Module Handbook

Modul Name	**Medicinal Chemistry**
Module Level	Bachelor
Abbreviation, if applicable	KIM 102
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	6th/Third Year
Modul coordinator(s)	Dr. .PratiwiPudjiastuti, M.Si.
Lecturer(s)	Prof. Dr. AfafBaktir, M.S.
Language	Bahasa Indonesia
Classification within the curriculum	Elective Studies
Teaching format/class hours per week during the semester	2 hours (50 min/hour)
Workload	2 hours lectures, 4 hours individual activities, 13 weeks per semester and total 78hours per semester ~ 2,6 ECTS *
Credit point	2
Requirement	Physical Organic Chemistry (KIO 301) Biochemistry I (KIB 301) Biochemistry II (KIB 303))
Learning Outcomes	**General competence (knowledge):** 1. Capable of understanding drugs, prodrugs, double prodrugs and me too drug 2. Able to explain the discovery of new drugs 3. Able to explain the physical and chemical properties of drugs 4. Ability to design a compound that has an activity of low, medium and high based on its structure through the concept of QSAR 5. Able to explain drug synthesis method of combinatorial chemistry 6. Able to explain how a systematic and logical fate of the drug in the body 7. Being able to describe the target of drug action 8. Able to explain receptors as targets of drug action 9. Able to explain drug delivery 10. Able to explain how measuring drug response **Specific competence:** 1. Being able to explain the relationship of chemical structure and physical properties of the drug activity, both qualitatively and quantitatively. 2. Being able to decipher phase pharmacokinetic (ADME) and pharmacodynamic drug (receptors as drug targets) 3. Having the ability to design drugs based on the concept QSAR

Content	Understanding drug, pro-drug, pro-drug double, me too drug and new drug discovery. The relationship between the properties of chemistry and physics to drug activity. Qualitative and quantitative SAR (Structure Activity and Relationship) models Free Wilson (de novo), the model Hänsch (LFER), Topliss models and Fibonacci in designing new drugs. Drug design combinatorial chemical synthesis methods. The fate of the drug in the body: adsorption, distribution, interaction with the target (pharmacodynamics), metabolism and excretion; Targeted drugs work: Protein (receptors, enzymes, protein channel and career). Receptors as targets of drug action: endogenous and exogenous ligands, ligand agonists and antagonists, receptor types and signalingnya, Drug delivery: classic, based on antibodies and nanoparticles; Measurement of drug response.
Study/exam achievements	Students are considered to be competent and pass if at least have finished 50% of practicum report and pass the exam **Final score is calculated as follows:** 20% report + 80% final exam **Final index is defined as follow:** A : 100 > NA ≥ 75 AB : 74,99> NA ≥ 68 B : 68 > NA ≥ 60 BC : 60 > NA ≥ 55 C : 55 > NA ≥ 50 D : 5 > NA ≥ 45 E : 45 < NA
Forms of media	Slides and LCD projectors, whiteboard, lab.
Learning Methods	Lectures, discussion, assignments
Literature	1. William O. Foye .Principle of Medicinal Chemistry 2. Sukarjo, B., Siswandono, 1990, *Kimia Medisinal*, 2^{e}ed, Airlangga University Press, Surabaya. 3. Sambudi,., 1980, *Kimia Medisinal*, 2 ndEd., Gadjah Mada Press, Yogyakarta 4. Patrick, G.L., 1995, An Introduction to Medicinal Chemistry, Oxford University Press, Oxford. 5. Berg, J.M., Tymoczko, J.L., Stryer, L., 2012, Biochemistry, 7thEd.., W.H., Freeman and Co., New York. 6. Goodman and Gilman's, 2001, The Pharmacological basis of therapeutics, 10th Edition, McGraw-Hill, New York. (Chapter 2– "PHARMACODYNAMICS: Mechanisms of Drug Action and the Relationship between Drug Concentration and Effect") 7. Nelson, D.L., Coc, M.M., 2005, Lehninger Principle of Biochemistry, 5thEd., W.H. Freeman and Co., New York
Notes	*Total ECTS = {(total hours workload x 50 min) / 60 min } / 25 hours **Each ECTS is equals with 25 hours**