ADVANCED CLINICAL CHEMISTRY

Module designation	*Advanced Clinical Chemistry*
Semester(s) in which the module is taught	*1*
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 therapeutic dose monitoring.
Exams and assessment formats	*Finall exam orTake-home written assignments*
Study and examination requirements	*The final grade in the module is composed of 25% presentation 65% 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. *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.*