able to understand radioactivity and its effects on biological systems 3. Able to understand about radiopharmaceuticals 4. Able to explain the principle of radiation detection and measurement 5. Able to explain about radiation protection and dosimetry 6. Able to explain about radiobiology and safe handling 7. Able to explain about radiopharmaceuticals in the hospital 8. Able to understand radiation sterilization 9. Able to explain about drug and food preservation 10. Be able to explain radioactivity to individuals 11. Able to understand the safety of radiation on nuclear drugs 12. Able to understand about radioactive waste 13. Able to explain the management of radioactive waste 14. Able to understand about radioactive safety guidelines
Content	This course is a course that explains radiation in the pharmaceutical field. Some of the topics that will be discussed in this course include: radioactivity and its effects, radiopharmaceuticals, principles of radiation detection and measurement, radiation protection and dosimetry, radiobiology and safe handling, radiopharmaceuticals in hospitals, radiation sterilization, preservation of drugs and food, radioactivity in individuals , radiation safety in nuclear medicine, radioactive waste, radioactive waste management, and radioactive safety guidelines.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	-

Module designation	Cosmetology
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	apt. Nelly Suryani, Ph.D
Language	Bahasa
Relation to curriculum	~~Compulsory /~~ elective ~~/ specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload: 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to describe, explain the definition and classification of cosmetics and their differences from drugs 2. Be able to explain the anatomy and physiology of skin and hair and their types 3. Be able to explain the formulation of cosmetic preparations for basic usage 4. Be able to explain the principles and formulation of sunscreen preparations 5. Be able to explain the formulation of cosmetic preparations for body care (soap, body lotion, body scrub, and< i> body cologne) 6. Be able to explain the formulation of cosmetic preparations for hair care 7. Be able to explain the concept of SPA 8. Be able to explain the principles and formulation of anti aging preparations early 9. Be able to explain government regulations related to cosmetics 10. Be able to explain adverse cosmetic reactions and their causes 11. Be able to explain the formulation of anti-acne preparations
Content	This course is a mandatory elective course for Bachelor of Pharmacy undergraduate students. This course discusses an overview of cosmetics, anatomy and physiology of skin and hair, cosmetics for basic use (cleaners, fresheners, moisturizers), sunscreens and their preparations, body care cosmetics (body lotions, soaps, body colognes, body scrubs, deodorants and antiperspirant), hair care cosmetics (shampoo, conditioner, hair tonic), SPA, anti-aging and its preparations, decorative cosmetics, government regulations regarding cosmetics, adverse cosmetic reactions, and anti-acne and preparations
Examination forms	Multiple choice,and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Harry's Cosmetology

Module designation	Cosmetology
	2. Andre O. Barel, Marc Paye, Howard I. Maibach, Handbook of Cosmetic Science and Technology, Third ed., Informa Health Care, New York, 200 3. Zoe Diana Draelos and Lauren A. Thaman, Formulation of Skin Care Products, Taylor & Francis, New York, 2006 4. Permenkes dan Peraturan Kepala BPOM tentang kosmetik 5. Retno I.T. dan Fatma L., Buku Pegangan Ilmu Pengetahuan Kosmetik, Jakarta, Gramedia, 2007

Module designation	Pharmacoeconomics and Pharmacovigilance
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	apt. Mita Restinia, M. Farm
Language	Bahasa
Relation to curriculum	~~Compulsory /~~ elective ~~/ specialisation~~
Teaching methods	Contextual Learning, Cooperative Learnin, Case study
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Be able to explain the terms and definitions used in pharmacoeconomics. 2. Be able to explain the measurement of therapeutic outcomes. 3. Be able to understand cost-minimization analysis and cost-minimization analysis. 4. Be able to understand cost-benefit analysis 5. Be able to understand cost-effectiveness analysis 6. Be able to understand cost-utility analysis 7. Be able to complete case studies related to pharmacoeconomic applications. 8. Be able to understand the definition of pharmacovigilance 9. Be able to understand Adverse Drug Reactions (ROM) 1 10. Be able to explain the role of BPOM, pharmacists in pharmacovigilance. 11. Be able to fill out drug side effect reporting forms. Able to understand the pathophysiology of nausea and vomiting; pharmacology, drug interactions, drug side effects, contraindications related to drugs used for nausea and vomiting, and management of nausea and vomiting. 12. Be able to complete case studies related to pharmacovigilance
Content	The Pharmacoeconomics and Pharmacovigilance course contains pharmacoeconomic history, pharmacoeconomic methodology, drug cost analysis, resource analysis, pharmacoeconomics for retail, pharmacoeconomics for drug discovery, marketing of pharmacoeconomic research results, post marketing drug research and development, and basics basic knowledge about pharmacovigilance, identification of drug side effects, medication safety, medication errors, monitoring drug side effects and ESO reporting to BPOM
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80%

