POPULATION PHARMACOKINETICS

Module designation	*Population Pharmacokinetics*
Semester(s) in which the module is taught	*2*
Person responsible for the module	Prof. Junaidi Khotib, S.Si.,Apt.,M.Kes.,Ph.D.(PJMK) **(Course Coordinator)**
Language	*Bahasa Indonesia*
Relation to curriculum	~~*Compulsory*~~ */ elective /* ~~*specialisation*~~
Teaching methods	*lecture, discussion, assignment*
Workload (incl. contact hours, self-study hours)	*(Estimated) Total workload:* *Contact hours (structured activities.): 90,67 hours* *Private study including independent learning activites*: *90,67 hours*
Credit points	*2 SCU / 6 ECTS*
Required and recommended prerequisites for joining the module	*NA*
Module objectives/intended learning outcomes	Students are: LO1: Able to realize excellence based on religious morals (excellence with morality), able to work together, and show a responsible attitude to work in their field of expertise independently LO2: Able to internalize the spirit of independence, struggle, and entrepreneurship LO3: Able to develop and build logical-critical-systematic-creative thinking and scientific conceptions through scientific research, design creation, or artworks of science and technology that pays attention to and applies humanities values through an interdisciplinary or multidisciplinary approach in the form of a thesis or other equivalent forms LO4: Able to develop a pharmaceutical professional performance with analytical acumen in solving pharmaceutical problems and managing research in the pharmaceutical field related to national and global systems and policies, both inter and inter-disciplinary approaches LO5: Able to access and review information through an Information and Communication Technology (ICT) system, decide on a specific subject of study, maintain the feasibility of implementing research designs, conduct research, analyze data, conclude research results comprehensively, and create strategic issues based on the study that reflect the latest updates in the field of pharmaceutical sciences, and communicate them in the media and scientific forums at the national and international level through an interdisciplinary or multidisciplinary approach in the form of a thesis or other equivalent forms. LO6: Able to make decisions in the context of solving problems related to science and technology development based on analytical or experimental studies through collaboration with colleagues, colleagues in institutions and research communities at both national and international levels and utilizing research results for the benefit of the

	user and other communities LO7: Able to analyze natural materials to obtain active ingredients and/or pharmaceutical excipients with due observance of nature conservation. LO8: Able to carry out drug designs through the synthesis of bioactive compounds based on the structure-activity relationship. LO9: Able to carry out molecular manipulation of substances and develop formulations and manufacturing of pharmaceutical preparations with active pharmaceutical ingredients derived from natural products and synthetic compounds through the manufacture of polymorphs, nanoparticles, solid dispersions LO11: Able to develop systems for evaluating the bioavailability of drugs in the body, pharmaceutical products circulation permits, and their in-vitro and in-vivo evaluations with specific delivery systems with appropriate analytical methods. LO13: Able to design drug development both from natural products and/or synthetic compounds by considering the biological mimicry system LO14: Able to build drug management systems from active pharmaceutical ingredients to finished products that are ready for therapeutic uses.
Content	The Population Pharmacokinetic course presents pharmacokinetics and pharmacometrics and their relationship; population pharmacokinetic concepts and model development including model elements, individual models and population models; NONMEM and NM-TRAN control streams including components, rules and estimates; design data sets and construct population kinetics models; interpretation of output models including planing, evaluation and quality control models; parameter estimation using Bayes Theorem and Individual parameter approaches; evaluation of the model as well as simulation and quality control of the model.
Exams and assessment formats	*Final exam (100 minutes), presentation (100 minutes), take-home written assignments*
Study and examination requirements	*the final grade in the module is composed of 40% performance on final exams, 25% quizzes, 25% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass*

Reading list	1. Owen JS, Fiedler-Kelly J, Introduction to Population Pharmacokinetic / Pharmacodynamic Analysis with Nonlinear Mixed Effects Models 1st Edition, Willy, 2014 2. Jelliffe RW, Neely M, Individualized Drug Therapy for Patients: Basic Foundations, Relevant Software and Clinical Applications, Academic press, 2016 3. Murphy JE, Clinical Pharmacokinetics 6th Edition, ASHP, 2017 4. Derendorf H, Schmidt S, Rowland and Tozer's Clinical Pharmacokinetics and Pharmacodynamics: Concepts and Applications 5th Edition, Wolter Kluver, 2019 5. Bauer L, Applied Clinical Pharmacokinetics 3/E 3rd Edition, Mc Grawhill Education, 2014

