

Study and examination requirements	<i>the final grade in the module is composed of 45% mid term exam, 45% final exam , 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>Whalen K, Pharmacology (Lippincott's Illustrated Reviews Series), 7th Edition, Lippincott Williams and Wilkins, 2019</i> 2. <i>Katzung B, Masters S, Trevor A, Basic and Clinical Pharmacology, LANGE Basic Science , 15th edition. Lange, 2021</i> 3. <i>Brenner GM and Stevens CW, Pharmacology, Second Edition, Saunders, 2006</i> 4. <i>Brunton L, Chabner B, and Knollman B, Goodman And Gilman's The Pharmacological Basis of Therapeutics, 13th edition, McGraw Hill Profesional, 2017</i> 5. <i>Vauquelin G and Mentzer BV, G Protein-coupled Receptors: Molecular Pharmacology, A John Willey and Sons, 2008</i> 6. <i>Offermanns S and Rosenthal W, Encyclopedia of Molecular Pharmacology, 3rd edition, Springer, 2021</i>

PHARMACOMETRICS

Module designation	<i>Pharmacometrics</i>
Semester(s) in which the module is taught	2
Person responsible for the module	<ol style="list-style-type: none"> 1. Chrimawan Ardianto, S. Farm., Apt., M.Sc., Ph.D.(Course Coordinator) 2. Prof. Junaidi Khotib, S.Si., Apt., M.Kes.,Ph.D 3. Prof. Dr. apt. Aty Widyawaruyanti, MSi.
Language	<i>Bahasa Indonesia</i>
Relation to curriculum	<i>Compulsory / elective / specialisation</i>
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 activites: 90,67 hours</i>
Credit points	<i>2 SCU / 6 ECTS</i>
Required and recommended prerequisites for joining the module	NA

Module objectives/intended learning outcomes	<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>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>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>
Content	<p>The Pharmacometrics course provides an introduction to pharmacometrics (definition, scope, objectives, and benefits of pharmacometrics), the development of diseased-animal models, the validation of diseased-animal models including models of infectious disease (malaria, viruses induced and bacterial-induced), models of degenerative diseases (cancer, diabetes, hypertension, atherosclerosis, kidney failure, and aging), models of other diseases (chronic pain, inflammation, and drug dependency), drug compound potency and effectiveness testing both in vitro and in vivo, calculation of drug compounds potency and effectivity, pharmacokinetic and pharmacodynamic relationship (based on circumstances, physiology, mechanism of action, and allometric scaling), pharmacometrics models and simulations, development of pharmacometrics models in the development of drug compounds, computer programs and their use in pharmacometrics.</p>
Exams and assessment formats	<p><i>Mid term exam and final exam</i></p>
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Reading list	<ol style="list-style-type: none">1. <i>Brutton L, et al, Goodman and Gilman's the Pharmacological Basis of Therapeutics, 13th Edition, McGraw-Hill Education 2017</i>2. <i>Katzung B, Masters S, Trevor A, Basic And Clinical Pharmacology, Lange Basic Science, 14th edition. Lange, 2017</i>3. <i>Vela JM., Maldonado R, Hamon M., In Vivo Models For Drug Discovery, Wiley VCH Press, 2014</i>4. <i>Brenner GM and Stevens CW, Pharmacology, 5th Edition, Saunders, 2017</i>5. <i>International Conference on Harmonization Good Clinical Practice (ICH GCP-E6) Integrated addendum, 2016</i>
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