

ADVANCED PHARMACOKINETICS

Module designation	<i>Advanced Pharmacokinetics</i>
Semester(s) in which the module is taught	<i>1</i>
Person responsible for the module	1. Prof. Dr. Suharjono, MS., Apt.. (Course Coordinator) 2. Dr. Budi Suprpti, M.Si., Apt.
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory</i> / <i>elective</i> / specialisation
Teaching methods	<i>lecture, discussion, assignment</i>
Workload (incl. contact hours, self-study hours)	<i>(Estimated) Total workload: Contact hours (structured activities.): 90,67 hours Private study including independent learning activities: 90,67 hours</i>
Credit points	<i>2 SCU / 6 ECTS</i>
Required and recommended prerequisites for joining the module	<i>NA</i>

<p>Module objectives/intended learning outcomes</p>	<p>Students are:</p> <p>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.</p> <p>LO2: Able to internalize the spirit of independence, struggle, and entrepreneurship.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>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.</p> <p>LO7: Able to analyze natural materials to obtain active ingredients and/or pharmaceutical excipients with due observance of nature conservation.</p> <p>LO8: Able to carry out drug designs through the synthesis of bioactive compounds based on the structure-activity relationship.</p> <p>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.</p> <p>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.</p> <p>LO13: Able to design drug development both from natural products and/or synthetic compounds by considering the biological mimicry system.</p> <p>LO14: Able to build drug management systems from active pharmaceutical ingredients to finished products that are ready for therapeutic uses.</p>
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Content	The advanced Pharmacokinetics course describes: pharmacokinetic concepts and physiological-based modeling (understanding of pharmacokinetics, scope and benefits, pharmacokinetic models, pharmacokinetic predictions based on QSAR); Drug absorption (gastrointestinal physiology, transfer membranes and barriers, absorption processes, absorption and potential estimation models absorption); Drug distribution in the body (transfer access through membranes at the target, distribution and drug-protein binding); Drug metabolism (biotransformation, oxidative metabolism, enzymes and catalytic); Drug elimination (clearance processes and the role of transport proteins, kidney, renal physiology and roles in drug excretion, lipophilicity and reabsorption in the kidney, renal clearance); Multiple dose concept and clinical applications; Relationship of physiological changes to drug kinetics; Pharmacokinetic-based drug development and population
Exams and assessment formats	<i>Take-home written assignments</i>
Study and examination requirements	<i>the final grade in the module is composed of 30% discussion, 30% presentation, 30% take-home assignments, 10% in-class participation and soft-skills assessment. Students must have a final grade of 70% or higher to pass</i>
Reading list	<ol style="list-style-type: none"> 1. <i>Shargel L, Wu-Pong S, Yu ABC, 2016. Applied Biopharmaceutics and Pharmacokinetics, 7th edition, McGraw Hill Medical,</i> 2. <i>Tozer TN and Rowland M, 2006. Introduction to Pharmacokinetics and Pharmacodynamics: The Quantitative Basis of Drug Therapy, 1 edition, Lippincott Williams & Wilkins</i> 3. <i>Burton ME, Shaw LM, Schentag JJ, and Evans WE, 2005. Applied Pharmacokinetics and Pharmacodynamics: Principles of Therapeutic Drug Monitoring Fourth Edition, Lippincott Williams & Wilkins</i> 4. <i>Gabrielsson J and Weiner D, 2007 Pharmacokinetic and Pharmacodynamic Data Analysis: Concepts and Applications, Fourth Edition, Swedish Pharmaceutic,</i> 5. <i>Bauer L, Clinical Pharmacokinetics 2005, 1 edition by, McGraw-Hill Medical,</i> 6. <i>John E. Murphy, 2016. Clinical Pharmacokinetics, American Society of Health-System Pharmacists,</i> 7. <i>Robin Southwood, Virginia H. Fleming, Gary Huckaby, 2018. Concepts in Clinical Pharmacokinetics [7th Edition], Ameri. can Society of Health-System Pharmacists</i> 8. <i>Hartmut Derendorf Ph.D. 2011. Clinical Pharmacokinetics and Pharmacodynamics: Concept and Applications [4th Ed]. Wolters Kluwer.</i>