Advanced Clinical Chemistry

Module designation	*Advanced Clinical Chemistry*
Semester(s) in which the module is taught	*2*
Person responsible for the module	1. Prof. Dr. apt. Sudjarwo, MS **(Course Coordinator)** 2. Prof. Dr. apt. Djoko Agus Purwanto, M.Si. 3. Dr. apt. Riesta Primaharinastiti, M.Si. 4. Dr. Bastiana Bermawi, dr. SpPK
Language	*Bahasa Indonesia*
Relation to curriculum	*~~Compulsory~~ / elective / ~~specialisation~~*
Teaching methods	*lecture, discussion, assignment*
Workload (incl. contact hours, self-study hours)	*(Estimated) Total workload:* *Contact hours (structured activities.): 90,67 hours* *Private study including independent learning activites*: *90,67 hours*
Credit points	*2 SCU / 6 ECTS*
Required and recommended prerequisites for joining the module	*NA*

Module objectives/intended learning outcomes	Students are: LO1: Able to realize excellence based on religious morals (excellence with morality), able to work together, and show a responsible attitude to work in their field of expertise independently LO2: Able to internalize the spirit of independence, struggle, and entrepreneurship LO4: Able to develop a pharmaceutical professional performance with analytical acumen in solving pharmaceutical problems and managing research in the pharmaceutical field related to national and global systems and policies, both inter and inter-disciplinary approaches LO5: Able to access and review information through an Information and Communication Technology (ICT) system, decide on a specific subject of study, maintain the feasibility of implementing research designs, conduct research, analyze data, conclude research results comprehensively, and create strategic issues based on the study that reflect the latest updates in the field of pharmaceutical sciences, and communicate them in the media and scientific forums at the national and international level through an interdisciplinary or multidisciplinary approach in the form of a thesis or other equivalent forms. LO6: Able to make decisions in the context of solving problems related to science and technology development based on analytical or experimental studies through collaboration with colleagues, colleagues in institutions and research communities at both national and international levels and utilizing research results for the benefit of the user and other communities LO11: Able to develop systems for evaluating the bioavailability of drugs in the body, pharmaceutical products circulation permits, and their in-vitro and in-vivo evaluations with specific delivery systems with appropriate analytical methods. LO15: Able to plan and organize concepts and procedures for quality assurance and recommendations on pharmaceutical products, which include drugs, cosmetics, foods, and beverages as products and therapeutic goods.
Content	This course presents various types of clinical chemical analysis method development with various biological samples using instrumental analysis techniques for the purposes of diagnosis, prophylaxis, and TDM..
Exams and assessment formats	*Final exam (100 minutes), take-home written assignments*
Study and examination requirements	*the final grade in the module is composed of 50% performance on final exam, and 50% take-home assignments. Students must have a final grade of 70% or higher to pass*

Reading list	1. Hartmann.C. ,D.L. Massart and R.D. Mc.Dowall, 1994, An Analysis of the Washington Conference Report on bioanalytical method validation,Journal of Pharmaceutical & Biomedical Analysis, Vol.12., No.11., hal 1337-1343 2. Hallworth, M.; Watson,Therapeutic Drug Monitoring: Clinical Guide. Abbot Diagnostic. 4th Edition. pp. 5-19. 3. Pillay, T.S. 2015. Practical Clinical Chemistry- core concepts: a training manual, First Edition. 4. Reed, R. Clinical chemistry educational services. Abbott diagnostics.Learning Guide. First Edition.pp. 6-105. 5. Sarhat, E.R. 2017. Therapeutic drug monitoring. Noor Publishing. First Edition, Muritius. Iraq. pp. 136-254. 6. Selinger K.A., 1995, Inspection by variable as an acceptance criteion in bioanalysis-a proposal, Journal of Pharmaceutical and Biomedical Analysis, No.13, 1427-1436. 7. World Health Organization (WHO). 2002. Handbook for good clinical research practice: Guidance for implementation. Pp. 21-87.