

Module Handbook Advanced Analytical Chemistry

Modul Name	Advanced Topics in Analytical Chemistry
Module Level	Bachelor
Abbreviation, if applicable	KIA407
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	6 th / Third year
Modul coordinator(s)	Dr. Miratul Khasanah, M.Si.
Lecturer(s)	Dr. Muji Harsini, MSi. Dr.rer. nat. Ganden Supriyanto, M.Sc.
Language	Bahasa Indonesia
Classification within the curriculum	Compulsory Course / Elective Studies
Teaching format/class hours per week during the semester	2 hours lectures (50 min / hour)
Workload	2 hours lectures, 2 hours individual study, 2 hours structured activity, 13 weeks per semester, and total 78 hours a semester ~ 2.6 ECTS *
Credit point	2
Requirement	Spectrometry and Electrometry
Learning goals	<p>General Competence (Knowledge) : Able to find different methods of analysis in research and industri yang tepat</p> <p>Spesific Competence :</p> <ol style="list-style-type: none"> 1. understand the concept of analytical thinking in problem solving measurement metal species in the environment with instruments tandem technique 2. understand the concept of separation with emulsion liquid membrane technique 3. able to think of analysis and synthesis in solving the problems associated with waste treatment with emulsion liquid membrane technique 4. understand the mechanism of the onset of the electrical signal potential or current that occurs in chemosensor and biosensor-based electrometry 5. understand how the synthesis and design the membranous polymer electrode 6. apply the benefits of enzymes as specific sensor 7. analyzing samples with instruments electrometry 8. understand the technique of flow injection analysis and its application in the analysis of samples in various fields such as the food industry, pharmaceuticals, environmental, agricultural and chemical industries 9. designing and applying systems analysis of analytes in a wide variety of different types of sample matrices using the

	<p>technique of flow injection analysis</p> <p>10. understand the kinds of techniques and application microextraction</p> <p>11. microextraction engineering design appropriate to the type of analytes and sample matrix</p> <p>12. understand the technique of molecular imprinting polymer and its application in the development of sample preparation techniques</p> <p>13. able to work together, present the results in written and oral thoughts and argue scientifically</p>
Content	Special Topics in analytical chemistry analytical methods based on developments to date, include: Analysis of speciation, using emulsion liquid membrane separation, and biosensors based Chemosensor Electrometry, stripping voltammetry and Potentiometry, Flow Injection Analysis, Microextraction and Molecular Imprinting Polymer
Atribut softskill	Logic, Communication skills, teamwork, (effort)
Study/exam achievements	<p>Students are considered to be competent and pass if at least get 55 of maximum mark of the exam, paper, presentation</p> <p>Final score (NA) is calculated as follow: Mid exam (Exam I) : 35% Final exam (Exam II) : 35% Structured activity : 30 % including (15% writing report, 15% presentation)</p> <p>Final index is defined as follow</p> <p>A : 100>NA≥75 AB : 74.99>NA≥70 B : 69.99>NA≥65 BC : 64.99>NA≥60 C : 59.99>NA≥55 D : 54.99>NA≥40 E : NA≤40</p>
Metode pembelajaran	Lectures, discussion, assignments, workshop
Forms of media	LCD, laptop, White board, journal
Literatur	<ol style="list-style-type: none"> 1. Brett, C.M.A., dan Brett, A.M.O., (1998): <i>Electroanalysis</i>, Oxford Univ. Press, Oxford, 88 p. 2. Cattrall, R.W., (1997): <i>Chemical Sensors</i>, Oxford Univ. Press, Oxford, 78 p. 3. Chromatographia 4. Eggins, B, 1996, <i>Biosensors: An Introduction</i>, John Wiley and Sons 5. International J. Environ. Anal. Chem 6. Journal of Analytical Chemistry 7. Journal of Membrane Science 8. Jurnal Analytica Chimica Acta

	<p>9. Sensor and Actuator B</p> <p>10. Journal of Electroanalytical Chemistry</p> <p>11. Skoog, D.A and Leary, J.J., 1992, <i>Principles in Instrumental Analysis</i>, 3rd ed, Saunders College Publishing, Fort Worth.</p> <p>12. Wang, J., 2000, <i>Analytical Electrochemistry</i>, 2nd ed., Wiley –VCH, New York.</p>
Notes	<p>*Total ECTS = {(total hours workload x 50 min) / 60 min } / 25 hours</p> <p>Each ECTS is equals with 25 hours</p>