Module designation	Pharmacoeconomics and Pharmacovigilance
	2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Bootman, J.L., Townsend,R.J., W.F. McGhan, Principles of Pharmaco economics, 2nd ed, Harvey Whitney Books,Cincinnati, 1996 2. Hay, J.W., W.M. Wu, Pharmacoeconomics and Outcomes Research : Expanding the Healthcare „Outcomes" Market, Value in Health, 3 (3), 181-185, May-June 2000 3. Walley, T., A. Haycox, A. Boland, Pharmacoeconomics, Churchill Livingstone, 2004 4. Arnold, R.J.G, Pharmacoeconomics, From Theory to Practise , 3rd ed., Taylor & Francis, USA, 2010 5. Smith, M.C., Studies in Pharmaceutical Economics, Pharmaceutical Product Press, NY, 1996. 6. Afdhal, A.F., Pharmacist Patient Interventions for Quality of Life, FIP Annual Congress, Stockholm, Sweden, 29 August 1995 7. Modul monitoring efek samping obat 8. BPOM. Modul Farmakovigilans

Module designation	Tissue Culture Technology
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	Dr. Isra Janatiningrum, M.Si Dr. apt. Eka Puteri, M.Si
Language	Bahasa
Relation to curriculum	~~Compulsory /~~ elective ~~/ specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Understand plant tissue culture and its benefits 2. Be able to explain the factors that support the success of tissue culture 3. Able to explain tissue culture planting media and preparation 4. Able to explain sterilization techniques in tissue culture 5. Be able to explain the sources of explants in plant tissue culture 6. Able to explain the application of tissue culture in various types of plants 7. Able to explain tissue culture techniques 8. Able to explain subculture techniques 9. Able to explain about acclimatization techniques 10. Doing small projects: practice in the laboratory 11. Small project presentation
Content	This course teaches the basic concepts of microbiology in supporting the pharmaceutical field. Some of the topics that will be discussed in this course are understanding the meaning of plant tissue culture and its benefits, factors that support the success of tissue culture, tissue culture planting media and preparation, sterilization techniques in tissue culture, sources of explants in plant tissue culture, application of tissue culture to various types of plants, tissue culture techniques, subculture techniques, and acclimatization techniques
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Doyle, A and J. Bryan. 1988, Cell and Tissue Culture, Laboratory Procedures in Biotechnology, John Wiley and Son, Toronto.

Module designation	Tissue Culture Technology
	2. Jackson, J.F and H.F. Linsliens. 2012. Testing for genetic manipulation in Plants, Springer, Heidelberg 3. Hartman HT, D.E. Kester, F.T. Davies Jr and R.L. Geneve, 2017, Plant Propagation, Principles and Practices, 9th edition, Pearson Education,Inc, 4. Smith , R.H., 2012, Plant Tissue Culture, 3th edition, Academic Press, San Diego, USA

