

Module Descriptions

Module designation	Basics of Chemical Separations
Semester(s) in which the module is taught	2 nd semester/First Year
Person responsible for the module	Dr. Rusmini S.Pd., M.Si
Language	Bahasa Indonesia (Regular Class) Bahasa Inggris (Internasional Class)
Relation to curriculum	Compulsory course
Teaching methods	Case method with practicum laboratory 3 workhours per week (3 x 170 minutes per week)
Workload (incl. contact hours, self-study hours)	1 CU for a bachelor's degree equals 170 minutes (50 minutes face-to-face, 60 minutes structured, 60 minutes independent learning) per week × 14 weeks, excluding mid and end-term exams. = 39.67 work hours per semester = 1.587 ECTS.
Credit points	3 Credit Units (CU) = 4.77 ECTS
Required and recommended prerequisites for joining the module	Basic Chemistry
Module objectives/intended learning outcomes	<ol style="list-style-type: none"> 1. Students are able to analyze the basic concepts and application of distillation chemical separation methods. 2. Students are able to analyze the basic concepts and application of extraction chemical separation methods. 3. Students are able to analyze the basic concepts and application of chromatography chemical separation methods. 4. Students are able to analyze the basic concepts and application of electrogravimetric chemical separation methods. 5. Students are able to analyze the basic concepts and application of membrane chemical separation methods. 6. Students are able to evaluate separation methods using distillation, extraction, chromatography, electrogravimetry, and membranes. 7. Students are able to apply chemical separation methods, including distillation, extraction, chromatography, electrogravimetry, and membranes.
Content	This course examines chemical separation techniques from the perspective of chemical structure, energetics and chemical analysis, including distillation, extraction, chromatography, membrane and electrogravimetry techniques, followed by supporting laboratory activities.
Examination forms	Essay and Oral Presentation

Study and examination requirements	Student assessments include: Participatory Activities 50% Practical Assessment 25% Tests 25%
Reading list	<ol style="list-style-type: none"> 1. Pecksok, et al. 1976. <i>Modern Methods of Analytical Chemistry</i>. 2nd New York: John Wiley and Sons 2. Harvey, D.2000. <i>Modern Analytical Chemistry</i>. Int.Ed. Singapore: Mc Graw Hill 3. Soebagio, Budiasih, E, Ibnu, S, Widarti, H.R, Munzil. 2001. <i>Kimia Analitik II (Common Book)</i>, Malang: IMSTEP – JICA FMIPA Universitas Negeri Malang 4. Nita Kusumawati, Agus Budi Santoso, Maria Monica Sianita, & Supari Muslim. 2017. Extraction, Characterization, and Application of Natural Dyes from the Fresh Mangosteen (<i>Garcinia mangostana</i> L.) Peel, <i>International Advanced Science Engineering Information Technology</i>, Vol 7, No 3, 878-884 5. Pirim Setiarso, Rochman Wachid (2017) Pembuatan Elektroda Pasta Karbon Termodifikasi Bentonit Untuk Analisis Logam Tembaga (II)) Secara Cyclic Voltammetry Stripping, <i>Indonesian Chemistry and Application Journal</i> Vol 1 no 1 6. Nita Kusumawati, Pirim Setiarso, Agus Budi Santoso, Setya Chendra Wibawa and Supari Muslim, 2019, The Development Of PVDF/PEI Blended Membrane: Effect Of Stirring Time On Membrane Characteristics And Performance, <i>Rasayan Journal Chemistry</i>, Vol 12. No 2, 975-986 7. Taufik Hidayatulloh, Pirim Setiarso (2019) Pembuatan Elektroda Kerja Graphene Oxide-Paraffin Untuk Analisis Logam Cd Menggunakan Cyclic Voltammetry Making of Graphene Oxide-Paraffin Working Electrode for Analysis of Cd Using Cyclic Voltammetry, <i>Unesa Journal of Chemistry</i> vol 8 no 2 8. Nita Kusumawati, Agus Budi Santoso, Setya Chendra Wibawa, Pirim Setiarso, Supari Muslim (2020) Development of a New Polymer Membrane: Polyvinylidene fluoride/Polyetherimide Blend Membrane <i>International Advanced Science Engineering Information Technology</i>, Vol 10, No 6, 2547-2559