DRUG DESIGN

Module designation	*Drug Design*
Semester(s) in which the module is taught	*2*
Person responsible for the module	4. Prof. Dr. Siswandono, MS., Apt.**(Course Coordinator)** 5. Prof. Dr. Bambang Tri Purwanto, MS., Apt. 6. Dr. Nuzul WD
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. 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. LO8: Able to carry out drug designs through the synthesis of bioactive compounds based on the structure-activity relationship. LO13: Able to design drug development both from natural products and/or synthetic compounds by considering the biological mimicry system.

Content	Drug Design Course describes introductory material on drug design, properties of drug compounds and receptors from a 3D molecular perspective, drug development and methods optimization steps, molecular modifications in drug design, pre-drug design, aspects of drug development and rational drug design, structure modification, and rational drug design model based on receptor protein structure and ligand modification, in silico drug molecular properties prediction, and computer application for compound activity prediction (ligand-receptor docking).
Exams and assessment formats	*Take-home written assignments*
Study and examination requirements	*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*
Reading list	*1. Siswandono, 2014. Pengembangan Obat Baru. Surabaya: Airlangga University Press.* *2. Siswandono, ed. 2016. Kimia Medisinal I. Edisi Kedua, Surabaya: Airlangga University Press.* *3. Roy, K., 2019. In Silico Drug Design, Repurposing Techniques and Methodologies, London: Elsevier Inc.* *4. Singh, D.B., 2020. Computer-Aided Drug Design, Singapore: Springer Nature Singapore Pte Ltd.* *5. Klebe, G., 2013. Drug Design, Methodology, Concepts, and Mode-of-Action, Heidelberg: Springer-Verlag.* *6. Ghosh, A.K. and Gemma, S., 2014. Structure-based Design of Drugs and Other Bioactive Molecules, Tools and Strategies, Weinheim: Wiley-VCH Verlag GmbH & Co.* *7. Tutorial dalam Program Komputer SPSS 25, ChemOffice 2020, dan Molegro 5.5.*