Module designation	Pharmacoepidemiology
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	Dr. apt. Nurmeilis, M.Si Dr. apt. Azrifitria, M.Si apt. Yardi, Ph.D
Language	Bahasa
Relation to curriculum	~~Compulsory /~~ elective ~~/ specialisation~~
Teaching methods	lecture, group discussion, case study
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand the scope of pharmacoepidemiology in general 2. Able to understand the basic principles of clinical pharmacology and epidemiology that are relevant to pharmacoepidemiology studies, the role of pharmacoepidemiology in various sectors, Data sources for pharmacoepidemiology studies, Post marketing surveillance, data systems automated, studies drug use (drug utilization reviews), pharmacoepidemiological studies safety vaccines pharmcovigilance, risk management, pharmacoeconomics, special pharmacoepidemiological methodologies, and the ESO monitoring system in Indonesia. /li> 3. Able to identify and solve drug problems using an evidence-based approach in the design, manufacture/preparation, distribution, management and/or service of pharmaceutical preparations to optimize therapeutic success. 4. Be able to explain the introduction of pharmacoepidemiology 5. Be able to explain the role of pharmacoepidemiology in various sectors 6. Be able to classify the methods used in pharmacoepidemiology 7. Be able to explain the design of observational studies in pharmacoepidemiology 8. Be able to explain the application of experimental studies in pharmaceutical services 9. Able to explain postmarketing surveillance 10. Able to explain pharmacoepidemiological studies of vaccine safety 11. Able to explain risk management

Module designation	Pharmacoepidemiology
	12. Be able to explain drug utilization review 13. Be able to explain pharmacovigilance 14. Be able to explain pharmacoeconomics 15. Be able to explain about the ESO monitoring system in Indonesia 16. Explain the role of herbal medicine in overcoming disease on the central nervous system 17. Explaining the role of herbal medicines in overcoming disorders of the cardiovascular system 18. Explaining the role of herbal medicines in the endocrine system 19. Explains the development of phytotherapy formulas which have anti-inflammatory pharmacological effects (Osteo Arthritis and Rheumatoid Arthritis) 20. Explains the role of herbal medicines in the hormonal system 21. Explains the development of phytotherapy formulas which have immunomodulatory pharmacological effects
Content	This course studies the science that studies about the use of drugs and their effects on a large number of people. In other words, Pharmacoepidemiology bridges the gap between Pharmacology and Clinical Pharmacology. Pharmacoepidemiology is useful for providing information about the adverse and beneficial effects of drugs, thus enabling a better assessment of the balance of the risk/benefit ratio of drug use in patients..
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Brian L. Strom, Stephen E. Kimmel, Sean Hennessy., Pharmacoepidemiology 5th ed, Wiley-Blackwell, 2012. 2. Warning, B., Montagne, M., Pharmacoepidemiology: Principles & Practice, McGraw Hills, 2000. 3. Quick JD, Rankin JR, Laing RO, O'Connor RW, Hogerzeil HV, et al. editors. Managing drug supply. 2nd Ed. West Hartford (Connecticut): Kumarian Press, 1997 4. Sjöqvist,F., Birkett, D., Drug Utilization Review. Karolinska Institute. Division of Clinical Pharmacology. Huddinge University Hospital. 5. Badan Pengawasan Obat dan Makanan, Informatorium Obat

Module designation	Environmental Pharmacy
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	apt. Rosa Adelina, M.Sc
Language	Bahasa
Relation to curriculum	~~Compulsory /~~ elective ~~/ specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to understand the scope of environmental pharmaceuticals 2. Able to understand water, soil, air, plant pollution and medicine 3. Able to understand the legislation related to pharmaceutical waste 4. Able to understand the basic principles biosafety and biosecurity 5. Able to explain types of waste 6. Able to explain chemical symbols 7. Able to explain the impact of pharmaceutical waste 8. Able to explain BOD and COD 9. Be able to explain the type of pollutant based on its source 10. Be able to explain the type of pollutant based on its nature 11. Able to explain the physical parameters of drinking water based on Permenkes 12. Able to explain the management of COVID-19 waste 13. Able to explain wastewater treatment/monitoring 14. Able to explain about IPAL
Content	This course is an explanation of how to treat waste and keep the environment healthy. Some of the topics that will be discussed in this course include: pollution, biosafety and biosecurity legislation, types of waste, being able to explain chemical symbols, the impact of pharmaceutical waste, BOD and COD, types of pollutants, and waste management.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such us cheating or other acts of fraud
Reading list	1. Management of Pharmaceutical Household Waste. Limiting Environmental Impacts of Unused or Expired Medicine.

