

Module Handbook

Module Name	Separation Techniques
Module Level	Bachelor
Abbreviation, if applicable	KIA 205
Sub-heading, if applicable	-
Course included in the module, if applicable	-
Semester/term	4 th / second year
Modul coordinator(s)	Dr. rer. nat. GandenSupriyanto, M.Sc YanuardiRahardjo, S.Si, M.Sc
Lecturer(s)	Dr. MujiHarsini, M.Si Dr. MiratulKhasanah, M.Si
Language	Bahasa Indonesia
Classification within the curriculum	Compulsory course/ elective course
Teaching format/class hours per week during the semester	2 hours (50 min/hour)
Workload	2 hours lecture, 2 hours individual activities, 2 hours structured activities, 13 weeks per semester, and total 78 jam per semester- 2,6 ECTS *
Credit point	2
Requirement	Analytical Chemistry II can be taken in time

Learning Outcomes	<p>General Competence (knowledge) : Students can separate a mixture of chemical components based on the theories, principles and techniques of various methods of separation.</p> <p>Specific Competence :</p> <ol style="list-style-type: none"> 1. Explain how the separation by distillation method 2. Explain how the separation by the method of melting 3. Describe how separation by sublimation method 4. Explain how the separation of the phase diagram for liquid substances partially soluble 5. Explain how the separation of the extraction method 6. Explain the separation by chromatography 7. Explain how the separation with chromatography paper 8. Describe how separation by thin layer chromatography method 9. Explain how the separation by column chromatography, the process of adsorption, ion and gel filtration perukaran 10. Parameter parameter specifies chromatography 11. Explain how the separation with GC and HPLC 12. Describe how separation by electrophoresis 13. Show and choose the instruments used for the separation
Content	Theory of distillation; melting theory; theory of liquid-liquid solution (phase diagram); theory of sublimation; extraction theory; chromatography which covers the basics of chromatography, paper chromatography, thin layer chromatography, column chromatography, including ion exchange chromatography, gel chromatography, gas chromatography (GC) and high performance liquid chromatography (HPLC), electrophoresis; demonstration equipment GC, HPLC and electrophoresis.
Study/exam achievements	<p>Students declared competent and able to pass if at least obtain a value of 55</p> <p>Final index is defined as follow</p> <p>A : 100>NA≥75</p> <p>AB : 74.99>NA≥70</p> <p>B : 69.99>NA≥65</p> <p>BC : 64.99>NA≥60</p> <p>C : 59.99>NA≥55</p> <p>D : 54.99>NA≥40</p> <p>E : NA≤40</p>
Forms of media	White board, Laptop, LCD hand out, computer <i>on line</i> (LAN)
Learning Methods	Lectures, discussion

Literature	<ol style="list-style-type: none"> 1. Sudjadi, 1988, <i>MetodePemisahan</i>, PenerbitKanisius, Yogyakarta, 2. Miller, J.M., 1975, <i>Separation Methods in Chemical Analysis</i>, John Wiley & Sons, New York 3. Dean, J. A., 1969, <i>Chemical Separation Methods</i>, Van Nostrand Co., New York 4. Pecsok, R.L., L.D. Shields, 1985, <i>Modern Methods of Chemical Analysis</i>, 3rd ed., John Wiley and Sons, New York. 5. Snyder, L.R and J.I. Kirkland, 1974, <i>Introduction to Modern Liquid Chromatography</i>, John Wiley and Sons, New York
Note	<p>There is 2 parallel class, and each class taught by 2 lectures</p> <p>*Total ECTS = {(total hours workload x 50 min) / 60 min } / 25 hours</p> <p>Each ECTS is equals with 25 hours</p>