Module designation	Environmental Pharmacy
	https://www.oecd.org/environment/management-of-pharmaceutical-household-waste-3854026c-en.htm 2. https://www.businesswaste.co.uk/pharmaceutical-waste/

Module designation	Drug Delivery System
Semester(s) in which the module is taught	7/Fourth year
Person responsible for the module	apt. Sabrina, S. Si., M.Farm, Ph.D apt. Yuni Anggraeni, M. Farm apt. Ofa Suzanti Betha, MSi. apt. Estu Mahanani Dillasari, M.Farm. apt. Nelly Suryani, M. Farm., Ph. D
Language	Bahasa
Relation to curriculum	~~Compulsory /~~ elective ~~/ specialisation~~
Teaching methods	Contextual Learning, Cooperative Learning
Workload (incl. contact hours, self-study hours)	Total workload : 5 hours 40 minutes per week 1 hours 40 minutes for contact study, 2 hours for structured academic assignment, 2 hours for self-study per week
Credit points	3 credits (2 sks x 1.67 credits)
Required and recommended prerequisites for joining the module	-
Module objectives/intended learning outcomes	1. Able to explain the purpose of the drug delivery system, limitations of the conventional drug delivery system, 2. Able to explain the classification of the drug delivery system 3. Able explain drug targeting systems 4. Be able to explain nanoparticles as drug carriers and polymer-based nanoparticles and lipid-based nanoparticles 5. Be able to explain microemulsions as vehicles in drug delivery 6. Be able to explain systems gastroretentive drug delivery 7. Able to explain the transmucosal oral drug delivery system 8. Able to explain the drug delivery system through the lungs 9. Able to explain the drug delivery system through the eye 10. Able to explain the rectal drug delivery system 11. Able to explain the transdermal drug delivery system 12. Able to explain the intravaginal drug delivery system 13. Able to explain the intrauterine drug delivery system 14. Able to explain the parenteral drug delivery system
Content	This course is a compulsory course for S-1 students in the Master of Pharmacy Study Program. In this course, the purpose of the drug delivery system is discussed; Limitations of conventional drug delivery systems; Basic concepts of biopharmaceutics and pharmacokinetics; Timing for optimal therapy; Terminology of drug delivery systems and targeting; Classification of drug delivery systems; Drug targeting system; The importance of nanocarriers in drug delivery; polymer-based nanoparticles (Polymer nanoparticles, Polymer micelles, Polymeric vesicles and niosomes); lipid-based nanoparticles (Liposome, Lipoprotein, Solid lipid nanoparticles, Lipidic core nanocapsules); Microemulsions as Vehicles in Drug Delivery; Gastroretentive

Module designation	Drug Delivery System
	Drug delivery system; Transmucosal Oral Drug Delivery System; Drug Delivery System Through the Lungs, Eyes, Rectal, Intrauterine, Vaginal, Transdermal, and Parenteral.
Examination forms	Multiple choice and essay
Study and examination requirements	1. Minimum lecture attendance of 80% 2. Completed 80% structured academic assignment 3. not commit acts of fraud such as cheating or other acts of fraud
Reading list	1. Anya M.Hillery, Andrew W.Lloyd, James Swarbrick. (2001). Drug Delivery and G 2. Chien, Y., W., 1992. Drug and The Pharmaceutical sciences. Novel Drug Delivery System 3. Vladimir P.T. 2006. Nanoparticulates as Drug Carriers. Imperial College Press 4. Vasant V.R. & Mannfred A.H. 2004. Drug Delivery Systems. Second edition. CRC Press 5. Drug Delivery and Targeting for Pharmacists and Pharmaceutical Scientists.2001. 6. Drug Delivery and Targeting for Pharmacists and Pharmaceutical Scientists.2001. Karhale Ashish. 2012. Pulmonary Drug Delivery System. International Journal of PharmTech Research. 7. Ashaben Patel Ocular drug delivery systems: An overview. World J Pharmacol. 2013 8. Rectal drug delivery: A promising route for enhancing drug absorption. Lakshmi Prasanna J,2012. Asian J. Res. Pharm. Sci. 2012; Vol. 2